



Arizona Archaeological Society Prehistoric Sites -- Q Ranch Pueblo

CONTRIBUTOR: Jim Britton (Phoenix Chapter AAS)

The stabilization information discussed below was taken from the field notes of Jack Bashaw and Jim Britton.

LOCATION:

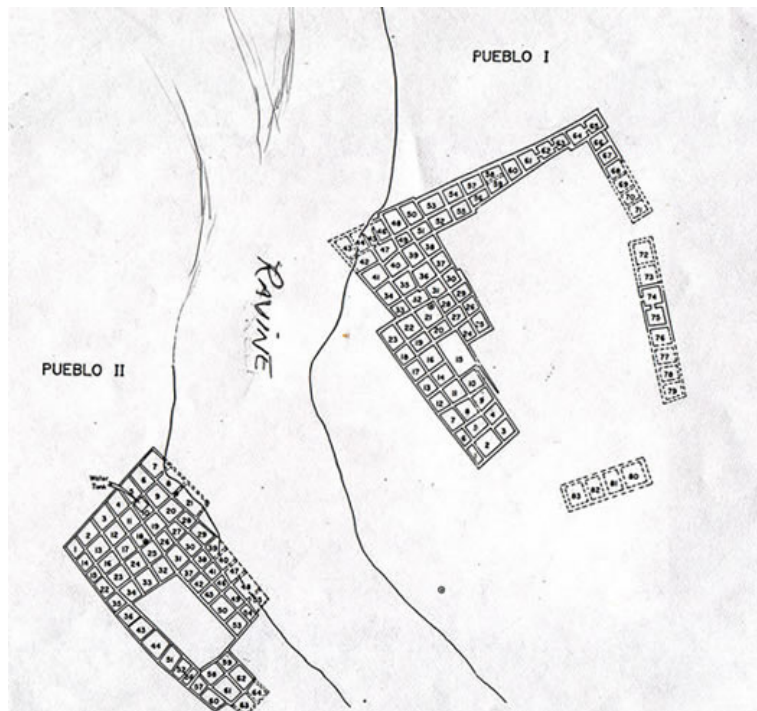
Q Ranch Pueblo is located off Hwy. 288 on a ranch south of the Mogollon Rim and east of the Town of Young. The elevation is approximately 5500 feet above sea level. It takes approximately 1.5 hours to get there from Payson.

PUBLIC VISITATION:

Q Ranch Pueblo is located on an active cattle ranch which is private property owned by the Rogers family. No visitation is allowed without the owners permission. The best opportunity to see the site is to attend the summer AAS Field Project held at this site.

SITE DESCRIPTION AND BACKGROUND:

Q Ranch Pueblo was home to a group of people some consider part of the Mogollon culture from A.D. 1265 to 1380. Other names considered for these people are "Prehistoric Western Pueblo" and "Mountain People". The ceramics and architecture indicate that this pueblo was contemporary with Grasshopper Pueblo located about 10 miles to the east. According to John Hohmann, Director of the AAS Field Project, Q Ranch Pueblo consists of approximately 220 rooms; 137 in Pueblo I and 83 in Pueblo II.



Q Ranch Pueblo Site Map by John Hohmann, Sept. 16, 1989

Pueblo I and II are separated by a deep wash. Pueblo II is on the west side of the wash next to the ranch house. Pueblo I is located on the east side next to a large flat pasture area probably used by the prehistoric people for farming.

The rooms are constructed using flat tabular sandstone mined from a nearby quarry. Site growth is traced by wall construction, e.g. bonded vs. abutted corners and external vs. internal wall face differences. External wall faces are fully coursed tabular stone with flat facing and small chinking stones embedded in the horizontal mortar joints. The internal wall faces are less organized using blocky and or smaller chunks appearing to be semi-coursed or uncoursed construction. These rough looking interior wall faces were mud plastered. There is some question if the nice looking exterior wall faces were ever plastered. It's been said many times "who would construct such a nice looking wall face and then plaster over it".



Good example of a full coursed exterior wall face with it's flat tabular sandstone and small chinking stones in the mortar joints.

PRESERVATION ISSUES AT Q RANCH:

In the early 1980s, the site was partially excavated using heavy equipment. For example, the plaza in Pueblo 1 was excavated exposing many of the external room walls. Having the dirt removed, has caused two very serious problems. First, the differential fill causes stress on the walls due to the dead load force. This force pushes the walls outward and will eventually cause them to slump and fall. Second, the excavated wall faces are exposed to the agents of deterioration which cause erosion and eventual wall collapse.

Another issue at Q Ranch is the deep wash or ravine that runs between the two pueblos. As the water flows between the pueblos, it under cuts the embankments below the ruin walls. Portions of both pueblos have fallen into the ravine. Roots from trees have caused some walls to buckle and lean. Animals such as cows, horses, and deer are able to walk on the ruin and negatively impact walls.

STABILIZATION HISTORY AT Q RANCH:

1990 The first AAS Field School was held in 1990. One of the five classes offered was Stabilization and Restoration. Only one of the 46 registered participants signed up for this class, that being J. Britton. Under the direction of J. Hohmann, J. Bashaw served as supervisor.

The stabilization project this year involved the east wall of Room 9/10. This wall also serves as the west wall of the “entry way” to Room 15. Due to the differential fill caused by Room 9/10 not being excavated, this wall was being pushed toward the east. The top two to three courses were leaning outward into the “entry way”. Our objective was to straighten this slumping wall.

The dirt inside Room 9/10 next to the slumping courses was removed for a distance of 5 meter starting at the NE corner of Room 9/10. This would allow the stones to be reset. The slumping stones were removed and placed in Room 9/10 in a pattern so that they could be reset in their original position. All loose mortar was removed. Some stones had fractured longitudinally, so these were replaced by stones of similar size.

Soil cement was used as a replacement mortar. The formula included four parts soil to one part Portland Type 1 cement. To offset the gray color caused by the cement, a dye was added. Based on a Munsell Color Chart, the original mortar color was 10YR 6/3 or a pale brown. Test patties were made using various ratios of soil, cement and color. Once dry, these test patties were compared to the original mortar color.

The original stones were soaked in water and relayed using the best mortar match. Levelers and thin chinking stones were placed in the horizontal mortar joints. Stone chunks (irregular shaped stones) were used to fill internal wall spaces. The 2 to 3 vertical courses below those relayed were prepared for repointing by cleaning 2 to 3 cm of old mortar from the joints. In hindsight, it would have been better to repoint the entire wall face.

1991 Week 1-Stabilization and Restoration was again offered as one of the field school classes. M. Reid (Britton) signed up for the first week. She was assisted by J. Britton and J. Bashaw. The objective was to reconstruct a portion of the east “entry way” wall that leads to Room 15. When original stones are missing reconstruction is necessary. Therefore, replacement stones had to be retrieved from piles located in the plaza. The mortar formula used was 4 parts soil to 1 part cement. Finding a good color match became a big problem. We never were real successful.



Marie reconstructing a course on the east wall of the entry way into Room 15. The wall behind is the 1990 stabilization project done by J. Britton and J. Bashaw.

Another project for Marie was to map a wall fall. The south wall of Room 36 in Pueblo I had fallen to the north. J. Hohmann wanted to have this wall reconstructed and possibly determine its original height. As the stones were drawn to scale, they were numbered. J. Darbyshire and G. Hembree excavated a 50 cm wide trench around the standing base of this wall to a depth of 50 cm so that it could be stabilized prior to the reconstruction of the upper courses. However, no reconstruction was done this year.

Week 2 - During this week D. Ivey and B. Carr worked with J. Bashaw. Their objective was to stabilize the east wall of Room 9/10 beginning where the 1990 project ended and continue south to the SE corner of that room. This 1.5 meter section had been constructed on an old hearth or fire pit which had weakened the wall.

After drawing a wall profile and numbering the stones, the east wall stones were removed and relayed using soil cement (2 parts soil to 1 cement per J. Bashaw notes). Due to the lack of enough color and rouble getting a good color match, they left a space in the mortar joint to be later repointed with colored mortar. The SE corner of Room 9/10 and an 80 cm section of the south wall (also the N. wall of Room 4 were physically pushed vertical before repointing them.

A 1.4 meter section of Room 4 east wall, next to the SE corner of Room 9/10, was repointed. The deteriorated upper courses were removed and the top four remaining courses above the foundation stones were repointed.

1992 There was no stabilization class during the June Field School. However, J. Britton gave two lectures related to stabilization. One was entitled "Walls: Construction and Destruction" and the second "Stabilization of Archaeological Sites" which included a history of stabilization at Q Ranch.

September - J. Hohmann and S. Baar taught a stabilization certification class in September. During this class, two to three work weekends were scheduled to be held at Q Ranch. The objective was to build a water diversion wall against the sloped embankment where it meets the ravine below the NW corner of Pueblo I. This embankment has been undercut due to the force of flowing water. Several rooms

from both Pueblo I and II have fallen into the ravine. A 32.5 meter long diversion wall was constructed using stones from Pueblo I wall fall. In 1993-94, J. Hohmann and crew constructed a retaining wall above the water diversion using vertical pipes which supported horizontal logs. This retaining wall was backfilled with stone and soil to stabilize the sliding slope and to form a walkway around the NW corner of Pueblo I.

Just prior to the first trip to the Q in October, the west half of the wall between Rooms 35 and 36 in Pueblo II had fallen down. Since the stones hit the ground in an organized pattern, most of the stones could be relayed in their original positions. The class was split into two groups. J. Bashaw coordinated the effort to put this wall vertical again while the other group did the water diversion wall along the east bank of the ravine. On the second trip in November, the relaying and reconstruction of the fallen wall section was completed. The wall half that had remained standing was repointed. Soil cement (6 parts soil to 1 cement) with dye color added, was used to do this work. The color, "Pueblo Brown", was premixed dry with the cement using 1.25 lbs. of dye to 47 lbs. of cement.

1993 Week 1-Field School had W. Zipse as the only stabilization and restoration student. Under the direction of J. Hohmann, J. Britton supervised this week. The objective was to draw a profile and then stabilize and bond the west wall of Room 35 to the crosswall separating Rooms 35 and 36 in Pueblo II. This was the section of the crosswall that had fallen down in Oct. 1992. We were to stabilize the west wall at the junction of this crosswall tying it for support and then extend our stabilization for approximately 1 meter distance toward the north along this west wall. However, once the work began, it was noted that the west wall was in much worse condition than first thought. Britton decided to extend the stabilization from 1m to 2.5m. This wall was two stones wide and tree roots had grown between the stones, pushing the interior face stones into the excavated room. The soil cement formula was 6 parts soil and 1 part cement. Color (Pueblo Brown) had been previously premixed with the cement.

Week 2 - Due to the expanded work done on the west wall of Room 35, discussed above, the west wall of Room 36 in Pueblo II was not bonded to the crosswall until the second week of Field School. Those doing the work included: W. Zipse, M. Magnan, E. Martin and Diana, with supervision by J. Bashaw.

The same crew, less E. Martin, began repointing and relaying the south wall of Room 36 in Pueblo I. Several courses were laid on top of the wall courses excavated in 1991 by G. Hembree and J. Darbyshire.

1998 July 25 & 26 work day - Several Agave House members came to do stabilization work. Room 42 in Pueblo I contains a short, 20 cm wide, curved wall made up of thin stones 3 to 5 cm thick. It abuts the south wall 1.72 m west of the east wall, curves around, and abuts the east wall 1.4 m north of the south wall. Loose stones in this curved wall were removed down 5 to 6 courses. These stones were stacked in a pattern so that they could be relayed in their original positions. Replacement mortar was made from soil from a nearby screening area and a small amount of sand mixed with water in a small pit. No amendment was added to the soil.

A crew had done some work on the west wall of Room 42 last month (June 27 & 28). J. Bashaw and N. Viether said there had been approximately 3 courses of

original wall still standing. During the July work days, N. Viether reconstructed more courses, stair stepping them up to meet the top of the south wall.

September - During this work weekend, shrink cracks in the work done in July were filled. A 4 cm diameter, 40 cm long pipe was inserted under the curved wall so that any water that collected behind this wall could drain out. The east wall of Room 42 and the south wall of Room 45 were repointed.

1999 No stabilization class was scheduled this year. However, J. Britton after discussion with J. Hohmann, decided to stabilize the south wall of Room 52 in Pueblo I. This room is located at the north west corner of the plaza. Since dirt was removed from the plaza, the exterior wall face of this south wall has been supported by plywood and pipe braces. This wall consists of three sections formed by two vertical mortar joints running from base to top. From east to west these sections measure 1.15 m, .94 m and 1.31 m in width. Due to construction technique and how it attaches to Room 55 to the east, it appears this wall had been reconstructed prehistorically following a wall collapse.

The top 3 to 5 courses of wall stones were loose and misaligned. Unamended mud was mixed using sift pile dirt and a small amount of creek sand. Sand was added to reduce shrink cracking. The entire interior wall face and two sections of the exterior face were repointed. As an experiment, the interior face of the east section was mud plastered. Britton will monitor the erosion process to evaluate how the plastered section weathers compared to the unplastered sections.

2000 It was decided that J. Britton would stabilize the 40 cm wide south wall of Room 3 in Pueblo I. This wall was originally constructed by laying the longer flat edge of a large stone (tabular sandstone) toward the exterior resulting in a nice fully coursed wall face. These large stones usually spanned the entire wall width. Then tabular stones of any angle or shape were used to complete the desired wall width by filling any voids resulting in the “not so nice” interior wall face. All non-‘insitu’ stones (assumed to be stones without mortar under them) were removed from the wall top and thrown onto a pile of wall fall. Then loose ‘insitu’ stones were removed and placed in a pattern so that they could be relayed in their original position. These stones were all relayed using unamended mud taken from the sift pile east of Room 15 and mixed with creek sand. A 1 meter long section of wall next to the SE room corner had to be reconstructed since most of the original stones were missing.

A. Danley helped by doing basal repair and repointing of the west and north walls of Room 3. The wall separating Rooms 3 and 4 was constructed differently than the south wall of Room 3 described above. The wall separating the two rooms is two stones wide. The stones are smaller than most of the ones used in the south wall of Room 3, but the two stones formed a wider wall of approximately 45 cm. There are no tie stones spanning the entire width of the wall. In reality, you have two parallel wall faces held together only by the mud mortar. A 1.33m section at the east end of the Room 4 side has collapsed and the stones are missing. Britton reconstructed this missing section, realigned various protruding stones, and repointed both sides of the entire east half of the wall. The west 1.65 m of wall were left to be worked on next year.

2001 This year we used an amended mud for all stabilization work. J. Britton had been experimenting with a polyvinyl acrylic copolymer called SoilShield-LS. He had used

it at Pueblo Grande Mound in Phoenix in December 2000. Since this product will re-emulsify when wet, he decided to make a stronger solution mix of 20 parts water to 1 part SS-LS for this higher wetter elevation. The PGM mix ration was 35 to 1.

The wall separating Rooms 3 and 4 was completed this year. Both Room 3 and 4 wall faces needed work along the west half of the wall. The Room 4 wall face was in such bad condition that it was dismantled and relayed using amended mud. The Room 3 side had three stones protruding into the room. The stones making up the courses above the protruding stones were removed and all were then relayed in their proper positions.

The 'insitu' stones of the bonded SE corner of Room 4 were relayed and missing stones replaced. The east wall of Room 4 is in very poor condition. This wall ranges from 3 to 5 courses high. The 5 courses are at the north end where it had been repointed using soil cement in 1991. The basal course stones were not laying flat due to the apparent force exerted on them when the fall tipped and fell. The lower two courses of the south half of this wall were relayed by N. Viether. M. Britton and B. Viether repaired and repointed the south wall of Room 42 in Pueblo I using amended mortar. The small curved wall inside this room was also partially relayed with amended mud.

2003 J. Britton supervised the stabilization crew which included: M. Britton (2 days), D. Sorensen (5 days), W. Sorensen (5 days), and G. Kurzhals (3 days). Our first objective was to repoint the west wall of Room 3 and to relay and repoint the east walls of Room 3 and Room 4 in Pueblo I. The east walls of these two rooms were in very bad condition due to being exposed to weather, animals, and differential fill for approximately 12 years. Using enlarged photos as maps, the stones were numbered and marked on the map. The stones were then removed, new amended mortar applied and the stones relayed. Where needed new stones were added to even off a course. SoilShield-LS was used again this year at a ratio of 20 to 1 to make the amended mud.



Pueblo I, Rooms 3 and 4 looking North before being stabilized. Photo taken June 2000.



Pueblo I, Rooms 3 and 4 looking North West after stabilization. Photo taken June 2003.

Our second objective was to stabilize the south wall of Room 15. This is a very important wall in tracing the site growth and for interpreting site use. It separates Room 15 from Room 9/10 and forms a blockage of the “entry way” into Room 15 from the plaza. The east portion of this wall was dismantled and relayed using a hand sketch as a map. The remainder of both exposed wall faces was repointed. Once the excavation is complete in Room 9/10, the newly exposed wall face should be repointed.

2004 Stabilization work was scheduled to be done during the September Work Weekend that ran from the 16th to the 20th. Our main objective this field session was to reconstruct and stabilize the east wall of Room 10 (On 1989 site map this room was shown as Rooms 9 and 10). The center portion of the wall had collapsed sometime prior to April 2003. The stones fell to the east and landed in a pile of rubble. Prior to the June 2003 field session, the stones were removed to facilitate a mapping session lead by John Hohmann. Since the stones had been removed there wasn’t anyway to identify them and relay them in their original positions. Therefore, we reconstructed the bottom three courses along the collapsed section and stair-stepped it up to meet the still intact sections next to the north and south walls (See photo #1). J. Britton lead a crew composed of W. Lesko, M. Britton, S. Lesko and D. Bengé.



#1 "The partially reconstructed east wall of Room 10."

The wall between Rooms 4 and 10 was bowed and leaning toward the south into Room 4. J. Britton planned to have the stones dismantled and relayed. He had taken

photos on both sides of the damaged wall section on a previous visit. These photos were enlarged to be used as “photo maps” for relaying the stones. M. Britton and S. Lesko used a black Sharpie to put a number on the stones to be removed and then marked the “photo map” with the corresponding number.

G. Dotson and J. Mead relayed a 1.65m long section at the west end of the wall separating Rooms 10 and 15. This was a rather fragile, one stone wide wall. It is a very important wall since it appears to have been a later addition to divide a large space into two extra large rooms. The unusual construction style suggests it was done quickly.

It started raining during the night of Sept 18. It continued raining most of the next day and stabilization had to be cancelled. In fact, it got so bad that the last 2 days of the field session had to be cancelled.

The summer work session was scheduled from June 17 to June 28. In 2004, the stones of the wall between Rooms 4 and 10 had been numbered. This year Jim Britton had planned to have the stabilization crew dismantle and relay this wall. However this plan was altered by an act of vandalism.

Sometime during the winter someone had vandalized several walls in Pueblo I. John Hohmann suggested that repairing the vandalized walls had priority over relaying the wall.



#2 "Vandal damage to the north wall of Room 15.

Room 15 north wall had two rather large holes and the west wall had one small hole. The vandal had removed wall stones and excavated fill dirt from the rooms behind the wall. The removed stones and fill dirt were piled at the wall base (See photo #2).

The damage shown in this photo took place where there was a unique wall feature. Prehistorically this feature had been formed by chipping a hole in the wall and then filling it with rather small flat stones. By using old photos we were able to identify the original position of each stone. The crew included Walt Lesko, Sylvia Lesko, Larry Roberts, Jerry Mead, Jim and Marie Britton.

We used unamended mud to replace the room fill. However, we used SoilShield amended mud to relay the wall stones in there original positions (See photo #3)



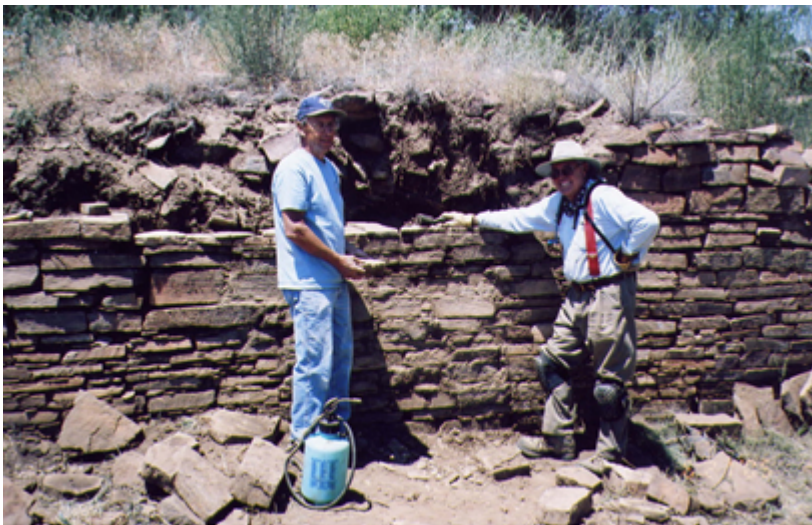
#3 " Relayed wall face of damaged area shown in photo #2."

The SoilShield solution used to make the mud was a ratio of 20 parts water to 1 part SoilShield.

Other damage blamed on the vandal included two partially collapsed wall sections along the west side of the plaza . These sections involved the east walls of Rooms 37 and 38 (See photo #4). The hole in the east wall of Room 37 ranged in width from 1.26m to 2.3m at the top.



#4 "Damaged wall along west side of Pueblo I plaza. Room 37 damage on the left, Room 38 on the right."



#5 "Walt and Jerry reconstructing the wall of Room 37." □

Jerry and Walt reconstructed the missing courses using stones that matched the height of the existing stones that had remained in place during the collapse (See photo#5).

The hole in the east wall of Room 38 ranged in width from 48cm to 1.56m at the top. Larry Roberts reconstructed the missing courses in this section. We used unamended mud to reconstruct both collapsed wall sections. There is a plan to backfill to buttress this wall in the future. With that in mind, and the fact that these walls will not be exposed to weather, it was decided not to use the rather expensive SoilShield amendment.

2006 The Q Ranch Project summer session was scheduled for June 16 to June 30. There were two main stabilization objectives for this session. We had the misaligned, leaning wall separating Rooms 4 and 10 and a collapsed wall section at the north end of the Pueblo I plaza. The collapse was extensive and would be time consuming to reconstruct. Jim Britton and John Hohmann decided rather than to dismantle and relay the wall between Rooms 4 and 10 jacks would be used to push the leaning and

bowed wall back into a better alignment. Doing this would allow more time to work on the wall collapse.

Larry Roberts, Walt Lesko and Jim Britton used two 4x4 beams between jacks and a plywood push-board to apply pressure against the wall. They were able to move the wall approximately 13cm. This resulted in a more vertical and better aligned wall. The pressure was applied from the Room 4 side of the wall. This wall face was the nicely coursed external type wall face. As the pressure was applied some of the smaller stones on the Room 10 side were dislodged and needed to be relayed based on the photo maps made in 2004. Jim, David, Tricia, and Amy used SoilShield amended mud to relay these stones and to repoint the loosened mortar joints. The top two wall courses were relayed with amended mud. This was done to seal the wall top.

Larry, Walt, Marie Britton, and Sylvia Lesko worked on the collapsed wall at the north end of the plaza. This wall was the south wall of Rooms 55 and 56. The wall opening was approximately 4m wide. The wall that separated these two rooms abutted to the fallen wall and could be seen in the opening profile. The wall section at the west side of the opening was leaning to the south toward the plaza. It was decided to use a jack to push this wall into a more vertical position. To do this fill from Room 55 had to be removed from behind the wall.

The Brittons and Leskos had to return home after the first week. Larry continued to reconstruct the wall with help from Kenneth. He used the stone height of each course of the wall segments on each side of the opening to select stones to be used in the reconstruction. He and John H. decided to anchor the reconstructed wall to the abutment wall with metal wire-twists. Larry finished the reconstruction during the September work weekend.