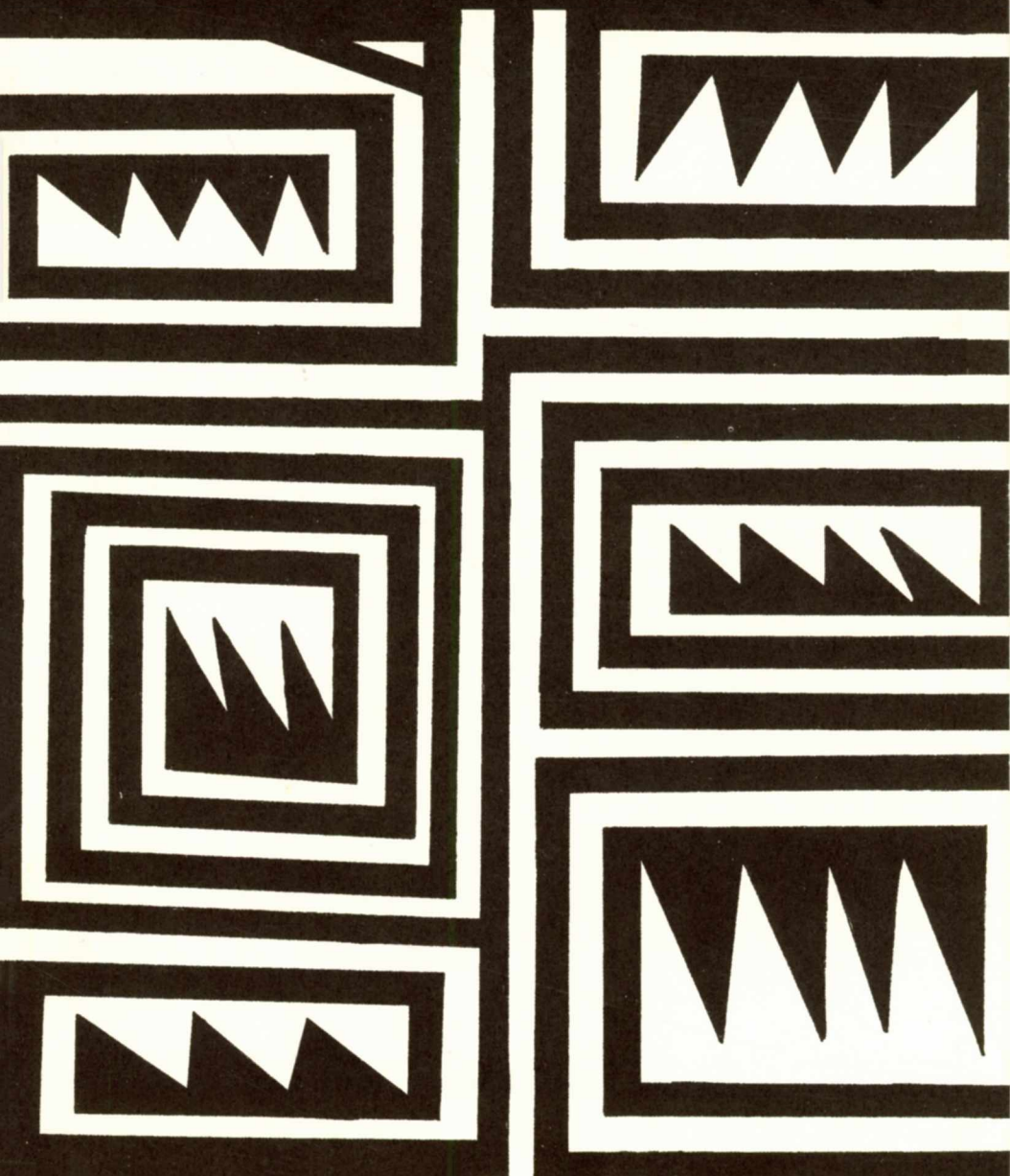
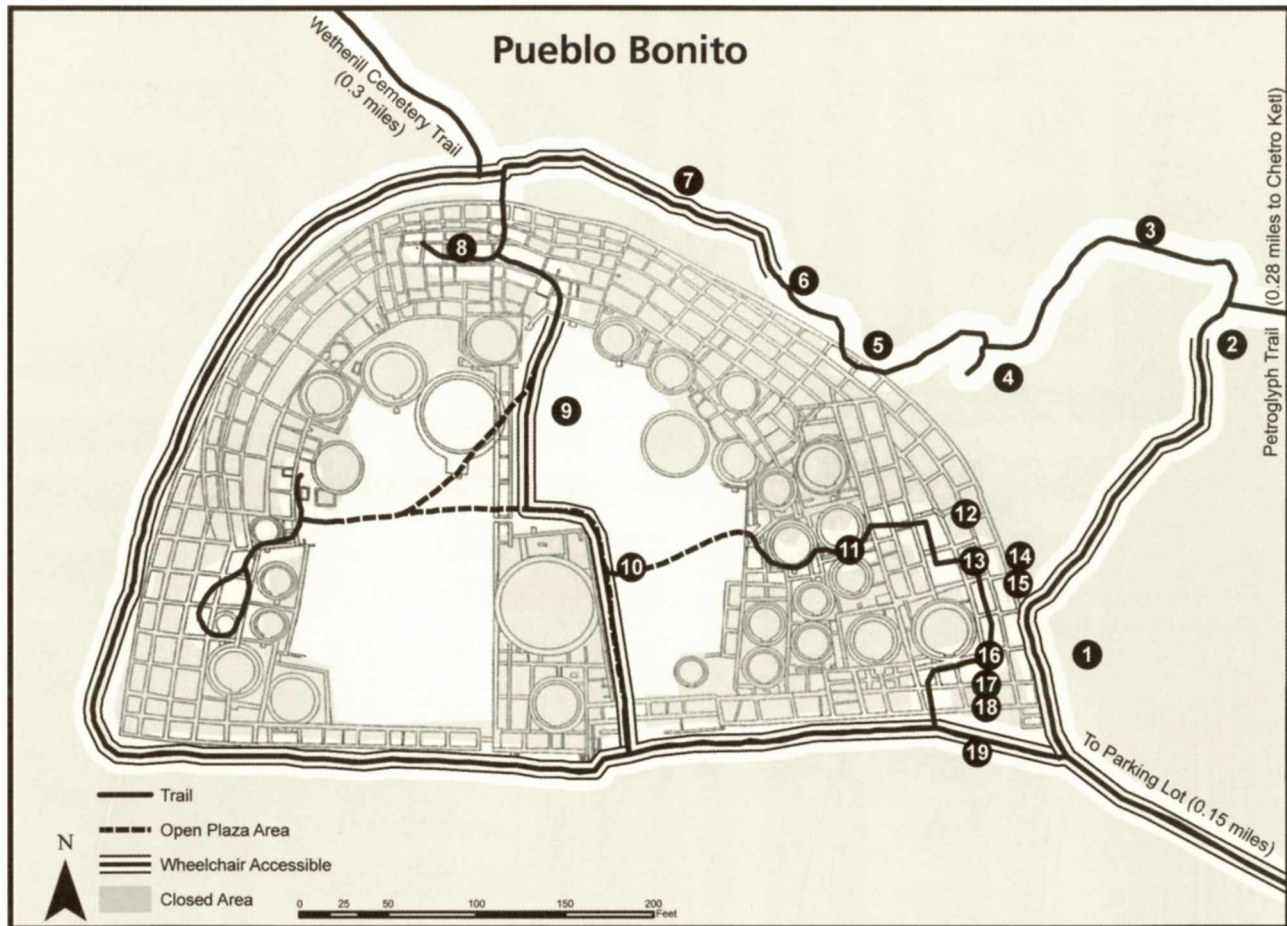


Pueblo Bonito



PLEASE STAY ON TRAIL AND OFF FRAGILE WALLS



Based on *Great Pueblo Architecture of Chaco Canyon, New Mexico*
by Stephen H. Lekson. University of New Mexico Press: Albuquerque, 1984:111.

Welcome to Pueblo Bonito

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

The graveled trail through Pueblo Bonito is 0.73 miles, roundtrip. It climbs several short, steep rises. Trail Stops 11–18 require climbing 7 stairs, descending 14 stairs, and stooping through 11 narrow doorways 20–27 inches wide and 41–46 inches tall. Mobility-impaired individuals may want to exit the plaza and proceed to Stop 19. The recommended wheelchair-accessible route is to view Stop 1, then return to the south wall and enter the plaza at a break in the wall, just past Stop 19.

Use this guide to recognize unique characteristics of Chacoan great-house architecture and learn about the enduring legacy of Chacoan culture.

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

In 1987, the park was designated a World Heritage Site. You can help protect and preserve this portion 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 parents or guardians. Pets are not permitted into sites. Watch for drop-offs into open kivas.

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.

LT. JAMES SIMPSON and his Mexican guide, Carravahal, gave Pueblo Bonito (Spanish for “Beautiful Town”) its name in 1849, during a military expedition into Navajo territory. The site also has Pueblo, Hopi, and Navajo place-names.

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

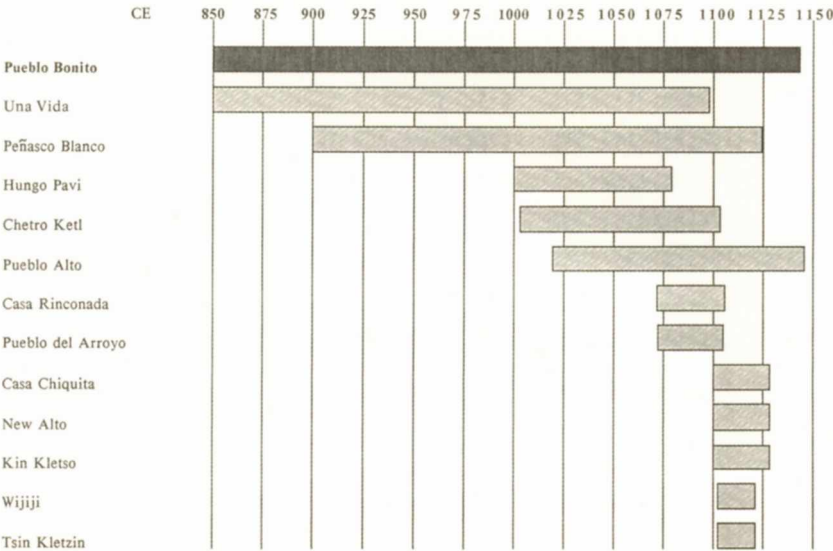
In traditional stories from Acoma Pueblo, Jemez Pueblo,

Rio Grande pueblos, and from Navajo culture, Chaco Canyon is known as 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.

Pueblo Bonito is the most thoroughly investigated, visited, and celebrated cultural site in Chaco Canyon.

Planned and constructed in stages from CE 850 to 1150 by ancestral Puebloan peoples, this was the center of the Chacoan world. That world eventually covered much of the present-day Southwest, including the San Juan Basin

Approximate Construction Dates for Chacoan Sites



of New Mexico and portions of Colorado, Arizona, and Utah. For more than 300 years, Chacoan culture united many diverse peoples.

Pueblo Bonito typifies the pueblo architecture found throughout the Chacoan world.

Archeologists use the term “great house” to describe large sites like Pueblo Bonito. Great houses share many architectural features: planned layouts, multistoried construction, distinctive masonry, very large rooms, plazas, and huge subterranean ceremonial chambers called “great kivas.” You will see all of these great-house elements along this trail.

Researchers believe that great houses were examples of public architecture. Ancestral Puebloans may have used them only periodically, when ceremonies, commerce, and trading drew people from other areas to Chaco Canyon. The great houses probably did not have large resident populations.

Their builders often oriented great houses to solar, lunar, and cardinal directions, and surrounded them with sophisticated astronomical markers, communication

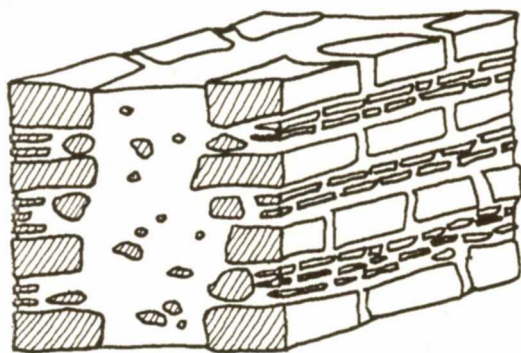
features, water control devices, formal earthen architecture, and Chacoan “roads.”

1 Core-and-veneer walls are a distinguishing feature of Chacoan great-house construction.

The *core* consists of roughly shaped pieces of sandstone laid in a mud mortar. The core is then faced on both sides with carefully selected and shaped stones to create the *veneer*. Several types of veneers were used, and styles changed over time. Archeologists use pattern variations to relatively date construction.

After the Chacoans built walls and roofed rooms, they applied plaster to most of the walls, concealing this fine stonework. This protected the mud mortar from rain, thus decreasing maintenance. The look of the structure would have been very different from what we see today.

During excavations in the 1920s, archeologists discovered an extensive network of room foundations in the open, vacant-looking landscape between the southeastern corner of Pueblo Bonito and Chetro Ketl. Nondestructive



Core and veneer

archeological studies (sub-surface imaging) of this area revealed more foundations, rooms, and kivas. Chacoans may have designed these features to link Pueblo Bonito to the Chetro Ketl complex.

2 These enormous blocks of sandstone are all that remain of Threatening Rock, which collapsed January 22, 1941, following a year of especially heavy rains.

The rockfall destroyed about thirty rooms that had been excavated in the 1920s. Prior to its collapse, the rock was a detached segment of the cliff wall, separated by a wide crack. The rock measured about 97 feet high, 140 feet long, and 34 feet thick, and weighed an estimated 30,000 tons. To get an idea of the appearance of

Threatening Rock before it fell, look to the east along the canyon wall at the massive (although only about a quarter as large) rock over toward Chetro Ketl.

Chacoan builders chose this location even though they recognized the threat of a fall, placing *pahos* (prayer sticks)

in the crevice between the rock and the cliff. They built a supporting masonry terrace below the base of the rock sometime between CE 1040 and 1050 (look for its remains to your right).

The traditional Navajo name for Pueblo Bonito is *Tsé biyahni'á'ah*, which means "rock that braces and supports the structure from below," and refers to the masonry that supported Threatening Rock.

3 The towering canyon cliffs provided the Chacoans with ample building stone, which they quarried to construct the great houses.

Dense dark-brown sandstone was the preferred stone for early construction. Found in thin outcropping layers on

the tops of nearby cliffs, it is hard and readily breaks at right angles. Chacoans used so much of it that little remains in place today.

A soft, blocky, light-tan sandstone taken from the lower canyon walls was used in later Chacoan constructions. Builders used it in the McElmo-style masonry at Kin Kletso, Casa Chiquita, New Alto, and other Chacoan sites.

Imagine the time and energy people put into the construction of these great houses: First, they designed and planned them. Then, they had to quarry and face the stones, harvest and transport roofing materials to the canyon, and gather water for mortar and plaster.

4 From here, you can see the massive scale and geometric design of Pueblo Bonito, the result of several planned building stages.

Construction of Pueblo Bonito began midway through the CE 800s. For 300 years, succeeding generations continued design and construction. Building ceased late in the 1100s, but pottery sherds

indicate that the site was used into the 1200s.

Early archeologists assumed that buildings like those at Pueblo Bonito and the other great houses were large farming villages similar to historic and modern Indian pueblos. Most researchers now believe that great houses were more likely used on a seasonal basis to accommodate temporary influxes of people visiting the canyon for ceremonies, trading, and other special events.

Today, researchers estimate the year-round population for Pueblo Bonito at 50 to 100 people—and for Chaco Canyon as a whole at 2,000 to 6,000. They base their estimates on the number of habitation rooms (rooms with fire pits) and the quantity of pottery vessels—as well as on the amount of arable land nearby.

5 Chacoans constructed the great houses far more substantially than the structures built by their neighbors. Sturdy walls were necessary for multistoried design.

This broken cross section of wall displays its massiveness, and how well it was designed.

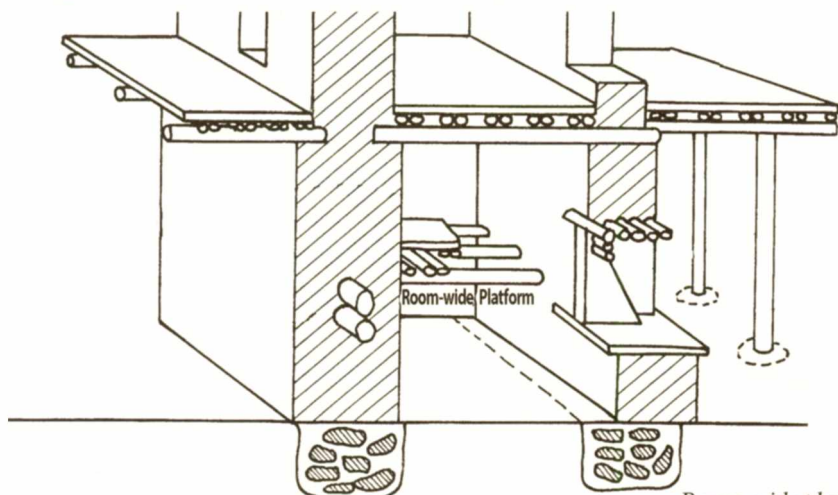
Chacoans built very wide walls in the first story to create a strong and stable base upon which to build additional stories with narrower, lighter walls. Decreasing wall widths demonstrate that the second and third stories were planned before the first story was built. You are looking at a room on the second story.

Builders added this exterior rear wall to the building during the second construction episode at Pueblo Bonito, from approximately CE 1040 to 1050. This new wall ran parallel to the existing wall, and was eventually tied into the old wall. The addition of the back wall widened the arching configuration of the building plan and expanded the size of the great house.

6 In the late 1800s, before the first archeological protection laws, archeologists, travelers, vandals, and pothunters repeatedly knocked massive holes into the back wall of Pueblo Bonito.

In this way, they removed the contents of the rooms, rather than by digging from above through many feet of wind-blown sand. Information about the contents of these rooms and their uses was lost forever.

The rooms along this back wall are unique. When Chacoans added the back wall in the late 1000s, they created a series of connected rooms between the old and new exterior walls with doors that only opened to the back—there was



Room-wide platform

no access into interior rooms or plaza areas.

Many of these rooms contained platforms across their width. These room-wide platforms were midway between the floor and ceiling and may have been used as shelving to increase the storage capacity of the rooms. Some researchers suggest that the platforms—and the restricted access to the rooms—may indicate use as sleeping areas for Chaco's visitors.

7 The doorways to your right lead into rooms that were used during the first sanctioned excavations of Pueblo Bonito.

Richard Wetherill, a rancher from the Mesa Verde area of Colorado, spent much of his life exploring the region and excavating antiquities to sell to museums and collectors.

Wetherill came to Chaco in 1896. He soon married, opened a trading post, and assisted project leader George Pepper with the first Pueblo Bonito excavations, under the auspices of the American Museum of Natural History in New York. The two eventually excavated 190 rooms in four work seasons. They located,

photographed, and mapped all of the major structures in the canyon. They also recorded Chacoan roads, stairways, dams, ditches, and headgates.

The excavations and photo documentation performed by Pepper and Wetherill are now considered equal to—or better than—many produced by more highly-trained and sanctioned archeologists of the day. While the majority of excavated artifacts were sent to the American Museum of Natural History, Wetherill sold others at his trading post. An outcry from archeologists and universities caused the government to shut down his activities at Chaco and led to the creation of our nation's first law protecting antiquities. It was this Antiquities Act (1906) that provided the basis for establishing Chaco as a National Monument in 1907.

After Pepper and Wetherill completed their excavation in 1899, Wetherill remained in the canyon, homesteading and operating a trading post at Pueblo Bonito. He was murdered in 1910 and is buried in the small cemetery west of here along with his wife.

8 This is the oldest section of Pueblo Bonito, dating from CE 850 to the late 900s, and consisting of approximately 100 ground-floor and upper-story rooms.

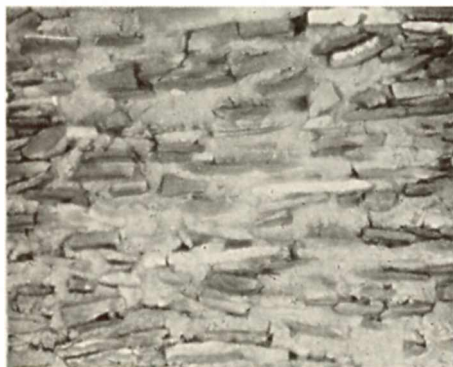
The Chacoans built three to five kivas (circular, subterranean, ceremonial rooms) in front of the crescent-shaped block of rooms. As with most other great houses, this early section was incorporated into subsequent stages of construction. Succeeding generations maintained the form and geometry of the building that started with this modest block of rooms.

Early excavators encountered extraordinary finds in this section: a cache of unique Chaco cylinder jars, thousands of turquoise beads and pen-

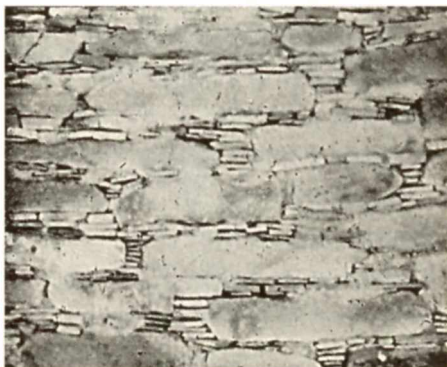
dants, conch-shell trumpets, turquoise mosaics, painted flutes, macaws, ceremonial staffs, and more. Some researchers believe the people purposely left this older section intact as they expanded the building around it to commemorate their ancestors.

This section shows several different masonry styles, including the earliest type used in great house construction. This early style used thin, rectangular-shaped pieces of sandstone laid down with copious amounts of mortar. It required more repairs and maintenance than later styles because the joints of the mud mortar are larger.

9 You are now entering the two major plazas of Pueblo Bonito.



Early Chacoan masonry



Later Chacoan masonry

These open areas are well defined by the multistoried roomblocks that flank them on the north, east, and west. A central wall, aligned along a north-south axis, divides the interior space of Pueblo Bonito into eastern and western plazas.

Plazas are important areas at modern pueblos, where many activities take place—public ceremonies, trading, community gatherings, and daily activities.

There was only one entryway into the interior of Pueblo Bonito and the plazas. The original entrance was in the southeastern corner of the western plaza. Originally seven feet wide, the entrance was later remodeled into a three-foot-wide door. Finally, even the small door was sealed—perhaps to “close” the site—when the people moved away.

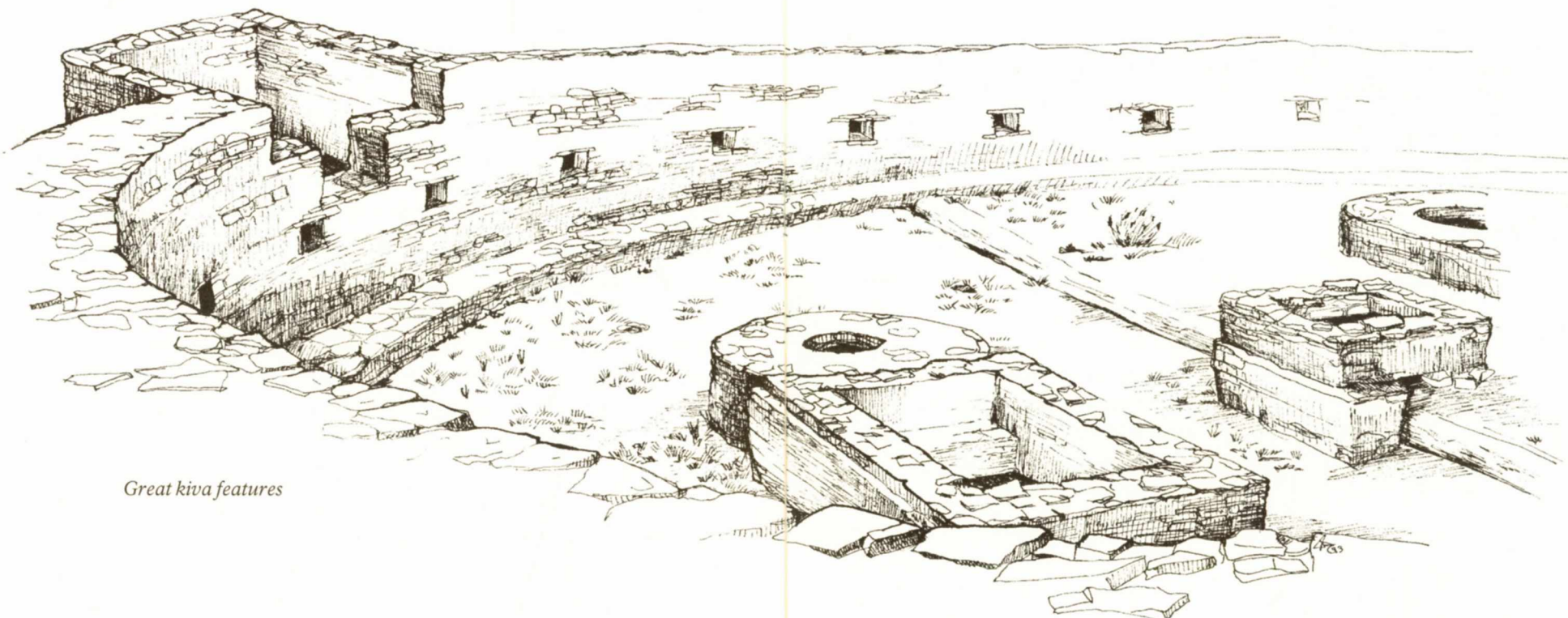
During excavations in the 1920s, Neil Judd found the stump of a massive ponderosa pine tree near this entrance. Researchers believe that a living tree, perhaps having a calendrical or ceremonial function, once stood in the plaza of Pueblo Bonito.

10 The large, round subterranean structure is a great kiva. Modern Puebloans use kivas for religious worship, preparation, dance, prayer vigils, public gatherings, and other activities.

Great kivas, a key element of Chacoan public architecture, are found in nearly every Chacoan community built between CE 900 and 1200. Great kivas are often within or near the plazas of great houses. Some are along roads and on prominent ridges and hills. Others, like Casa Rinconada across the canyon, were central to communities.

The unique design, size, and central position of great kivas suggest a ceremonial purpose—public gathering places for communities and the region. Great kivas—like modern kivas—could have accommodated hundreds of people.

Great kivas contain highly standardized architectural features: a low masonry bench around the base of the room, raised floor vaults, a raised firebox and deflector, pits for seating four upright wooden



Great kiva features

posts (or masonry pillars) used to support the roof, and an antechamber and entryway at the plaza level. These features are present in great kivas throughout the Southwest and may reflect shared ceremonial practices or beliefs. There were four great kivas in the plaza of Pueblo Bonito, although all were not used at the same time.

Chacoan great kivas often include wall niches, perhaps repositories for offerings and sacred objects, or open shelves to display them.

Stops 11–18 require climbing 7 stairs, descending 14 stairs, and stooping through 11 narrow doorways 20–27 inches wide and 41–46 inches tall. Mobility-impaired individuals may want to exit the plaza and proceed to Stop 19.

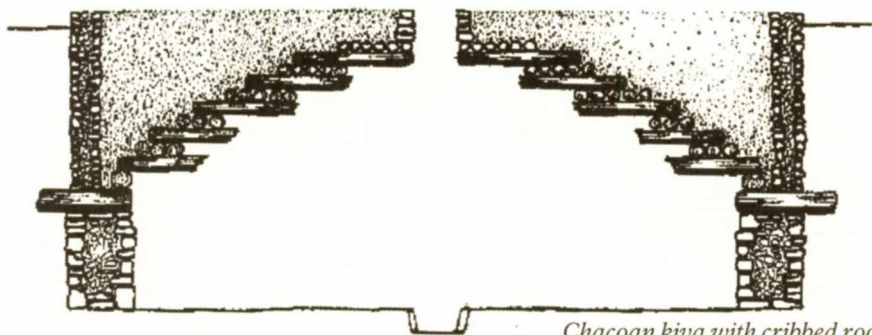
11 From 1921 through 1927, Neil Judd excavated Pueblo Bonito for the Smithsonian Institution and the National Geographic Society. He identified

features in Chacoan kivas (called “housed kivas” and “clan kivas”) that distinguish them from kivas found in other ancestral Puebloan settlements.

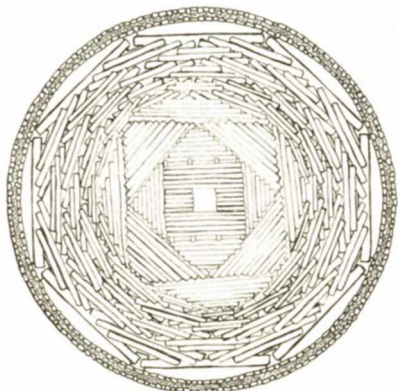
Chacoan kivas are enclosed within square rooms and contain a sub-floor vault, a sub-floor ventilation system, a firepit, a low masonry bench encircling the base of the room, and pilasters (masonry boxes) built on the benches to support the roof. Chacoans set a small piece of log inside of, but not extending beyond,

the masonry boxes—perhaps to cushion the weight of the massive log-and-earthen roof.

Chacoans placed logs from one pilaster to the next and continued the process, creating a cribbed roof (stacked log or domed structure) covering 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.



Chacoan kiva with cribbed roof



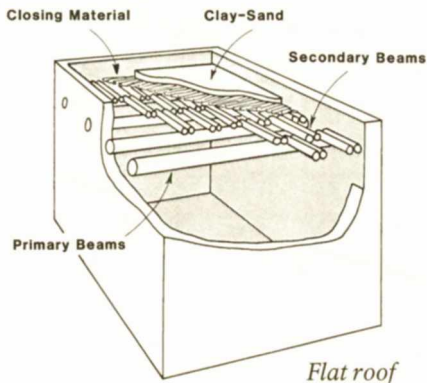
Cribbed roof viewed from inside the kiva

12 In this room, you see the remnants of original plaster, as well as primary and secondary roofing beams.

The *vigas* (primary beams) carry the weight of the roof. The *latillas* (secondary support beams) were laid perpendicular to the primary beams. Willows, juniper splints, and other plants (closing materials) were placed on top of the *latillas*. A thick layer of mud mortar completed the roof, which could also serve as

the floor of the room above. These floor and ceiling systems were about a foot thick and would have made the rooms in this section very dark with little air circulation.

The room's size—with large floor space and tall ceilings—is typical of Chacoan architecture. Rooms at Chaco were far larger than those built by contemporary neighboring groups. The present surface is raised off the floor level and covered with sand to protect and preserve fragile features. This process is called “backfilling,” a common preservation strategy at the park.



Flat roof

Notice the masonry-filled doorways. Chacoans commonly remodeled great houses by closing or sealing off doorways—perhaps to change a room’s function from domestic to storage, or to change the access.

13 The function of prehistoric rooms is often difficult to determine. Architectural features found during excavation are clues to their use.

Sandstone slabs used to grind corn (*metates*), meal-ing bins, and firepits indicate a room’s function. Artifacts found where they were originally left (in situ) suggest uses, as well.

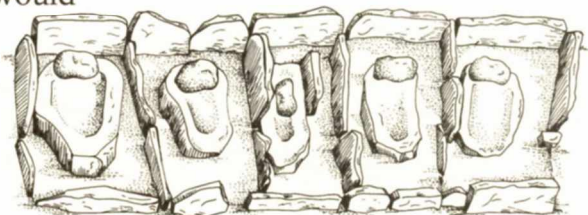
It is unlikely that the large rooms in this section of Pueblo Bonito were domestic dwellings, because they lack features such as firepits.

More likely they were used for storage. Also, they were set so deep in the interior of the roomblock that they would have been difficult to heat, ventilation would have been inadequate, and the rooms would have been dark. Domes-

tic rooms may have been on the upper floors, which subsequently collapsed and cannot be identified today.

14 The east and west wings of Pueblo Bonito were constructed between CE 1075 and 1115, including this room. This was the most extensive building phase in the canyon and one of the last.

During the 1920s, astronomer A. E. Douglass pioneered “dendrochronology” (tree-ring dating). For the first time, archeologists could date the timbers used in construction—sometimes pinpointing the exact year or season. Archeologists use wood samples to determine when a tree was cut down, how old it was, and—in some cases—where it came from and what the local weather was like during the tree’s life.



Meal-ing bins

As researchers studied the dated wood, the changing masonry styles, and the differing floor plans, they identified several episodes of construction.

By studying the ways walls meet, or “abut,” researchers identified construction sequences. Abutted walls do not interconnect at the corners, but instead are flush with each other. Abutted walls were constructed at different times, while walls with “adjoining” corners were typically built at the same time.

15 Who were the people that built these monumental great houses? Archeology and architecture give us insights into Chacoan society.

Burials discovered at Pueblo Bonito contained large quantities of worked shell, turquoise pendants and beads, conch-shell trumpets, painted flutes, and other specialized items—perhaps representing individuals of higher rank or status and class differences in Chacoan social organization.

While monumental public buildings such as Pueblo

Bonito and Chetro Ketl were in use, smaller, more typical villages alongside them and throughout the canyon were also inhabited. This association suggests that different groups of people may have lived side by side—perhaps speaking many different languages.

Who—and where—are the descendants of Chacoan people today? Although they share an agricultural lifestyle and certain other characteristics, modern Pueblo Indian peoples are not a single culture. They represent diverse clans, cultures, and languages, and their ancestors came from different areas. Oral traditions, passed down through generations within the Hopi, Zuni, Acoma, Zia, Laguna, and other Rio Grande pueblos, speak of clan migrations from Chaco and affirm their ties to this special area. Puebloan descendants continue to return to Chaco today to pray and honor the spirits of their ancestors.

Navajo oral traditions trace the origins of several of their clans and ceremonies back to the time when ancestral Navajo people interacted with ancestral Puebloans at Chaco

Canyon and other sites—interactions that included conflict and competition, intermarriage, and the exchange of ceremonial knowledge.

16 There are at least four principal door types used in Chacoan architecture: small doors with high sills, large doors with low sills, uncommon corner doorways, and T-shaped doors.

T-shaped doors are found throughout the ancestral Puebloan world, and in present-day Mexico. Their placement is often restricted to special locations in buildings, facing plazas and balconies.

These doors are frequently associated with great kivas. Researchers believe their shape is symbolic rather than practical. T-shaped altars, wall niches, petroglyphs, and pictographs also exist. Researchers differ over whether T-shaped

doors originated at Chaco or in Mexico.

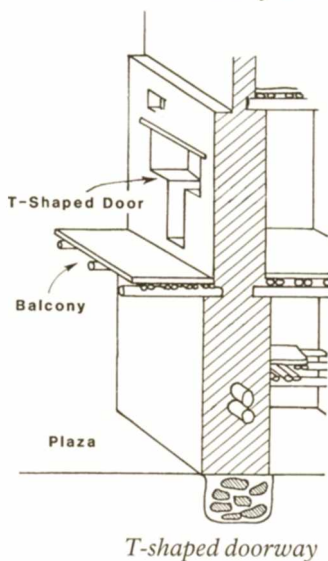
17 You can see original vigas and latillas in the ceiling of this room.

In 1991, wood samples were taken from these beams for tree-ring dating. The sampled areas in original beams are indicated by small, plugged holes, filled with numbered corks or by sawed-off beams.

Chacoan builders cut an estimated 225,000 trees for the construction and repair of their great houses and great kivas in Chaco Canyon. They traveled to mountain forests, 40 to 60 miles away, on wood-collecting expeditions. They cut trees, peeled them,

and allowed them to dry to reduce their weight. Chacoans carried the beams back to Chaco for construction, cutting the ends flush, and sanding them with stone tools.

The walls of this room were replastered in 2005 to remove

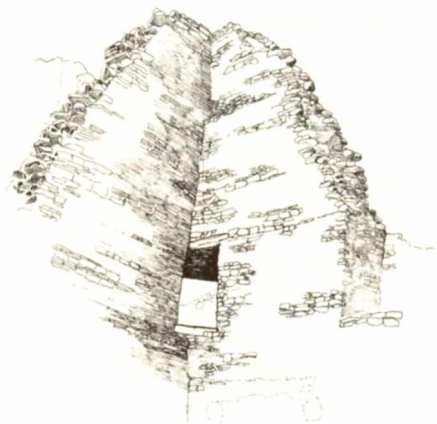


years of graffiti and to demonstrate how the room might have originally looked.

18 Look above and to the left of the rooms you have just exited, and notice the southeast-facing corner doorway.

This unusual type of door was used in great house construction. Only seven are known in Pueblo Bonito, and all were built during later construction in the eastern part of the pueblo. The doorway here appears to function as an astronomical marker. When the sun rises on the morning of the winter solstice, sunlight passes through the opening and strikes the opposite room behind it. Throughout the canyon, other architectural features, as well as modified landforms, correspond with astronomical events. Chacoan knowledge of astronomy seems to have been an integral part of construction.

19 Archeologists originally identified the rectangular earthen mounds that you pass as you leave



Corner door

Pueblo Bonito as middens (refuse deposits).

However, although they contained some trash, they are mostly composed of sand and construction debris. Researchers wondered if the mounds were planned architectural features, because they are enclosed by masonry walls, raised about ten feet above the surrounding ground level, and the tops of the mounds are leveled, plastered, and were accessible by stairs. Some archeologists believe that the mounds were associated with Chacoan roads and great-house landscaping, because similar mounds are found in association with roads and formalized entrances to other Chacoan great houses, such as Pueblo Alto, Peñasco Blanco, and Kin

Ya'a. A segment of the Chacoan road connecting Pueblo Bonito to the great kiva of Casa Rinconada passed between the earthen mounds here. What these mounds looked like and their significance is still unknown.

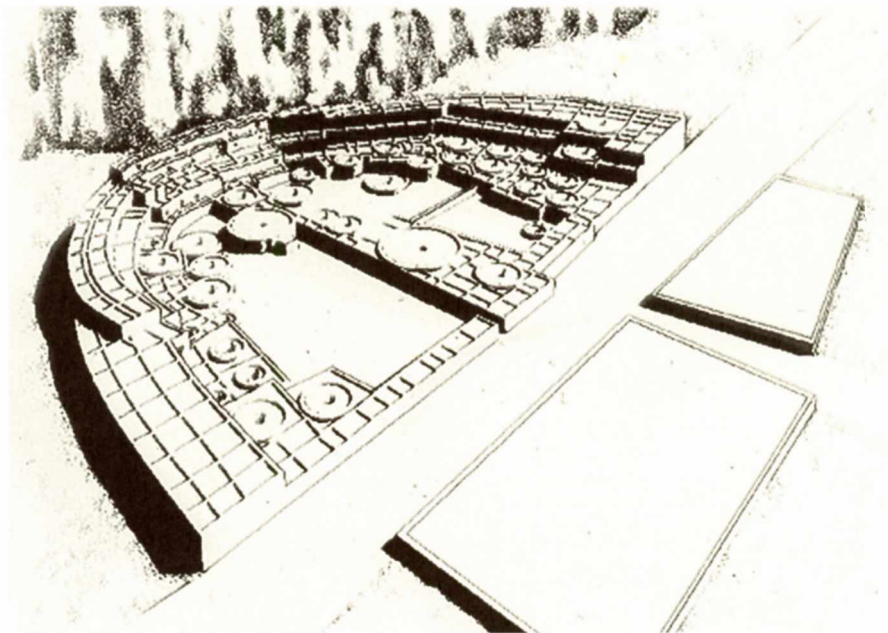
*Please do not climb
the mounds.*

Chacoan peoples created stunning architecture at Pueblo Bonito 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.

Chacoan peoples began to move from the canyon in the 1100s and thereafter ceased to build in the Chacoan style. However, their cultural legacy has been passed along to numerous and diverse American Indian descendants who live in the region today.

Many Southwest Indian peoples 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.



Hypothetical drawing of Pueblo Bonito (courtesy of Ron Cox)

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