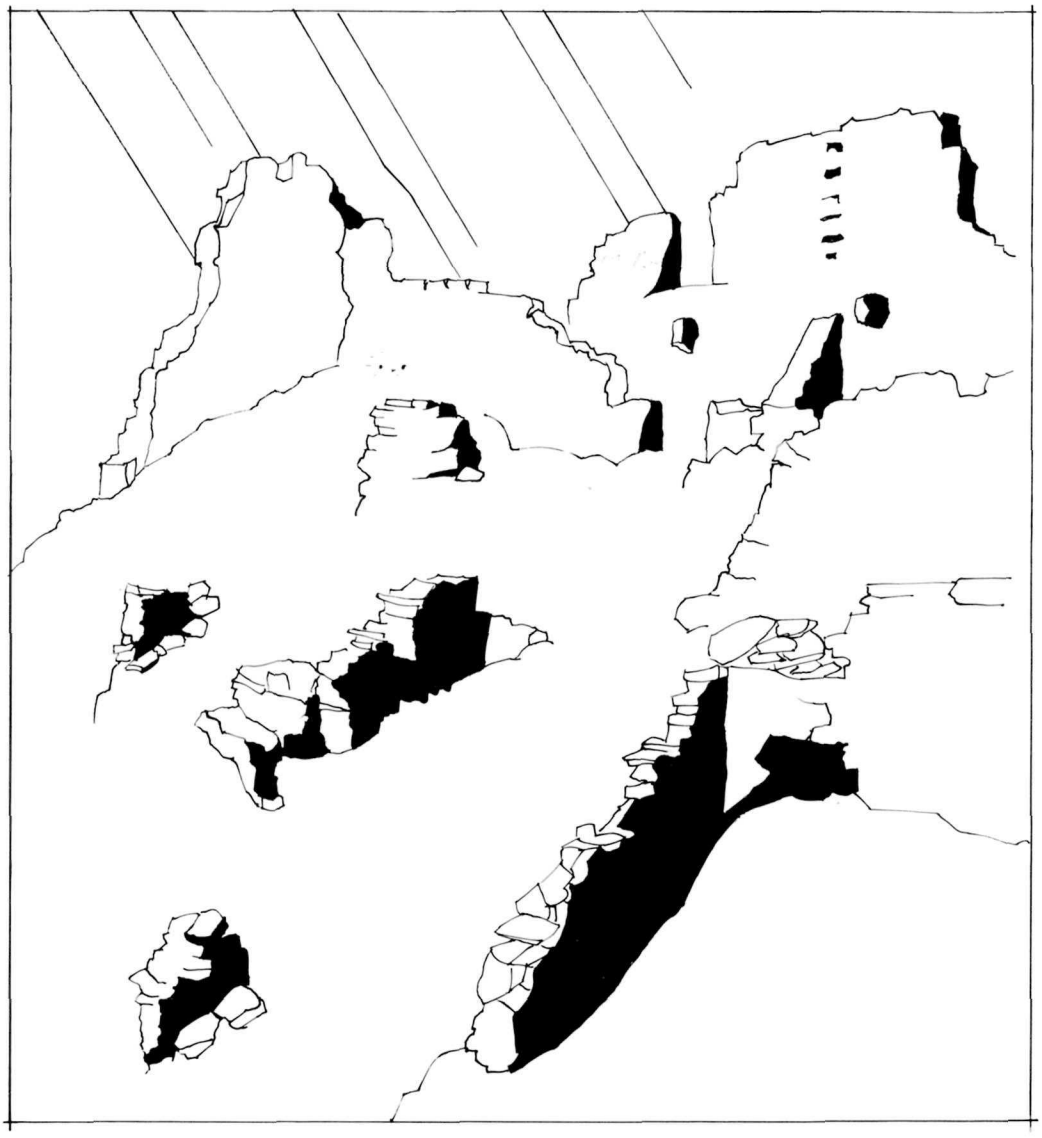

NON-DESTRUCTIVE ARCHEOLOGY at SLIDING ROCK RUIN an experiment in the methodology of the conservation ethic

NON-DESTRUCTIVE ARCHEOLOGY AT SLIDING ROCK RUIN: AN EXPERIMENT IN THE METHODOLOGY OF THE CONSERVATION ETHIC

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Any misplaced emphases or other errors remain mine, however.

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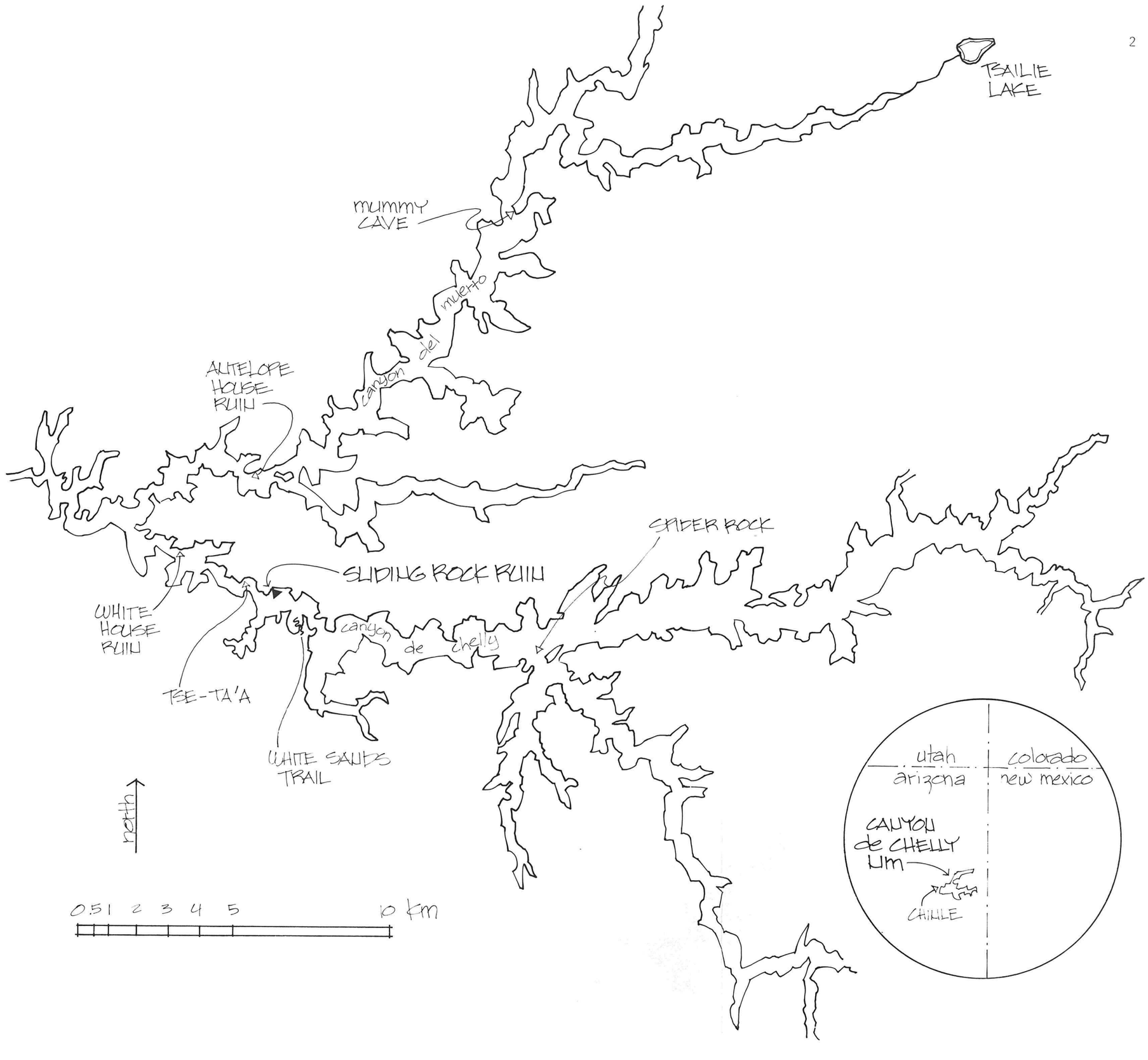
CHAPTER I:

INTRODUCTION

Among the largest cliff dwellings in Canyon de Chelly is Sliding Rock Ruin, perched precipitously along the north wall of the canyon (Fig. 1). The ruin marks the site of lengthy prehistoric human activity spanning a period between ca. A.D. 400 and A.D. 1300. Basketmaker cists of unknown date are present in the lowest strata of the site and a few are visible eroding out of the slope below areas later occupied by kivas. Anasazi occupations are shown by the five kivas and numerous rooms present during the most intensive and extensive use of the alcove. The exact numbers of rooms present at one time are unknown, because the massive retaining wall enclosing the major room block has fallen. Much of the site has toppled into the canyon bottom along with the wall, and an extensive volume of fallen stone now reposes at the base of the cliff. Trash deposits on the flood plain still remain to a depth of two meters, but much has been eroded by runoff pouring over the cliff edge.

Subsequently, Navajo storage structures have been erected in the alcove, and at least two Navajo burials have been interred. Sheep and goat dung litter much of the site, and a modern flock still uses the flood plain below it. A summer hogan used by the family of one of the preservation workmen is present in the rincon, as are a small field and an orchard.


TSAILIE LAKE
MUMMY CAVE
ANTELOPE HOUSE RUIN
CANYON DEL MUERTO
SPIDER ROCK
SLIDING ROCK RUIN
WHITE HOUSE RUIN
TSE-TA'A
WHITE SANDS TRAIL
CANYON DE CHELLY
north
0 .5 1 2 3 4 5 10 km
utah
arizona
colorado
new mexico
CANYON de CHELLY NM
CHINLE

Note on the Site Name

Several numerical designations have been applied to the site. These include Sites 31 and 32, given by Mindeleff (1897: 119-122, 150), and CDC 107, assigned by de Harport (1959: 169), who also called it Sliding Rock Ruin. Occasional references in the literature have been made to Sliding House, or Sliding Ruin. These designations are synonymous with Sliding Rock Ruin. Since de Harport managed to publish his name for the site (no mean feat), and it is in keeping with the ruin's current disposition, this report will use Sliding Rock, frequently without the Ruin, for brevity's sake.

Environment

A complete treatment of this topic is beyond the scope of this study, and more information is available in McDonald (1976: 1-17). The synopsis that follows draws principally from his review.

Geology

The two major canyons of the monument are deeply entrenched into the Defiance Plateau, exposing geological formations spanning the Permian to Triassic periods (Gregory, 1916: 79). The capstone of the plateau is formed by the Shinarump conglomerate, which surmounts the de Chelly sandstone. The de Chelly sandstone is composed of three members, with the uppermost being the White House sandstone. This member is characterized by cliff-forming

weathering patterns and extensive cross bedding. Below it are the Oak Springs and Hunter's Point members (Pierce, 1962: 18). At the base of these lies the largely impermeable Supai formation (Cooley, et al, 1969: A38).

As the de Chelly sandstone was eroded by the stream forming tne canyon, and as groundwater movements caused exfoliation along bedding planes, rock shelters and alcoves were formed (de Harport, 1959: 91-95). These rock shelters became the focus of human activity throughout the Basketmaker/Anasazi continuum and later Navajo occupation. The alcove containing Sliding Rock results from these weathering activities.

Topography

Sliding Rock is located in the middle topographic zone defined by de Harport (1959: 81-87) during his survey. This middle zone contains most of the large sites in the canyon, suggesting that the carrying capacity of the land near Sliding Rock could have supported a large population. Canyon morphology near Sliding Rock is rather wide, providing an ample area for crop cultivation, and several side canyons could have supplemented this area with additional fields or the collection of wild plant foods if allowed to remain in a more pristine state. Several trails lead up out of both sides of the canyon in the immediate vicinity, permiting access to areas containing other resources. These are Cove Trail, located ca. km east of the ruin, and connecting the canyon

bottom with the mesa top peninsula between the two major canyons, and White Sands Trail directly across the canyon from the ruin (Fig. 1). The elevation of the mesa above the ruin approximates 1950 meters (6400 feet).

Past and present climate

Seasonal variation is the pattern for both temperature and precipitation at Canyon de Chelly, since the canyon is located in a transitional zone between high mountains and desert country. Comparison of the present environment with Hack's (1942: 23) Hopi farming zones show similarity. According to McDonald (1976: 6), the growing season exceeds 120 days and precipitation averages between 225 and 300 mm.

That this situation has not always existed is indicated by McDonald (Ibid.: 13-17) who synthesizes a series of periodic fluctuations in an environment basically similar to today's. These fluctuations, like elsewhere in the Southwest, are related to two variables: the amount of precipitation as compared to present environments, and the seasonality of the precipitation. A key factor is the retention of soil moisture. Generally it is assumed that moisture from winter snows are retained better than heavy summer thundershowers, the latter of which result in erosive run-off. A composite of McDonald's summation, which includes various research, is given in Table 1. It is apparent by the vagaries of the table that additional information for Canyon de Chelly is needed.

A.D. Dates	Moisture amount, & conditions, compared to present.	Seasonality
1-400	moister than present	winter-dominant
400-700	like the present	winter-dominant
700-?, before 800	moister than present	shift from winter to summer-dominant
?-975	dryer than present	summer-dominant
975-1050	regional fluctuations	summer-dominant
1050-1129	gradually increasing, wetter than present	summer-dominant
ca. 1140-1189	dryer than present	summer-dominant
1190-1249	?	?
1250-1274	dryer than present	summer-dominant
ca. 1300-1700	gradually increasing, fluctuating	shift from summer winter-dominant
1700-?		summer-dominant returns

Table 1: Past environmental rainfall fluctuations. From data compiled by McDonald (1976: 13-17)

Vegetation

Plant species have been inventoried (Halse, 1973; Ambrose, 1975), and vegetation communities exploited by the prehistoric occupants of the canyon have been derived from these inventories by Dennis (1975). McDonald (1976: 7-13) provides the following summation of these communities, although it should be stressed that no site-specific plant investigations around Sliding Rock were done as part of the project. Local conditions may vary somewhat.

1. The canyon bottom community: The middle zone which contains Sliding Rock is similar to the lower zone, but also contain Utah juniper (Juniperus osteosperma), Gambel's oak (Quercus gambelri), and box elder (Acer negundo). Other plants are:

   cottonwood (Populus wislizenii)
   peach leaf willow (Salix amygdaloides)
   pigweed (Amaranthus sp.)
   goosefoot (Chenopodium berlandieri)
   beeweed (Cleome serrulata)
   prickly pear cactus (Opuntia phaeacantha)
   reed (Phagmites communis)
   purslane (Portulaca retusa)
   greasewood (Sarcobatus vermiculatus)
   narrow leaf yucca (Yucca angustissima)

   All of these plants were used, either as food, construction elements, or raw materials for manufacturing artifacts. McDonald (1976: 7,9) provides some specifics.

2. Talus communities: Aspect or exposure determines which type of vegetation is present. North and east facing slopes produce Douglas fir (Pseudotsuga menziesii). Slopes facing south or west support plants generally associated with more xeric conditions, and there is some change between upper and lower parts of the canyon. These plants are:

Utah juniper (Juniperus osteosperma) (lower elevation)
pinyon pine (Pinus edulis) (higher elevation)
Indian rice grass (Oryzopsis hymenoides)
Mormon tea (Ephedra viridis)
fendler bush (Fendlera rupicola)
walnut (Juglans major)
beargrass (Nolina microcarpa)
scrub oak (Quercus turbinella)

Once again, most of these plants were utilized.

3. "West" community: This designation refers to those species growing in highly mesic environments, which are generally rare in the monument. Such species were also most often used by the prehistoric inhabitants, and include:

horsetail (Equisetum sp.)
muhley grass (Muhlenbergia racemosa)
tule (Scirpus acutus)
cattail (Typha latifolia)
box elder (Acer negundo)

4. The pinyon-juniper continuum: This extensive group is found over most of the Defiance Plateau, and has been divided into sparse, medium, and dense zones which gradually intergrade. The medium zone is present above Sliding Rock, consisting of about 30% tree cover formed by pinyon-juniper. The relative frequencies involve an increase of pinyon to juniper over the sparse zone. Large sage (Artemisia tridentata) is the predominant shrub. All of these were utilized by the Anasazi.

5. Canyon rims, cliffs, and ledges community: These small areas are characterized by shallow, rocky soils which support a diverse group of plants. Aspect is important, again influencing soil moisture retention, and most of the plants were presumably used by Sliding Rock's inhabitants. On the rim above the ruin, the community can be expected to contain:

Utah juniper (Juniperus osteosperma)
scrub oak (Quercus turbinella)
mountain mahogany (Cercocarpus intricatus)
sagebrush (Artemisia bigelovii)
narrow leaf yucca (Yucca angustissima)

banana yucca (Yucca baccata)
clematis (Clematis linguisticifolia)
Mormon tea (Ephedra viridis)
pinyon pine (Pinus edulis)
skunk bush (Rhus trilobata)
rabbit brush (Chrysothamnus sp.)

Across the canyon, the community is probably composed of:

box elder (Acer negundo)
Utah service berry (Amelanchier utahensis)
fendler bush (Fendlera rupicola)
mock orange (Philadelphus microphyllus)
Douglas fir (Pseudotsuga menzesii)
Gambel's oak (Quercus gambelii)
selaginella (Selaginella mutica)
clematis (Clematis linguisticifolia)
Mormon tea (Ephedra viridis)
pinyon pine (Pinus edulis)
Skunk bush (Rhus trilobata)
rabbit brush (Chrysothamnus sp.)

Other communities defined by Dennis (1975) are the low shrub-grassland community, and the sagebrush community. Both are only present at some distance from Sliding Rock, and data recovered from Antelope House, also located in the middle topographic zone, do not indicate much use of these groups.

Animal life

The exhaustive list supplied by Burgess (1973) includes few species actually found in archeological contexts. Primary animals which were hunted include:

mule deer (Odocoileus hemionus)
desert cottontail (Sylvilagus audubonii
jack rabbit (Lepus californicus)
pronghorn (Antilocarpa americana)
bighorn sheep (Ovis canadensis)

Species recovered from Tse-ta'a (Steen, 1966) and Antelope House (Morris, n.d.b.), and apparently used less frequently or intensively are:

mouse (*Peromyscus* sp.)
packrat (*Neotoma* sp.)
prairie dog (*Cynomys gunnisoni*)
elk (*Cervus* sp.)
muskrat (*Ondrata zibethecus*)

Various birds were also used extensively, but for feathers as much as for food.

CHAPTER II:

PROJECT GOALS AND ORIENTATION

Archeological work at Sliding Rock was funded in order to minimize adverse impacts caused by the stabilization program. Consequently, it is difficult to understand the archeological perspective without first considering the preservation work which was needed. Most of the site is situated precariously along a slope which at some places approximates 40 degrees. The prehistoric occupants made the area habitable by erecting a series of massive retaining walls and thus creating a terrace. The area behind these walls was filled with debris, an agglomeration of cultural wastes and materials imported solely for that purpose. Much of this carried-in material consists of vegetal detritus such as corn husks, sticks, and branches.

Unfortunately, at some unknown point in time, the middle of these retaining walls fell, carrying with them a large portion of the architecture of the ruin which, in turn, had been supported by the materials behind the wall. The ruin formerly stood up to five stories high at its east end, but these rooms, along with kivas which had been excavated into the fill, slid to the floor of the canyon. Nevertheless, a substantial number of rooms and the remnants of several kivas still remained, albeit marred by structural cracks and embrasures induced by downslope settling of the unconsolidated fill. The ruin was stabilized during 1978 by rebuilding

a portion of the retaining wall and refilling behind it. In addition, a few isolated structural cracks and embrasures were repaired in order to prevent collapse of individual room walls. A complete chronicle of these preservation efforts is provided by Adams (1979).

The chief goal of the project was to collect archeological data in advance of stabilization work to prevent the loss of information. It has been noted that the current state-of-the-art methodology for stabilization paradoxically tends to adversely impact the very resources that it strives to preserve (Gilman and Thornton, 1976). The concept that data must be collected before it is lost in the face of some development has been termed "salvage archeology", a guiding tenet of the discipline of archeology for many years in this country.

It has recently been recognized, however, that archeological sites constitute an irreplaceable, non-renewable resource which should be conserved whenever possible (Wendorf, et al., 1978: 5-6). There are two pertinent aspects to what has been termed "conservation archeology" (Lipe, 1977):

1) The physical remains of ancient civilizations have historical significance, and these remains should be preserved for their heritage value. This aspect of the conservation ethic has its foundations firmly rooted in a body of federal law (Dunnell and Dancey, 1978: 2).

2) The data-bearing potential of such ruins should not be compromised by any deleterious action. This aspect includes more than the protection of physical manifestations of prior human activity. It also

> includes premature and perhaps poorly conceived data collection formats and preservation methodology which prohibit future data retrieval.

Because of their relative rarity and better state of preservation, cliff dwellings comprise a particularly fragile type of cultural resource which is squandered if not carefully evaluated prior to extensive excavation (Dean, 1978). As a result, the perspective taken during this study has been to emphasize non-destructive archeology done in advance of preservation activity. Secondly, such preservation activities as have been enacted have been limited to holding actions designed to have a minimum impact upon the integrity of the resource. There is no denying that at this point in time, less is known about Sliding Rock than would have been known had extensive excavations been undertaken. The hope and viewpoint of the author is that in the long term, Sliding Rock offers a better understanding of Canyon de Chelly's archeology if left relatively intact until problem-oriented research excavations can be pursued.

As a consequence, little excavation was done during the project, and Sliding Rock was instead subjected to an intensive yet passive architectural analysis. It is believed that the information so collected is well suited toward providing tentative conclusions of some utility in assessing Sliding Rock's role in the archeology of Canyon de Chelly. These tentative conclusions are only "best guesses" based on currently available data; they are in fact tentative hypotheses which can be operationalized using

attendant test implications if some unborn researcher shares their implicit bias towards room function. Both the hypotheses and implications can be evaluated with material culture and currently below-grade architectural findings at some future date, in the event that a research project for Sliding Rock is funded. In the meantime, the reader is free to judge the probability of the conclusions offered.

To reiterate, the chief goal of the project was data collection in such a way that the maximum structural and data-bearing integrity of the ruin would remain unimpaired. One way to achieve this goal was the application of remote sensing technology. Contracts were written to provide both an aerial photogrammetric map of Sliding Rock, and terrestrial imagery to supply structural and architectural features at one point in time. These maps, drawings, and photographs would have assisted in providing a high degree of accuracy and permanent record of conditions at one point in time, had they been brought to fruition. Unfortunately, neither map was made because of technical problems. Sliding Rock's position in the alcove precluded making the aerial map, although it was flown several times by the contractor in an attempt to do so. On-site measured photographs were prevented by the slope and unconsolidated nature of the deposits, and camera points could not be accurately re-established for creating scaled photographs which were to form the basis for architectural drawings. Nevertheless, a map was needed, and one was drawn in the field for the purposes of

designating structures within the ruin and recording certain architectural details.

Visible standing walls were subjected to scrutiny by monitoring those attributes and variables which constitute Appendix A. The kinds of data collected has permitted an hierarchical model of architectural analysis to be used. The model shown in Figure 7 is predominantly structural in nature, evaluating walls, rooms, and various more abstract room clusters in different sections of this report. It also has meaning in terms of site development and chronology, and the data presented is compared with other sites in Canyons de Chelly and del Muerto and, in some cases, elsewhere in the Southwest. The model also implicitly uses processualist concepts, but these observations are necessarily limited by the scope of the project and cannot be considered explanatory.

Excavated materials are rare, since only two loci were dug in conjunction with the rebuilding of the retaining wall, and these were shallow in depth and limited areally (Fig. 2). In addition, most of the objects recovered are perishable plant fragments, with all fills unconsolidated and unstratified. These are discussed briefly in Chapter IX. Other collections involve samples of original fabric taken from selected rooms, and include mortar, plaster, paint, stone, and organic inclusions. A small localized surface collection of sherds was taken from the talus below the ruin.

Thus, the major thrust of pre-stabilization archeology at Sliding Rock has been architecture and its development. Collected

materials are but rarely represented. One aspect of the site which has been ignored in this report is the rock art which is frequent in the alcove. The project simply did not have enough field time to evaluate the pictographs and petroglyphs, since they have little to do with the architectural analysis. In putting this matter into abeyance, hopefully the emphasis on architecture has not been misplaced.

CHAPTER III:

PREVIOUS WORK AT SLIDING ROCK RUIN

A lengthy description of archeological work in Canyon de Chelly and Canyon del Muerto has been provided by McDonald (1976: 18-31). Much of what has been done consists of poorly documented and rather unsystematic work, or work with very limited report distribution. There are, however, several endeavors worth mentioning. Foremost among these are cultural resource surveys conducted by de Harport (1959) for Canyon de Chelly, and Don Morris (Morris and Rock, 1975), who concentrated on Canyon del Muerto. Mindeleff (1897) has provided an overview for sites in both canyons, but strongly emphasizes Canyon de Chelly.

Well documented excavations are equally infrequent. Steen (1966) dug Tse-ta'a, a multicomponent village located ca. 2.5 km down canyon from Sliding Rock but still in the middle topographic zone. D. Morris' (n.d.; Rock and Morris, 1975) work at Antelope House has provided a welcome addition to the Monument's archeology. This site, located in Canyon del Muerto in an area analogous to de Harport's middle topographic zone, has provided a composite picture of life in the area. The work blends a variety of ecological and archeological data to arrive at interpretations used in this report for comparative purposes.

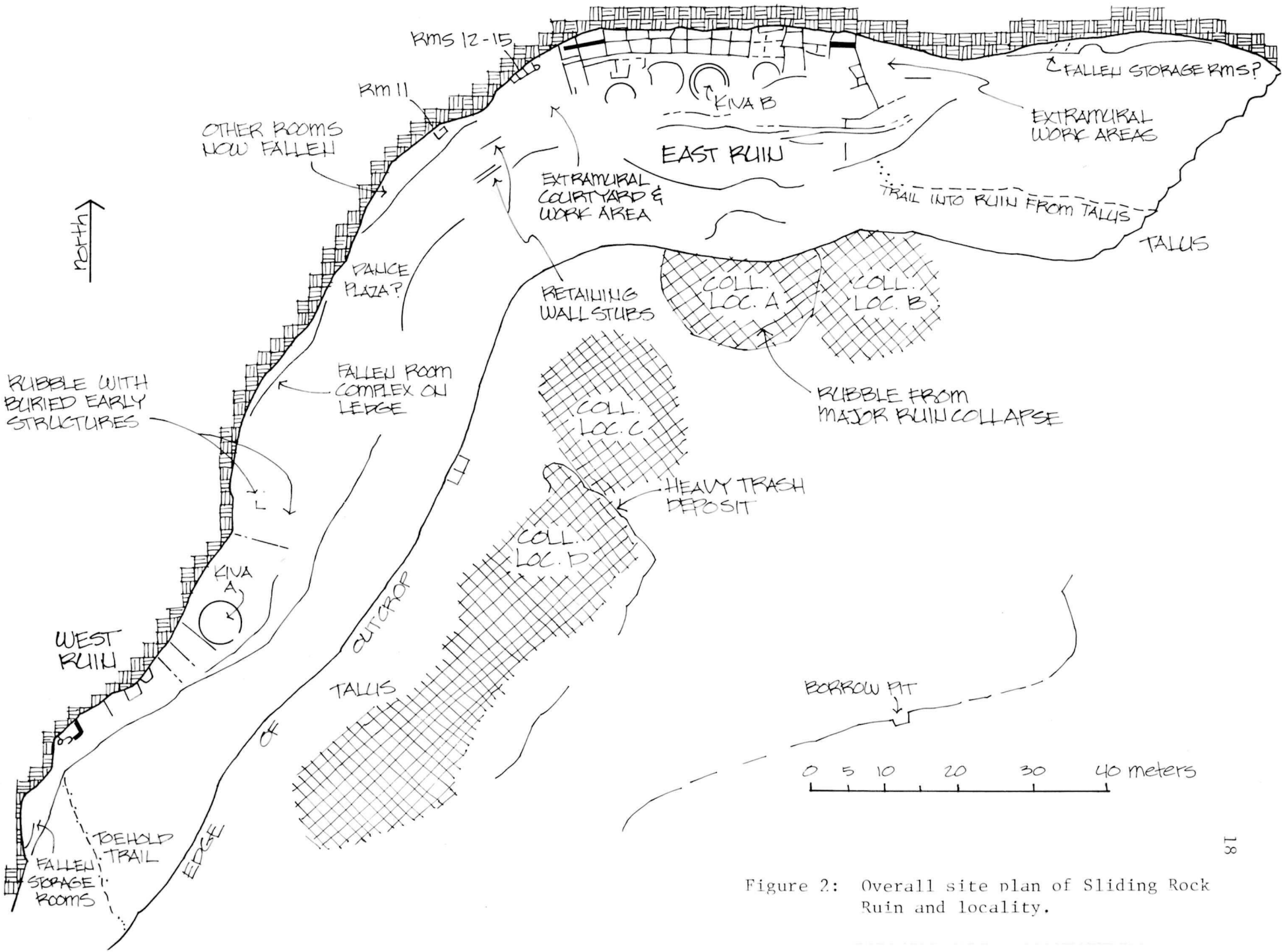


Figure 2: Overall site plan of Sliding Rock Ruin and locality.

Figure 3: Overview of sliding Rock, facing north.

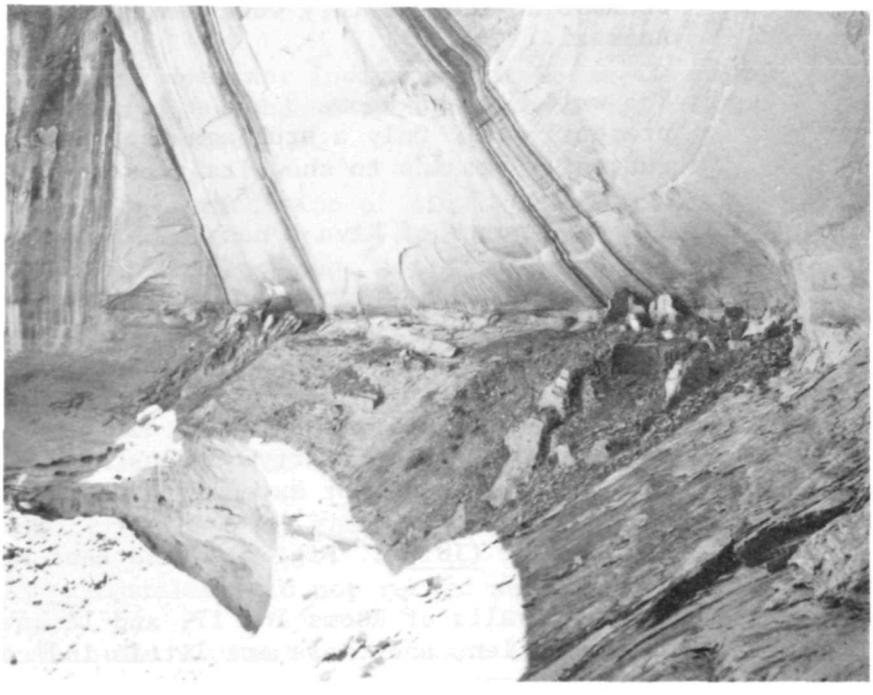


Figure 4: Overview of Sliding Rock, facing west.

Sliding Rock was first examined extensively by Mindeleff in the 1880's during his survey work, although his report was not issued until 1897. He divided the site into two units, Sites 31 and 32, each with its own architectural integrity, drew plans of each unit, and described their overall architecture in some detail. With the exception of several minor features, his work is highly accurate. In the case of Sliding Rock, changes in slope morphology may have changed since his visits, as several new features were exposed by shifting and downslope sliding of the unconsolidated fill in the ruin. These should be mentioned to avoid confusion among future researchers. Since Mindeleff did not assign room numbers, those given here are the author's: Mindeleff's Site 31 (1897: Fig. 20) (herein called the West Ruin):

1) Rooms 1 and 5 are shown in dotted line, perhaps because he thought they were Navajo instead of Anasazi.

2) The wall between Rooms 3 and 4 is longer than it presently is. Only a stub against the alcove currently remains to show its presence.

3) The wall south of Kiva A has fallen downslope.

4) The rubble walls defining two or three rooms shown at the northeast end of Site 31 are now indistinguishable from the rest of the rubble.

5) There is a retaining wall which defined the northeastern boundary of Courtyard Cluster A. Mindeleff's map is not extensive enough to show it.

Mindeleff's Site 32 (Ibid.: Fig. 21) (the East Ruin):

1) The west walls of Rooms 16, 17, and 18 have now mostly fallen, and there are little indications of their presence.

2) Another kiva (Kiva D) is now visible to the west of Kiva C. This feature may have been covered with debris when Mindeleff explored the ruin.

3) The cross wall shown on Mindeleff's map between Rooms 36 and 61 is now absent. Its presence can be inferred from architectural details, however.

4) The cross walls between Rooms 32a and 32b and 35a and 35b are now absent, and cannot be inferred from presently visible above-grade architectural details. Mindeleff also fails to record the presence of Room 34, a Navajo granary in this same area. These factors may have combined to create an error in his map, or the latter room may have been built after his visit.

5) Walls forming the three rooms north of Kiva E are now absent, having possibly fallen at the same time as the retaining wall. Architectural evidence regarding the contiguity of the early pueblo room block on either side of the break indicates that rooms were at one time present.

6) Mindeleff shows a cross wall which divides Room 43 in half. It is not now present, and its presence cannot be inferred from mudlines on the alcove or any other evidence.

7) Mindeleff does not indicate that Rooms 41 and 42 are Navajo, but based upon the architectural details they are.

8) Mindeleff's rendition of Kiva B architectural details (Ibid.: Fig. 22) and remodeling are slightly different from my own.

9) In Figure 69, he shows numerous beams protruding from the retaining wall. There are not enough sockets remaining to have held this many beams, and I believe Mindeleff's artistic license was invoked when preparing the illustration.

Several other general comments regarding the site are also noteworthy. Mindeleff did not record several isolated rooms in the alcove. Some of these are Anasazi (Room 11) and some are

Navajo (Rooms 12-15). Nor did he use mudlines on the alcove for designating rooms. Use of these mudlines has greatly increased the overall room count for Sliding Rock, as well as an understanding of village architecture and its meanings. Nevertheless, Mindeleff's contribution to the archeology of the site has been substantial.

Mindeleff (Ibid.: 150, Fig. 61) also shows two contiguous rooms at the top of the talus below Site 31. The walls of these rooms are no longer distinguishable, having collapsed into a pile of rubble. Nearby is a second rubble mound which marks the presence of one or two additional rooms. Since these are located in a very shallow shelter, sheep and goat traffic probably contributed to their downfall. Other than noting their presence, nothing can be inferred about the mounds, although one may contain a Navajo burial. Figures 5 and 6 show their present condition. Mindeleff's base map (Ibid.: Plate XLIII) also shows three structures at the top of the talus below Site 32. He does not mention them anywhere in his text and there are none there now, nor are their remains visible.

Temporally between Mindeleff's explorations and de Harport's survey, only minimal amounts of excavation were done at Sliding Rock, and tree ring samples were taken. There are no reports of the excavations done or collections made, except for E. Morris (n.d.). McDonald (1976: 97) notes that Earl Morris and cohorts removed six burials for the American Museum of Natural History in 1925.

Figure 5: Remnants of rooms at the top of the talus below Mindeleff's Site 31, facing West. Site may contain a Navajo burial.

Figure 6: Remains of rooms at the top of the talus, below Mindeleff's Site 31, facing north.

Provenience	Designation	Dates
Center of ruin, logs in buttress	M-55 M-52 M-51	846p-936r 875p-957+r 935p-986r
West center of ruin	M-57	768p-834vv
East end of ruin	M-61	796p-856v
East end of cave	GP-3149 GP-3158 BE-39 BE-38	735p-829vv 935p-983rG 845p-943rL 835p-957r

Table 2: Tree ring dates from Sliding Rock Ruin, after Bannister, et al. (1966: 29-30). Key to designation prefix letters: M-collected by E. Morris; GP - collected by D. O'Bryan for Gila Pueblo; BE - collected by J. Jeancon for the First Beam Expedition

CATALOGUE NUMBER	DESCRIPTION
8422-23	two pre-Pueblo sandals
8424	one pre-Pueblo apron
8425	one pot ring
8426ab	withe rings stuffed with husks
8427ab	withe rings stuffed with husks

Table 3: Listing of artifacts collected by E. Morris (n.d.) at Sliding Rock in 1927, for the American Museum of Natural History. Apparently these specimens are still at that location, with final catalogue numbers as listed. Morris' field number for all of these materials is 27/520.

Bannister, et al. (1966: 29-30) provide a general synopsis of the tree-ring dates. Unfortunately, the provenience of the individual dates is rather poor, as indicated by Table 2. During architectural recording at the site, plugged corings marked with metal tags were noted in two locations, but the apparent field numbers do not correspond with any of those given along with published dates, although they were taken by Deric O'Bryan/Nusbaum in 1940. These are CDC-217, from a vertical log in the lower retaining wall, and CDC-209-GP6-40, from a vertical post in the north wall of Room 47. There is no certain correlation between these designations and the Gila Pueblo dates in Table 2. Examination of the ruin suggests that the designations "east end of cave" and "east end of ruin" probably are the same, most likely coming from Rooms 44-48. There are no rooms in the extreme east end of the cave.

De Harport's (1959) survey combined Mindeleff's survey designations into a single site number, CC107, based on the unbroken continuum of petroglyphs, pictographs, and activity areas between the two ruins. He mentions the large amount and variety of rock art, while collecting a sherd sample that indicates an unbroken occupation between Pueblo I and III periods (p. 170). The sherd count is given below, along with Breternitz' (1966) "best" dates, where he supplies them:

		A.D. DATE
White Mound B/W	1	750-910
Kiatuthlanna B/W	2	850-910

Kana'a B/W	5	725-816+
Kana'a Neck Banded	1	760-900
Sosi B/W	3	1095-1190
Eastern PII B/W	6	
Flagstaff B/W	3	1120-1285
McElmo B/W	2	1090-1275
Tusayan B/R	1	1090-1285
Wingate B/R (probably)	2	1050-1200
St. John's Polychrome	2	1200-1300
Klageto B/Y	2	1276-1280
Jeddito Plain	3	
Navajo Utility	2	
Unid. gray corrugated	12	

A few chips and flakes were also gathered. Other than the collection, de Harport refers to Mindeleff's description of the architecture, and no total room count is given.

CHAPTER IV:

CULTURE HISTORY FRAMEWORK

Anasazi archeology has traditionally been divided into a sequence of chronological periods. The hiatus between the first of these periods and its antecedents is incompletely understood. This section will provide only a summary of each period, so that Sliding Rock's chronological position can be somewhat better understood. For a general description of Southwestern culture history, the reader is invited to peruse Kidder (1924) and Wormington (1957: 27-101), and amplify specifics with McDonald's (1976: 32-71) observations regarding Canyon de Chelly archeology. It is noteworthy that local renditions of the Pecos classification system, i.e., the use of phases, have not been applied at Canyon de Chelly.

The Paleoindian Stage: 9200-5500 B.C.

This period is characterized by hunters and wild plant foragers who manufactured lanceolate projectile points of various shapes. Their quarry was larger game such as mammoth or bison, or smaller animals and rodents. Areas with lakes or rivers, elevated overlooks, and broad, open hunting areas have been suggested as their preferred haunts. Any architectural remains left by these people are rare, and limited to hearths. The

social grouping is inferred to be a family, sometimes banding together for economic purposes.

The Archaic Stage: 5500-200 B.C.

More xeric environmental conditions resulting in a subsistence change is generally described for this period. Megafauna died and dietary percentages of exploited plants and animals changed. The importance of floral products increased, based upon a higher frequency of tools for plant processing, and utilization of areas of high resource diversity was the general rule. Hunting was limited to deer, antelope, and other comparably-sized creatures, plus rabbits and rodents. These bands of people probably fluctuated in size based on economic conditions. Architectural features other than hearths or posthole alignments defining irregularly shaped structures have not been found. As McDonald points out (1976: 35), the potential for sites of the Archaic in Canyon de Chelly has not been examined very thoroughly.

The Basketmaker II Stage: 200 B.C.-A.D. 400

This stage is ushered in by the arrival of domesticated plants in the Anasazi area, and increasing reliance on a sedentary existence. Generally speaking, a mixed subsistence strategy of gathering and corn and squash horticulture is supplemented by hunting, although there is substantial regional variation. Basketmaker II people lived in excavated pithouses of variable size, shape, and depth, capped by wood and mud superstructures.

Slab-lined cists in shallow caves are frequent residues left by these people, who began to develop enough surplus food that storage facilities were needed. Since these people lacked ceramics and often lived in caves and rockshelters also used by later groups, it is difficult to recognize evidence of the period. Their remains may be obliterated or covered with debris. The social group living together is open to debate, but certainly involved the nuclear family somehow, perhaps as a core around which other individuals or related groups gathered. Canyons de Chelly and del Muerto have a well developed Basketmaker II population, but little technical information has been offered by prior researchers. Below the floors of Sliding Rock kivas are exposed several rather large slab-lined cists. Whether they are of Basketmaker II or III origin is unknown.

The Basketmaker III Stage: A.D. 400-700

When fired, undecorated gray ware ceramics occured, this stage began. There was a general increase in quality of these ceramics throughout the period, with better surface finish and painted designs. Beans and cotton supplemented corn and squash as cultigens. Wild plants continued to be collected and the continued emergence of food surplus produced larger settlements. Pithouses and storage cists made of vertical stone slabs were the principal structural remains left by these people, who were fewer in number than in the preceding stage. As mentioned previously, semi-exposed vertical slab cists are present at Sliding Rock. De Harport (1959: 1484-1485)

speculated on reasons for this, suggesting that perhaps archeological methodology was at fault. Despite de Harport's work being the best synthesis of this stage to date, some of his conclusions have been questioned (vide McDonald, 1976: 45-47).

The Pueblo I Stage: A.D. 700-900

Increased reliance upon cultigens was the subsistence trend throughout this period, and technical improvements in ceramic manufacture and design characterized changes in the material culture. Architecturally, rooms were built above ground, and structures were retained both as houses and kivas. Rooms were constructed of vertically placed slabs near the base, capped with jacal or wattlework superstructures, with villages arranged in arcuate or linear rows. Later, masonry supplanted the wattlework crown above the slabs. Pit structures became deeper, and were located to the south of the room blocks. It has been suggested that these villages were the homes of lineages, groups of families with common fictive or real ancestors. Families may have resided within room suites definable architecturally within each village. The degree of Pueblo I usage in Sliding Rock is unknown, but the ceramics collected by de Harport indicate some occupancy.

The Pueblo II Stage: A.D. 900-1100

Ceramics continued to show discernible changes, some of which have been used to separate this period from its antecedent.

Architecturally, other changes occurred as well. Most notable was a reduction from larger to smaller villages in some areas, although the precise nature of these changes in Canyon de Chelly is unknown. Village morphology is given by McDonald (1976: 53):

> "Rooms in rock shelters were constructed along the rear wall of the shelter. If the shelter was deep enough, kivas were placed in front of the room block; if not, they were placed at one end."

De Harport believed that the extended family or lineage was the basic socio-economic unit (Ibid.), with matrilocal residence.

The Pueblo II stage appears to be but poorly defined locally, and few statements regarding the precise construction methodology important to this study have emerged. Generally, the architecture of the period is regarded as contiguous with preceding and subsequent periods, but characterized by coursed masonry. Because the architectural details, ceramics, and few available tree-ring dates indicate a substantial use of Sliding Rock during this period, I will return later to discuss Pueblo II architecture at greater length.

The Pueblo III Stage: A.D. 1100-1300

Population aggregation during this period was a condition of virtually every area in the San Juan Anasazi region, including Canyon de Chelly, although where these people came from is conjectural. Ceramics and masonry styles were of diffuse origins, and, while the number of sites decreased, the size of those that remained inhabited increased. Cliff dwellings and villages at the bases of cliffs were preferred habitation locations. Coursed

masonry continued as the principle construction method. At the period's end, the canyon's role as a focal point of human activity drew to a close with its abandonment. During this stage, Sliding Rock's most intensive and extensive use occurred, and the architectural details must be examined more closely elsewhere.

The Pueblo IV and V Stages: A.D. 1300-present

Both of these stages are poorly defined at Canyon de Chelly because of research emphasis on prior periods. Although there was some continued use of the canyon, its scope was evidently greatly reduced. Ceramics produced during these periods are occasionally recovered in limited quantities from earlier sites, including Sliding Rock (de Harport, 1959: 170). Any architecture constructed during the period remains unknown.

The Navajo: A.D. ?-present

Exactly when the Navajo entered Canyon de Chelly is not known, however, the earliest tree ring dates from Gobernador area Navajo sites are near the end of the 15th Century. The best evidence for Canyon de Chelly suggests arrival during the last quarter of the eighteenth century, according to McDonald (1976: 64-70), who provides a complete synopsis of all phases. There is little information regarding any sequential arrangement of Navajo storage structures of the sort which are present at Sliding Rock. These structures could have been built and used any time between ca. 1750 and the present, although it is possible to restrict this

span somewhat (vide Chapter X). The only temporal referent available is Mindeleff's map (1897: Fig. 21) which shows or omits certain individual rooms within the ruin. De Harport (1959: 170) collected a few Navajo sherds.

CHAPTER V:

ARCHITECTURAL UNITS AT SLIDING ROCK

There are few explicit specific statements regarding architectural development at Canyon de Chelly. Consequently, one is forced to consider Sliding Rock in a somewhat broader framework involving Anasazi architecture from the Southwest. In doing so, it is possible to examine the descriptive elements of architecture from several perspectives, while simultaneously assessing where Sliding Rock fits into the architectural picture. These perspectives are all combinations of attributes which may change or remain stable through time but at various hierarchical, analytical and descriptive levels. In order of increasing complexity, these levels are: walls or wall segments, intravillage subdivisions (rooms, room suites, courtyard clusters, and dual or triadic divisions), and the village itself. Even closer scrutiny involves examination of the individual components which comprise the wall or wall segment. This data is supplied by individual wall analysis forms attached as Appendix A. Walls or wall segments can best be described in terms of masonry style; intravillage subdivisions are best dealt with as nested groups of increasing size and complexity, and the village can be examined by considering its overall arrangement and the implications of its overall development. In this chapter, the objective is to describe architecture in

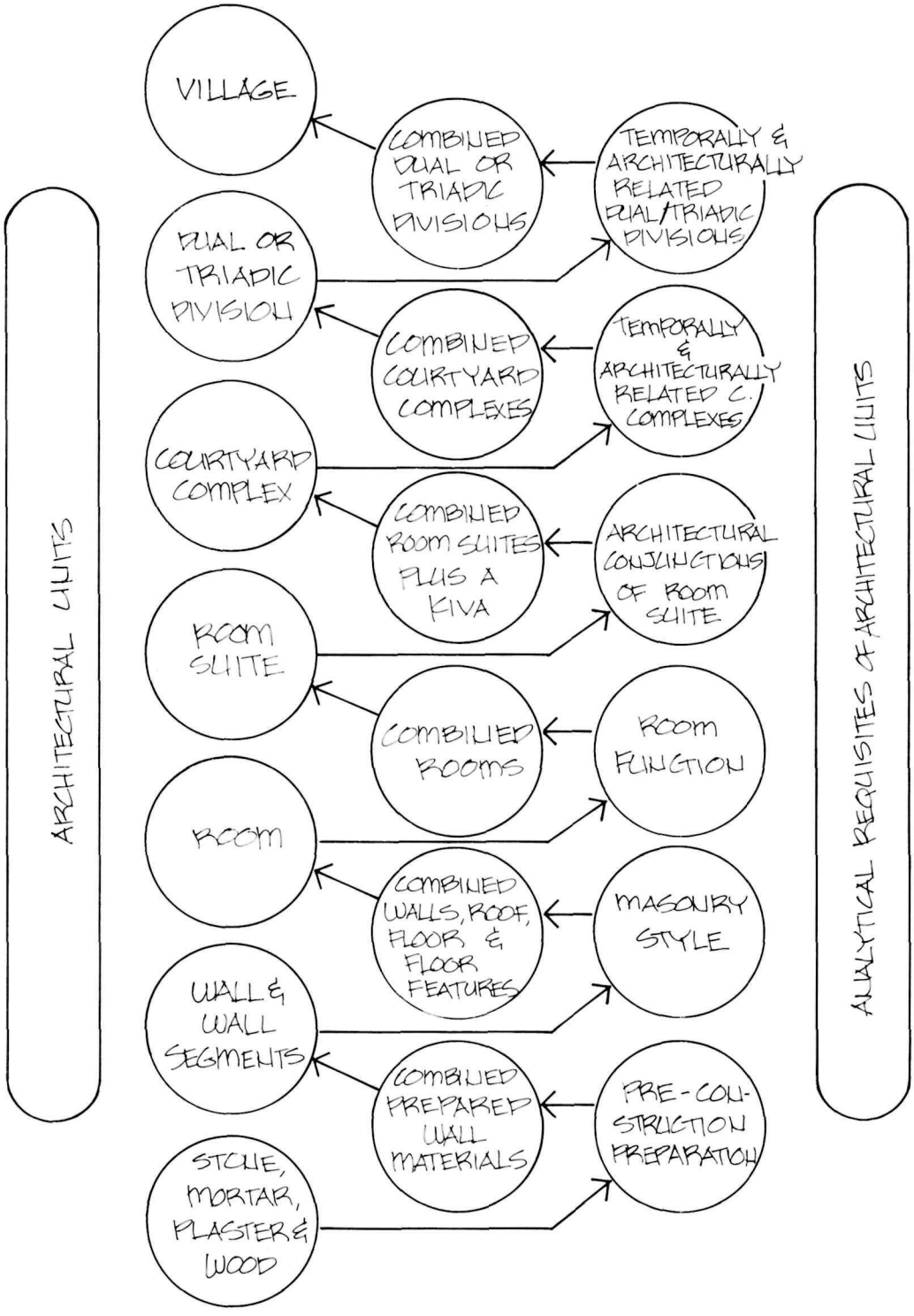


Figure 7: Hierarchical model used in the architectural analysis at Sliding Rock.

terms of walls or wall segments, and rooms. Subsequent chapters will deal with groupings or rooms which occur during the most intensive occupation of Sliding Rock, the Pueblo II and III stages.

Masonry Style

Basketmaker

Basketmaker sites can be considered to be devoid of true coursed masonry. Pithouses and cists mentioned previously are semi-subterranean, the walls formed in part of earth and frequently lined with stone slabs. Houses have superstructures constructed of jacal, supported by a four-post arrangement (Bullard, 1962). No such houses are visible at Sliding Rock, and the sloping nature of the alcove floor would have required extensive leveling using imported soil prior to building them.

The Basketmaker storage cists which are present, however, have been built on small, artificially leveled areas. Essentially, they correspond to cists described by E. Morris (1925: 270):

> "These were rude enclosures of irregular form from two to six feet in diameter and of varying depth. Large, thin slabs of stone set on edge composed the walls, the joints of which were sealed with mud made tough with shredded bark, reeds, leaves, or cornhusks."

The cists at Sliding Rock fall within the size range noted by Morris, but tend towards the larger end. If Basketmaker cists increase in size through time, reflecting both better crop yields and concomitant larger stored surplus, the cists may be Basketmaker III, although the size range for Basketmaker II cists could

encompass the cists at Sliding Rock.

No covers were found in position on any of these cists at Sliding Rock. In Mummy Cave, E. Morris found (Ibid.):

> "Resting upon the tops of the slabs in each case was a juglike neck of adobe reinforced with sticks. The covers were slabs of stone worked down to nearly circular form."

Since the tops of the slabs for some of these cists were immediately below the floors of kivas, the lids may have been removed when the kivas were built, unless taken off earlier.

Pueblo I

The transition from vertical slabs to true masonry occurs during Pueblo I. Pithouses of the previous period begin to be built deeper, with their lower walls lined with vertical slabs. Paradoxically, storage structures are built shallower, with vertical slabs protruding above the ground. Above this slab foundation are found several kinds of superstructure (vide Brew, 1946: 191-193, Fig. 93). Only two have been reported in any detail for Canyon de Chelly. The first of these is "coursed masonry walls laid on slab foundations" (Hurt, 1947: 271). Although the extensive use of mud in the form of turtlebacks, sun-dried balls, and mortar has been related for other areas, Hurt (Ibid.) mentions that "those of Canyon de Chelly are laid with relatively little mortar." Steen (1966: 22, 24, 32) depicts this kind of masonry for both Basketmaker and Pueblo I periods at Tse-ta'a. In his illustrations, masonry begins atop the slabs in Basketmaker structures

(Ibid.: Fig. 7), and is used to back the slab as well as furnish the bulk of wall construction during Pueblo I (Ibid.: Fig. 10).

The second method consists of a vertical post core which is interlaced with willow and plastered. D. Morris found such situations at Antelope House (n.d.: 71), wherein the posts used are pinyon, cottonwood, ponderosa pine, or juniper. He estimates the time of construction to have between ca. A.D. 825-850, based on tree-rings. Only one wall is built in this fashion at Sliding Rock, but one cannot be certain that it dates to this period because jacal construction continues in reduced frequencies after A.D. 900.

Pueblo II

During this period masonry styles are somewhat more developed. Wall thickness is a single stone, as shown by Steen for Tse-ta'a (1966: 38), but individual stones are prepared prior to their use in the masonry. Preparation is by chipping the edges of stone slabs. In discussing Pueblo II dwellings built about A.D. 1000 on the Mesa Verde, Lancaster et al. (1954: 37) offer:

> "Rather flat sandstone slabs were selected, rough shaped by chipping or knocking the edges from both sides, with the result that the inner and outer faces of the blocks appear v-shaped in cross section. Because of the v-shaped edges it was necessary to employ considerable mortar in laying up the courses, and the walls of pueblos of this period were not too strong. The builders sometimes incorporated upright posts in a wall to give it greater stability."

These tabular slabs are of rather consistent size, shape, and dimensional proportions at Sliding Rock, in fact, more than building

stones of the subsequent period. At Antelope House, portions of the South Room Block and South Plaza were built of edge chipped slabs, as was Battle Cove, and D. Morris (n.d.: 35, 77) implies that this kind of construction predates A.D. 1100.

Sometimes the large sandstone flakes removed from these edge-chipped slabs were used as chinking material. This method occurs sporadically at Sliding Rock. More prevalent is the use of flat flakes of stone up to 1.0 cm thick, and up to 10 cm in length and width. Emplacement approximates the method mentioned by Roys (1936: 120):

> "They always had at least one straight side which was laid about flush with the visible face of the wall. These spalls were invariably laid in a peculiar manner. They seldom touched the stone below them or the stone above, but were embedded between cushions of mud above and below just like the wall stones . . . . Furthermore, these spalls did not extend back into the wall the full depth of the wall stones, but only about one-quarter as deep, and often less. The spalls were laid in the courses of the wall as the wall progressed upward, and were not inserted into the joints after the completion of a part or the whole of the wall. Back of the spalls, the mud cushions . . . filled in all the space between the wall stones, and transmitted the load borne by the center of the wall."

At Sliding Rock, many walls built using this technique were laid up in tiers up to 50 cm high before each tier was permitted to cure. Parging, a heavy coat of puddled adobe applied to level the final facade, was added with the fingers as the tier was built. In many rooms of this period, this parging completely obscures the wall stones.

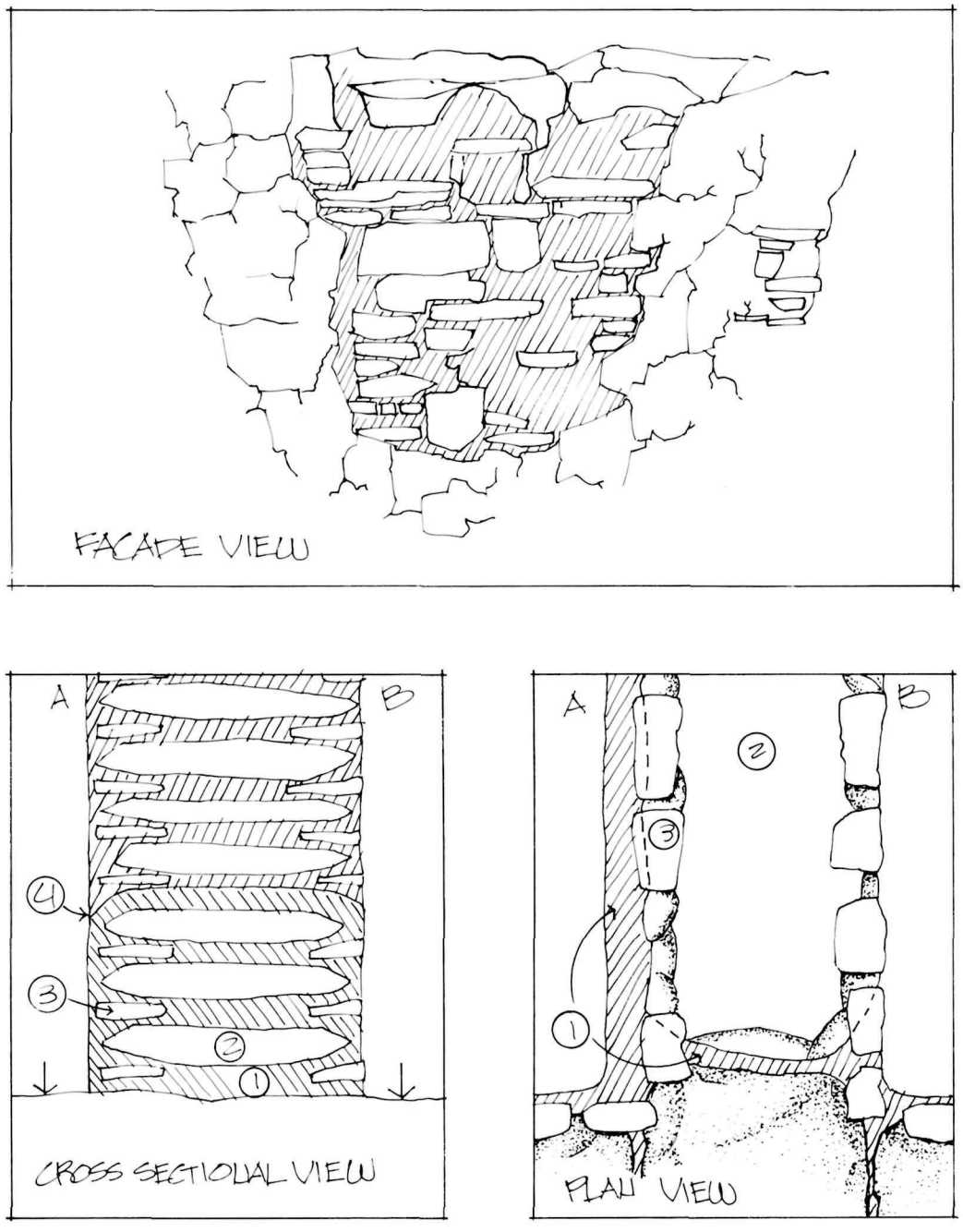


Figure 8: Three views of edge-chipped slab masonry characteristic of Pueblo II construction at Sliding Rock. Key: 1-mortar bed; 2-edge-chipped slab; 3-tabular sandstone chink; 4-mud cap between masonry tiers.

Any finish plaster was applied only after the entire wall was built, a process which may have taken several days, based upon permitting full cure. Frequently, the lack of finish plaster visible on room interiors, and sooting of the parging coat both indicate that no finish coat was used. Finish plaster was either applied with the hand or some kind of cloth or mop, although the nature of cloth or mop is tenuous. In some cases at Sliding Rock and other sites, a white paint or plaster was used to coat walls or apply designs to them. Perhaps this is a kaolin-like clay found only in the Chinle formation at localized outcrops (D. Morris, n.d.: 54).

Pueblo III

Masonry of this period is characterized by considerable variability, and various researchers of masonry styles have tended to term various kinds "Chaco-like" or "Mesa Verdean." The emphasis in recording such generic forms seems to have been coupled with ceramics in order to determine cultural contacts external to the area (vide Steen, 1966: 45-47; D. Morris, n.d.: 50). Generally speaking, the distinctions involve the presence of rubble-core and veneer masonry, a Chacoan trait, and walls containing pecked or pecked-and-ground blocks are said to be influenced by Mesa Verde style. A classic discussion of these two kinds of construction is supplied by Roys (1936: 116-124). Actually, these two concepts mix levels of analysis because the former deals with the way wall components are combined, and the

latter deals only with pre-construction stone preparation.

Pre-construction stone treatment during Pueblo II was a matter of bifacial edge-chipping of slabs. At Antelope House, D. Morris (n.d.: 50) found a gradual progression from edge chipped, to broken-face, to pecked-and-ground stone preparation, through time. Most of the stones of Pueblo III vintage at Sliding Rock could be characterized as broken-faced. Stones were quarried in blocks of various sizes and shapes. A flattened upper and lower surface were adequate for bearing the wall weight without being completely flat. The faces of the stone which would compose the wall facade were judiciously selected and perhaps modified by breakage to produce a flat surface. The masons appeared to have been unconcerned with the geometric shape or size of the stone, other than on the face or faces of the wall.

Later, a distinct attempt was apparently made to ensure a flat stone surface. The face selected for exposure on the wall facade was subjected to pecking with a hard, cryptocrystalline hammerstone, producing pitting or dimpling. Some masons apparently then used sandstone abraders to grind this face to an even smoother configuration. As at Antelope House, both pecked and pecked-and-ground stones were rare at Sliding Rock, suggesting that they were stolen from abandoned structures and reused.

Wall components consisting of stone building blocks, chinks, mortar, and plaster are combined in various ways. At Antelope

House, D. Morris (n.d.: 49) notes the presence of single stone (simple) walls in earlier Pueblo III contexts, followed by walls two stones thick (compound walls). He also notes an absence of rubble-cored walls at the ruin, contrasting it with such sites as White House and Standing Rock Ruin. Both compound and veneer-rubble cored masonry are present at Sliding Rock, and Pueblo III simple walls are absent. Both factors suggest that the Pueblo III occupation of Sliding Rock is later than that at Antelope House, but data is limited.

Compound walls constructed of broken-faced and rare pecked or pecked-and-ground stones are prevalent during this period. Both faces of the wall are laid at the same time in a mortar bed, and chinks are used. Rather than both stones being the same width, generally one set is narrower than the other such that one side approximates a veneer. This side is more susceptible to structural failure than the heavier side, since stones may not be laid flat, but on edge. Apparently some convention regarding overall wall thickness caused this precarious phenomenon. A second method involves alternating wider stones on opposite sides of the compound wall, thus producing a more stable situation.

Rubble-cored walls tend to be thicker than other types, as expectable, and are rare at Sliding Rock. Stone preparation is the same as found in compound walls. Construction technique is as described by Roys (1936: 120):

> "The core or hearting of this type of wall was chiefly well-puddled mud, although it might contain more or less stone. Regardless of the proportion of rough broken stone in the core, the laminated nature of the wall (shown on the surface by the distinct courses) was maintained to some extent in the center of the wall. Irregular flat stones horizontally laid in the mud core were usual, while irregular jagged stones that would spoil the coursing were much less usual."

These walls apparently are constructed by positioning a single course of both veneers, and filling in behind the stones composing them with a mixture of stone and mud.

Chinking is present in both compound and rubble-cored walls. Arrangement is generally between horizontal joints; if in the vertical joints between stones, chinks are still placed horizontally. Roys (Ibid.: 122, 125) has described several kinds of chinks, all of which are a radical departure from chinking used during the antecedent period, and all of which occur randomly in Pueblo III walls at Sliding Rock. "True-bearing spalls" touch both the wall stones above and those below them, consequently bearing a portion of the wall's weight. "False spalls" are wedge-shaped, "chunk" chinks with a triangular cross-section. They are emplaced into the mortar joint to force the mortar in either direction against the wall stones. "Stop chinks" of tabular shape are used to prevent highly plastic mortar from exuding between courses, functioning as small dams. Although Roys' conclusions as to the functions of these various chink types may not be valid, his descriptions of their morphology have value.

Plastering of walls of this period seems not to involve

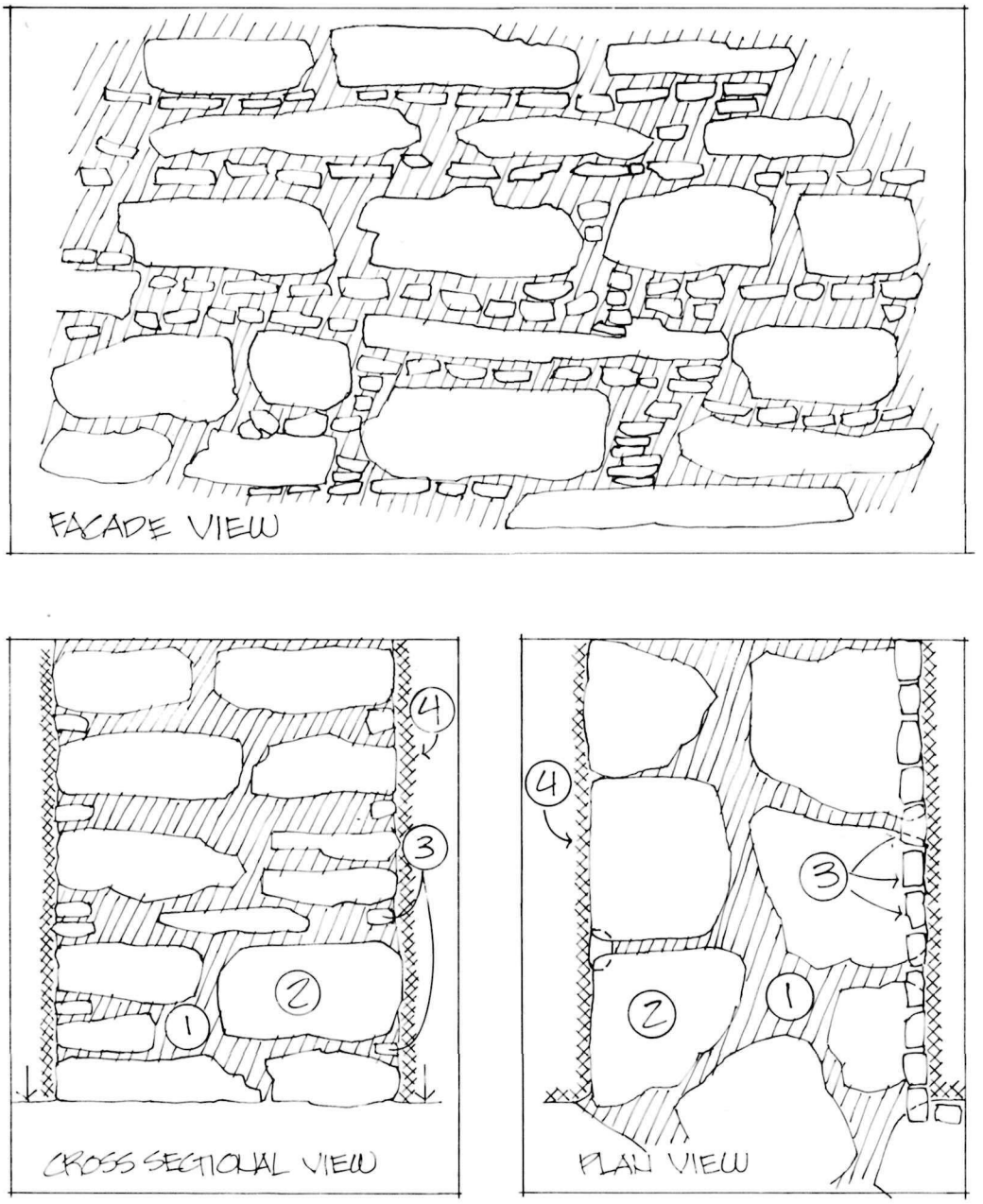


Figure 9: Three views of double stone masonry characteristic of some Pueblo III construction at Sliding Rock. Key: 1-mortar bed; 2-broken faced, pecked, or pecked-and-ground building stone; 3-small spall chinks; 4-plaster.

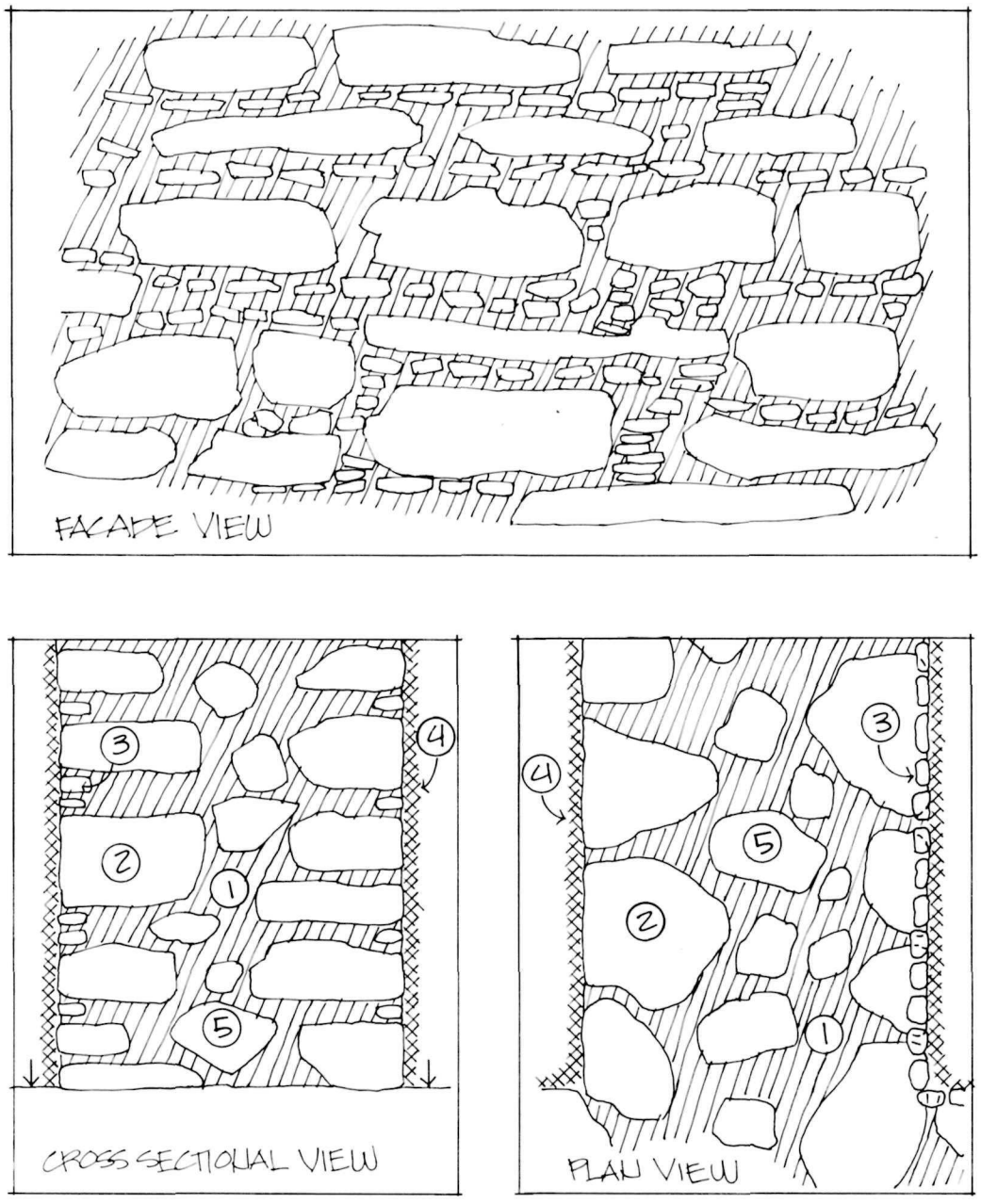


Figure 10: Three views of veneer, rubble core masonry characteristic of some Pueblo III construction at Sliding Rock. Key: 1-mortar bed; 2-broken-faced, pecked, or pecked-and-ground building stone; 3-small spall chinks; 4-plaster; 5-unshaped interior rubble stones.

scratch coats, although two kinds of finish coat were used. Plain tan mud has generally been used, and occasionally a white plaster or paint was applied to entire walls or as a design. The method of application and materials are the same as during the preceeding period. Sooting of room walls was one reason for replastering them, and kivas of the period have up to 35 coatings at Sliding Rock. The front walls above kiva roof top courtyards were painted or plastered white.

Rooms and Room Function

Basketmaker

During the Basketmaker stages only three kinds of rooms are used. The first is a semi-subterranean pithouse, although a few slab and mud houses built above ground have been reported at Canyon de Chelly. Both forms are irregularly oval to circular in shape. After recording the dimensions of such structures, Bullard (1962: 119-126) provides median sizes ranging between 10 and 16 m^2 in diameter and .75 to 1.29 m in depth. Floor features are numerous and variable, including storage pits and bins, hearths, ash pits, and other indeterminate floor holes. Banquettes may encircle the walls. Occasionally, antechambers of varying morphology, size, and complexity comprise an additional room appended to this main room. Usually, these antechambers are smaller.

In terms of room function, there is some evidence to suggest differential usage between antechamber and main room. The primary function of the main room was as a habitation area in which a

variety of tasks were performed, each in specialized local areas within it. Antechambers may have been used predominantly for storage, based upon the frequent presence of bins and cists, and the general lack of other floor features and floor artifacts (Bullard, 1962: 141; Birkedal, 1976: 453-4).Secondary functions of antechambers may be related to house entry and air temperature control, or as an all purpose "overflow" work area wherein only limited activities were performed on an impromptu basis.

There is little information regarding the use of areas outside pithouses by Basketmaker people, because archeologists have only infrequently excavated entire pithouse villages, including the external areas outside the pithouses. Smaller storage cists of similar slab construction and circular or oval shape occur outside the houses.

Pueblo I

During this period, pit structures are excavated more deeply into the ground and are comparable diameters, tending to be of sub-square or sub-rectangular shape. A number of interior architectural features continue, with storage cists excavated into the wall a common convention. Wing walls may increase in height to partition off portions of the interior, and antechambers are less frequent. The depth of these pit structures permits a flat roof punctured by a smoke hole and roof entry. Four posts usually support the roof, which is level with the surrounding ground. Few pit structures have been excavated in Canyon de Chelly, with

Pueblo I construction usually limited to jacal surface rooms. A round kiva was dug by Steen at Tse-ta'a, but its lack of depth makes it questionable as a true pit structure (Steen, 1966: 32). Contiguous, above ground rooms were used for storage and/or habitation. These structures are sub-square or sub-rectangular in shape (Hurt, 1947: 271), usually lacking floor features and large numbers of floor artifacts.

The activity structure of Pueblo I houses appears somewhat confused because of the emerging patterns of both continued pit and novel surface structure construction, and the rising dichotomy between domestic and ritual activities. The pit structures have been called both kivas and pithouses, and undoubtedly individual structures exemplify both forms. When pithouses are present, activity structure generally resembles the previous period, with specialized but frequently undemarcated areas inside the pithouse used for various tasks. Some objects suggesting ritual activities have been found, generating arguments as to whether these pit structures were kivas or kiva-like as opposed to purely domestic in nature. Whether or not these aboriginally excavated structures were used as pithouses or kivas is important when considering room and area functions for the remainder of the site. If pit structures were used as kivas, then some of the above ground structures probably were living rooms, and the remainder were used as storage rooms. If the pit structures were the living areas, perhaps the surface structures were used for storage, as Brew (1946) argues

for Alkali Ridge villages. Both pithouse/kiva and surface structure roofs were apparently used for storage and as work areas, but precise assessment of spatial use beyond the confines of the structure has not been examined with archeological rigor.

In summary, three room types can be expected to occur at Sliding Rock for the Pueblo 1 stage: storage (including granaries), habitation, and ceremonial rooms. There is little architectural evidence of any rooms dating to the period on the surface. Based on ceramic collections, they are present but probably buried, perhaps below rooms at the rear of the alcove.

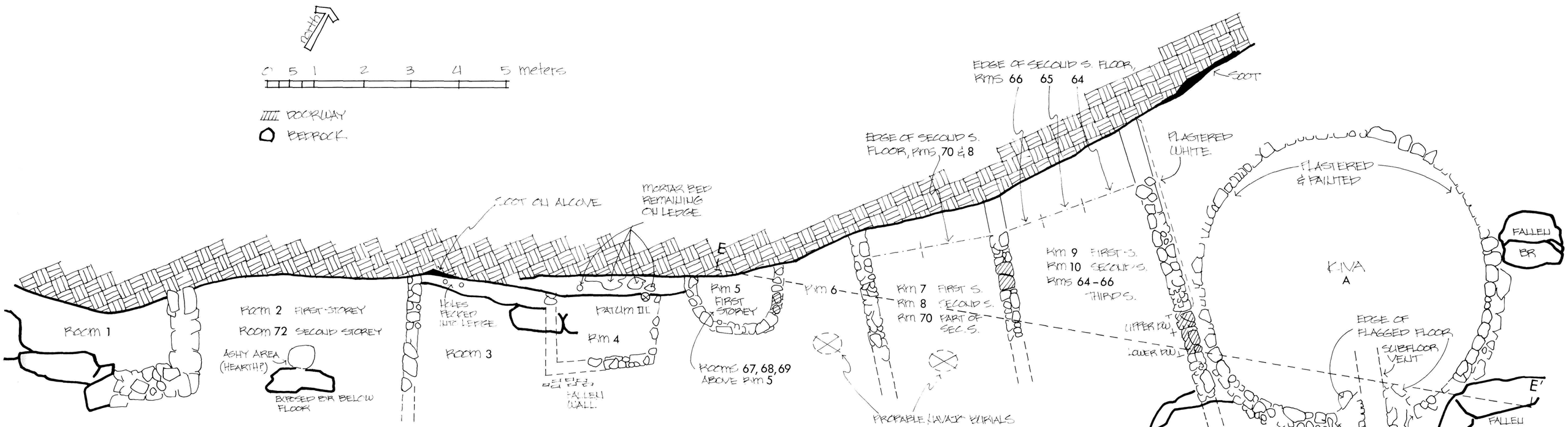
Pueblo II and Pueblo III

Most of the use of Sliding Rock alcove occurred during these stages, hence they will be discussed in somewhat greater detail than previous ones. During Pueblo II, questions of room function seem more resolved than during Pueblo I in that pit structures are more apt to be interpreted as kivas. A few pithouses lag on, however, in localized areas. The overall trend in room function is from general to more specific use as time proceeds. At Antelope House, D. Morris (n.d.: 60) notes a decrease in median room size throughout Pueblo III, from 17.6 square meters (early), to 5.9 square meters (middle), to 3.2 square meters (late). This trend acquires additional meaning when the bimodal distribution (2.5 square meters and 8.0 square meters) suggesting late period functional dichotomy is considered. In part, this room size reduction may result from an increase in the number of storage rooms through

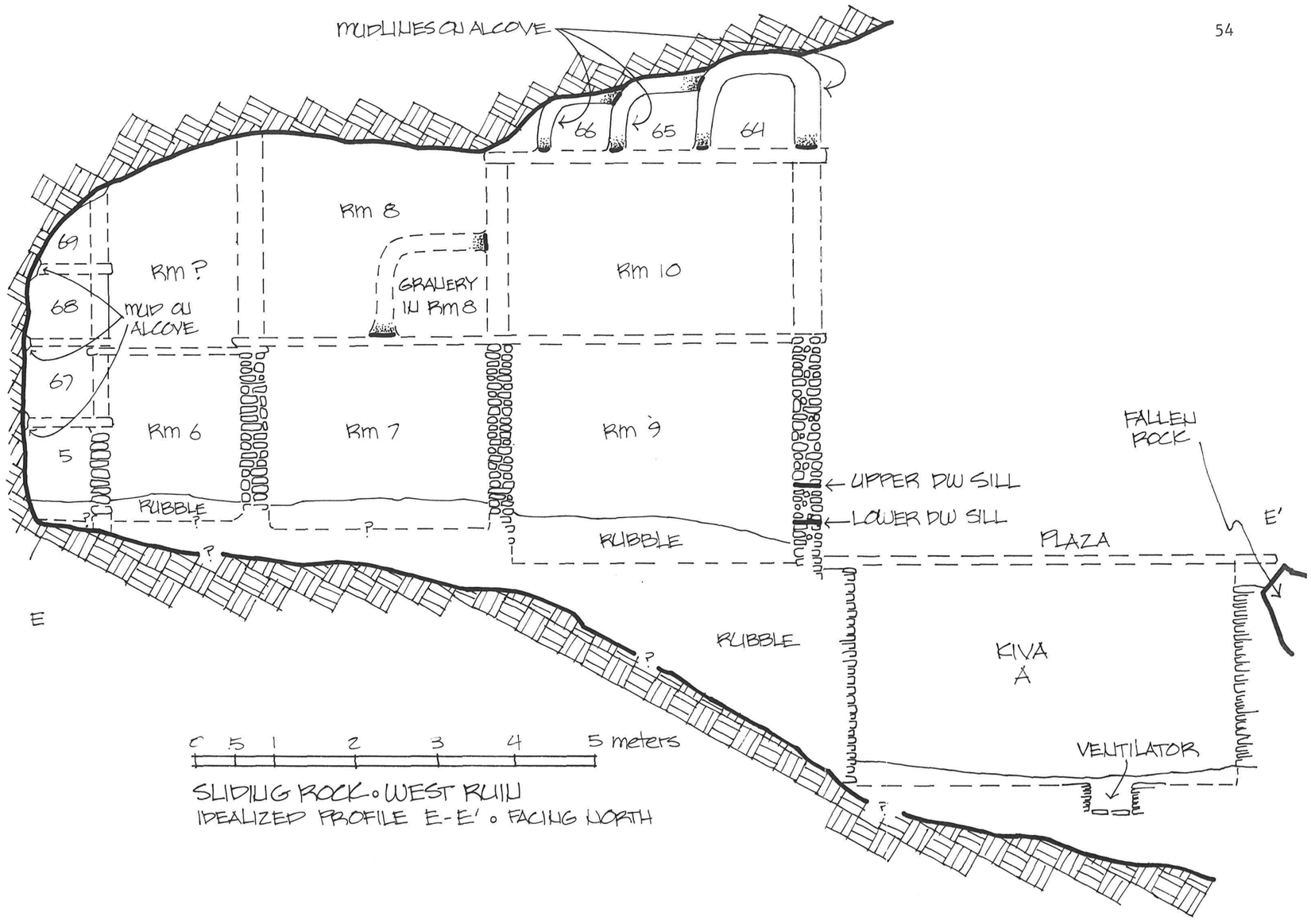
time, as storage rooms are usually smaller.

Both traditional archeological methodology and ethnographies (White, 1962:47) have implied that storage rooms are smaller, but neither adequately distinguish between foodstuff and other storage. Dean (1969: 29) asserts that size is a poor criterion for distinguishing either storage rooms or granaries from living or habitation rooms, based on Tsegi Phase sites in the Kayenta area in which some of the largest rooms are granaries. Others (Brew, 1946: 191 ; Hill, 1966: 13) have used smaller size to define storage rooms, because smaller size correlated intuitively with storage room features and material culture residues. With some reservations, size will be considered here to be an element in determining room use, but only when other more definitive characteristics are absent.

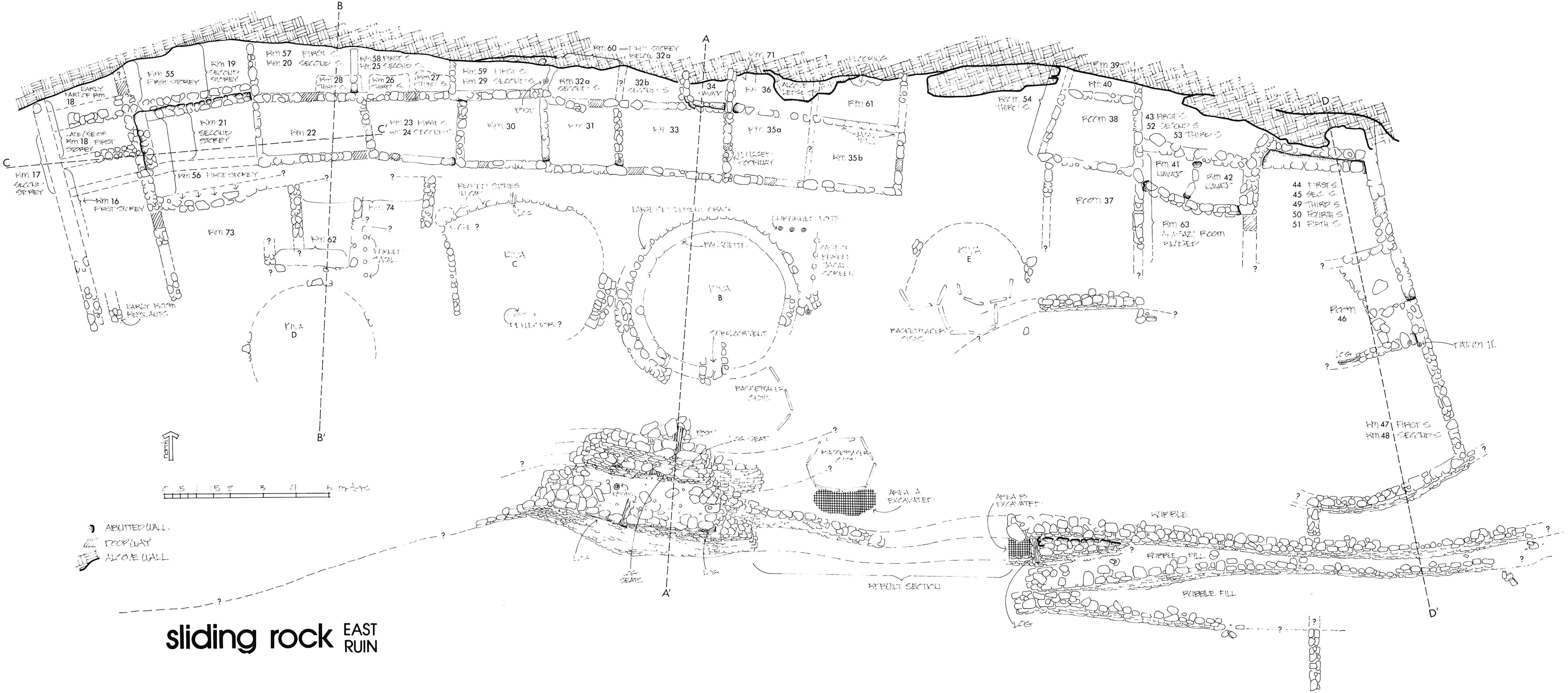
Methods of inferring room function have been of two types. Dean (1969) has primarily used architectural features and details to do so, culminating a long-term trend in Southwestern archeological methodology. Hill (1966) and Jorgenson (1975) have used differences in material culture distributions, including constellations of ceramic type, to do the same. Here, the architectural details recorded during the analysis will be used to infer tentative room use. These conclusions can be operationalized via hypotheses and test implications, with expectations of material culture and newly exposed architectural details, if excavation ever occurs at Sliding Rock. For example:



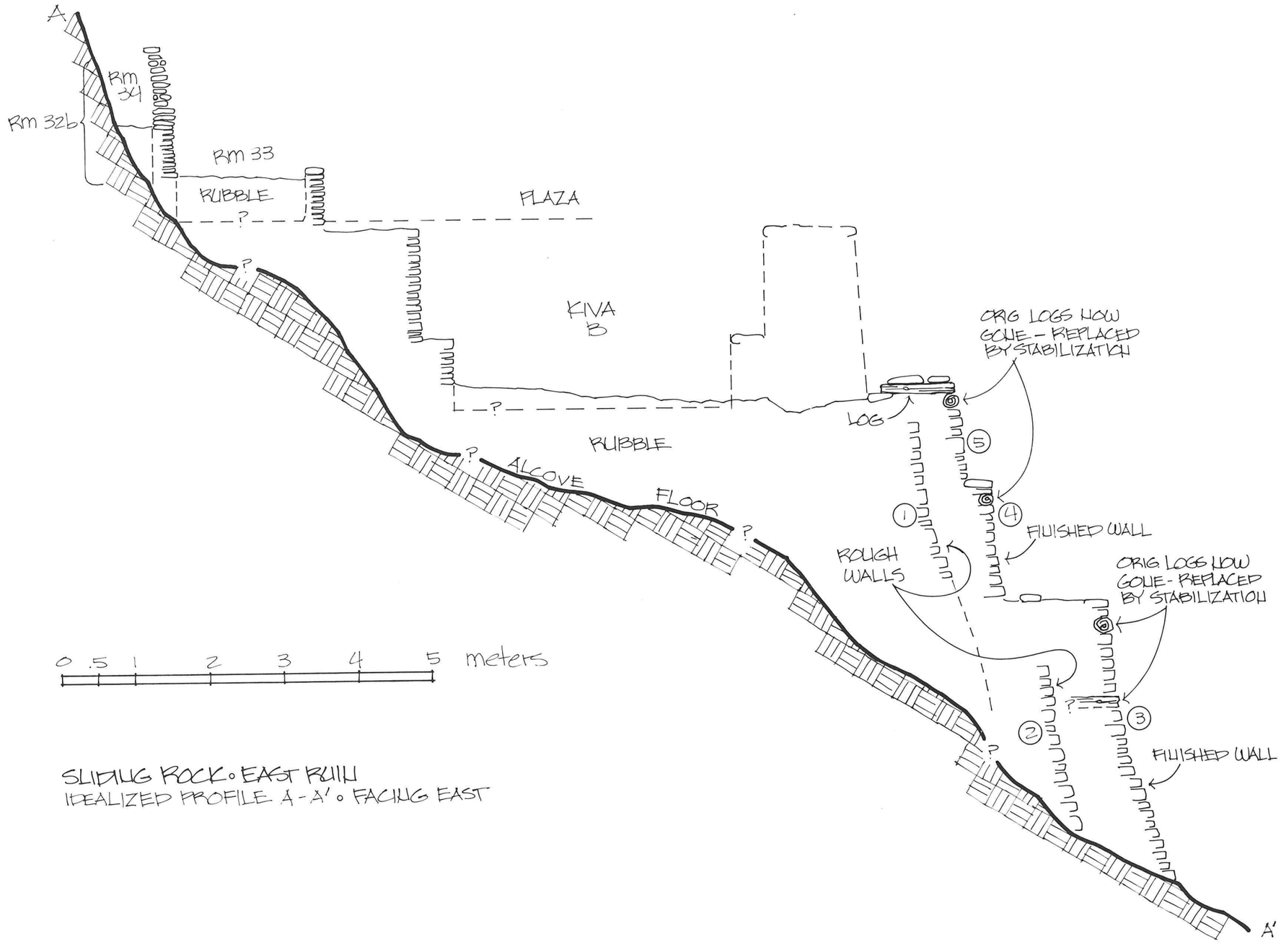
sliding rock · WEST RUIN



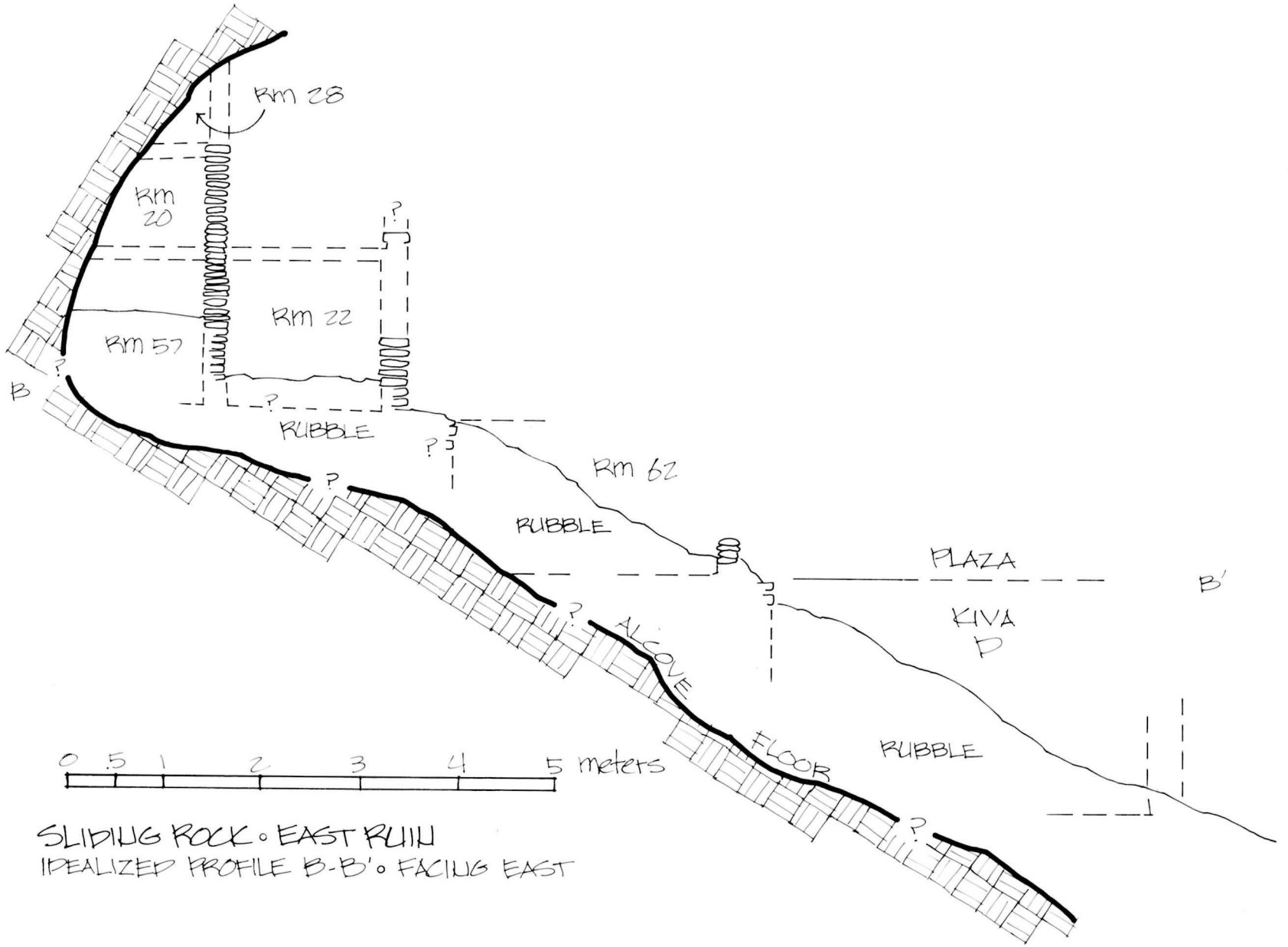
SLIDING ROCK • WEST RUIN
IDEALIZED PROFILE E-E' • FACING NORTH



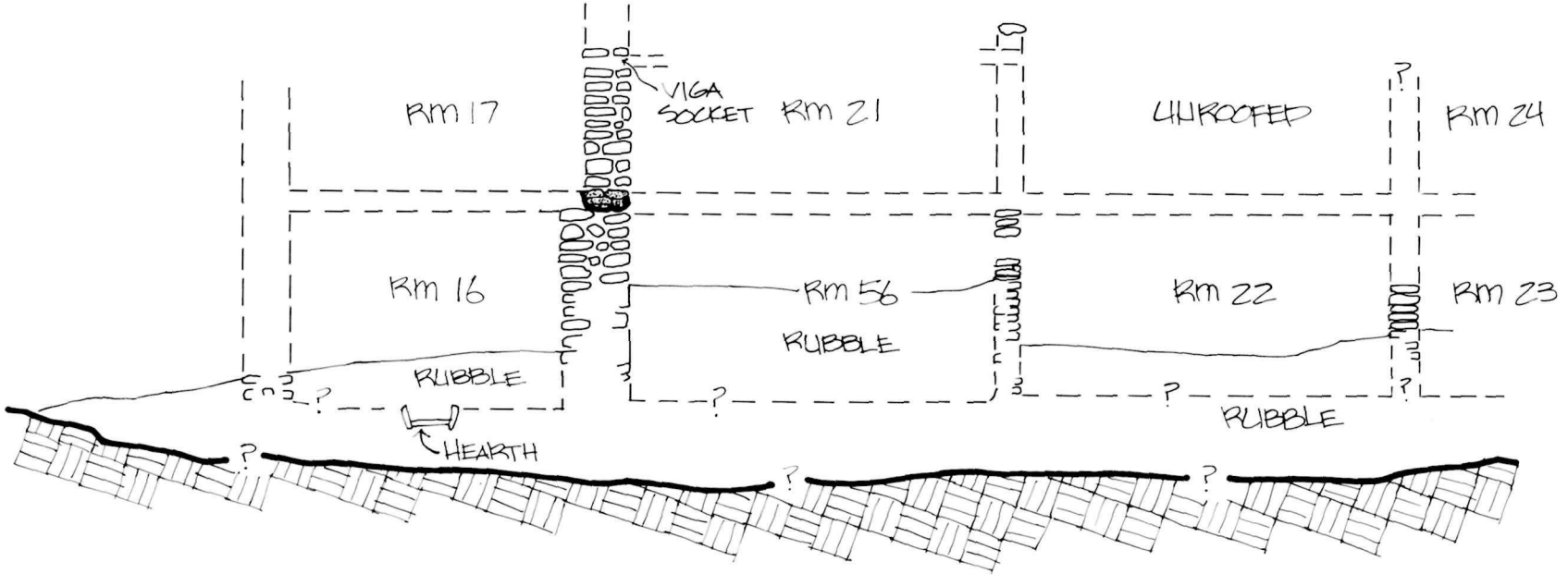
sliding rock EAST RUIN

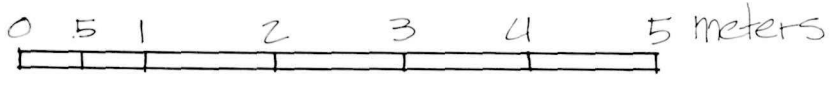


SLIDING ROCK • EAST RUIN
IDEALIZED PROFILE A - A' • FACING EAST

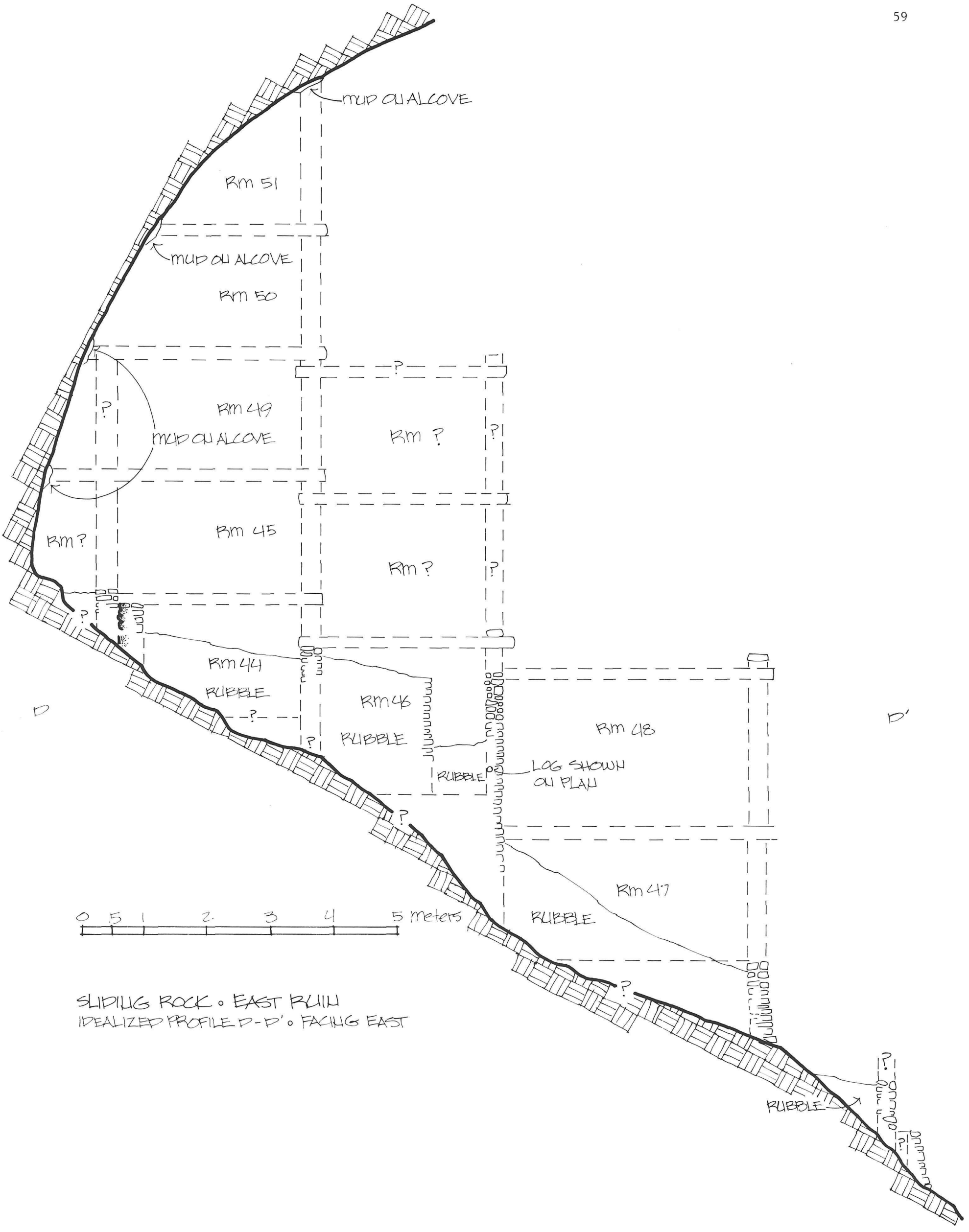


SLIDING ROCK • EAST RUIN
IDEALIZED PROFILE B-B' • FACING EAST





SLIDING ROCK • EAST RUIN
IDEALIZED PROFILE C-C' • FACING NORTH



SLIDING ROCK • EAST RUIN
IDEALIZED PROFILE D-D' • FACING EAST

If Room 6 is a mealing room (based on architectural analogues), then one could expect to find:

a. the remains of at least one jacal wall, or an open side of the room which has no wall;
b. a doorway connecting the grinding room with one adjacent, preferably foodstuff store room;
c. fixed mealing bins or multiple grinding implements on the floor of the excavated room;
d. a significantly higher proportion of grinding implements in the fill excavated from the room;
e. a significantly higher frequency of hammerstones used to roughen grinding implements, both in the fill and on the floor;
f. meal transfer facilities, i.e. scoops, ceramic vessels; when compared with other non-mealing rooms at Sliding Rock.

Thus, any assessments of room function contained herein should be regarded as hypotheses based upon an evaluation of what is currently known about that room. As such, they are subject either to verification or rejection after room excavation.

In order to generate such hypotheses, a certain amount of baseline data regarding room function has been compiled. What follows draws most heavily from Dean (1969), Hill (1966), and D. Morris (n.d.), with other observations generally taken from pertinent archeological literature of the Southwest. Because Dean has expended the most effort in correlating architecture and room function, the room types he defined will be used as a framework for a functional room typology. It is important to realize that in spite of the general nature of the room attributes which follow, Dean has used some rather localized architectural conventions which do not occur in the Canyon de Chelly area. An example is the entrybox complex (Dean, 1969: 28). Such developments have

been eliminated from consideration since the concern here is in providing a pertinent composite of archeological details in rooms throughout both stages. D. Morris (n.d.) offers some comment on more local room function at Antelope House. All of the room types identified by Dean (1969: 26) are found at Sliding Rock. These include living rooms, granaries, store rooms, ceremonial rooms, grinding rooms, and courtyards. The attributes of each will be discussed in detail before comparing them with rooms at Sliding Rock.

Living rooms. Living or habitation rooms are those enclosed rooms used for a variety of domestic activities, including cooking, eating, sleeping, and maintenance tasks. Stevenson (1905: 292) adds entertaining guests and some storage of clothing to this list. The architectural details of such rooms include:

1. Walls having:
   a. less than five coats of interior plaster;
   b. occasional jacal construction;
   c. a tendency toward poorer quality masonry composed of lower percentages of stone and chinking, and higher proportions of adobe;
   d. frequent sooting;
   e. features including wall niches, shelves along bedrock outcrops, and wall peg rack supports.

2. Doorways involving:
   a. locations through walls, with roof hatches in ca. 25% of Tsegi Phase rooms;
   b. preference for locations in jacal walls if such walls are present;
   c. higher sill-to-lintel doorway height than storage rooms;
   d. sills at or below exterior ground surface;
   e. evidence of interior closure preferred, although exterior closure may occur;
   f. horse collar adobe mouldings around doors.

3. Floors with:
   a. central slab-lined hearths without moulded clay rims;
   b. mealing bins;
   c. indeterminate floor holes;
   d. careful leveling and plastering.

4. Sizes:
   a. exceeding five square feet (.5 square meters);
   b. relatively greater than storage rooms;
   c. more likely to have sufficient headroom for standing.

Granaries. These rooms have only one purpose: the succesful storage of foodstuffs against invasion by rodents and excess moisture. Steen (1969) uses the term corncrib for the same kind of room but Dean's term is more expansive and will be retained here. In general, the emphasis on granaries is on exterior sealing, to prevent unsolicited access. Features include:

1. Walls having:
   a. better developed interior than exterior masonry, with more exterior chinking and plastering;
   b. an absence of jacal construction;
   c. no sooting;
   d. infrequent interior wall features, although horizontal pole shelves and rows of hanging pegs are occasionally present.

2. Doorways having:
   a. wall entries with adobe mouldings, exterior closure and sealing, a lower sill-to-lintel doorway height than living rooms, elevated sills, perhaps with exterior steps; or
   b. roof entries with hatches set on stone slabs, and originally sealed with puddled mud.

3. Floors with:
   a. few floor features or floors with none;
   b. no floor leveling, even if area is uneven;
   c. frequent flagging, if not above bedrock;
   d. thick clay seals if multiple-storied.

4. Sizes
   a. possibly variable, but tending to be smaller than living rooms;
   b. less headroom than living rooms.

Store rooms. Dean (1969: 26) discusses few definitive features useful for identifying storage rooms. Basically, store rooms without specialized doorway sealing conventions are construed to be simple store rooms. For example, rooms with doorways which seal from the exterior are granaries. Otherwise, they are merely store rooms for non-food stuff items. Stored items included ceremonial goods and valuables (Stevenson, 1905: 292). Elongate items may be stored among the roof poles (Judd, 1954: 46). Because of poor doorway preservation at Sliding Rock, and the presence of adobe mouldings on both storage and living rooms at Antelope House (D. Morris, n.d.: 57), store rooms are difficult to identify at Sliding Rock, a point which will be returned to momentarily (p.75).

Ceremonial rooms. This room type at Sliding Rock is probably limited to kivas, so this discussion will concentrate on them. Other ceremonial rooms include great kivas and clan houses. The former is absent from Sliding Rock, and the latter probably is, although there are some indications that certain living rooms may have been more closely related to kivas than others. Without wishing to recap Smith's (1952: 154-165) discussion on kivas and other rooms, it is necessary to point out that kivas are more than and sometimes exclusive of a fixed constellation of architectural details. One of the problems in dichotomizing between kivas and pithouses was alluded to previously: they seem to share many

interior features. It is probable that the real differences between them lies in the kinds of activities performed within them. Pithouse floors tend to be populated by material culture remains left during a variety of domestic tasks, perhaps with some ceremonial items. Tasks performed by women, especially grinding corn, are more apparent. On the other hand, kivas tend to produce an increase in the numbers of ceremonial items, and those domestic tasks represented by residues are usually male-oriented.

A general feature of kivas is their circular shape, combined either with full subterraneity or an attempt to make them appear to have been built underground (Dean, 1969: 31). They may also have an encircling banquette. Other kiva features pertinent to those at Sliding Rock are:

1. Walls having
   a. higher quality masonry, with a tendency toward more elaborate stone preparation before emplacement in the wall, when compared with related room masonries;
   b. multiple plaster applications, frequently painted with designs;
   c. features which include niches in conventional locations, roof support structures, and ventilator openings (in above-floor forms).

2. Doorways located in the roof, generally above the hearth.

3. Floors with
   a. elaborate plastering or flagging;
   b. numerous floor features, including a slab-lined hearth, ash pit, deflector, ladder holes or pit, loom anchors, sipapu, ventilator tunnel (in below-floor forms), and indeterminate holes;

c. conventionally located ventilator, deflector, hearth, ashpit, and sipapu, usually along an approximate north-south axis.

4. Sizes
   a. A minimal height between floor and ceiling of 68 inches (169 cm);
   b. variable diameters, with total area tending to exceed that of other enclosed rooms.

Grinding rooms. Synonymous with the mealing room, this room type is identified by Dean (1969: 33) only by the presence of mealing bins, a group of two to four permanently emplaced metates surrounded by vertical slabs. At Antelope House, D. Morris (n.d.: 60) notes that both enclosed rooms and courtyards are marked by these bins, suggesting that seasonal weather changes might be responsible for the distribution. Other features are:

1. Walls exhibiting jacal or flimsy masonry construction along at least one side, or an unenclosed side;

2. Access through the unenclosed side, or doorways to adjacent rooms;

3. Floors lacking any floor features except the mealing bins;

4. Frequently unroofed.

Courtyards. Courtyards or plazas were identified by Dean (1969: 33) as formed by the enclosed rooms surrounding them. Consequently, courtyards are largely a function of village layout. They may also occur on roof tops. Several architectural details are found as floor features. These are hearths, bedrock mortars, storage pits, and mealing bins. Dean (Ibid.) and D. Morris (n.d.) concur that these areas are prime living locales during periods of good weather.

Room Function at Sliding Rock

As noted previously, the five principal room types identified by Dean are all present at Sliding Rock, but both the Tsegi Phase attributes and their application to the Canyon de Chelly area require modification. Inclusion of comments by D. Morris (Ibid.) into the foregoing attribute lists was one means of such alteration, but not enough detail is present from various sources of on-site evidence to be certain of Sliding Rock room function. In addition to alterations of the architectural details which will be discussed presently, several other attributes were used to infer function. These are based upon traditional archeological literature and inferences on human behavior and include a composite of size and shape, and room location.

Shape and size. Using size as a criterion for identifying room use has been denigrated by Dean, as noted elsewhere. In general, this caveat is supported by the Sliding Rock data. Except for ceremonial rooms (kivas), when the sizes of room classes are compared, there is considerable overlap. Smaller rooms at Sliding Rock generally tend to be identified as granaries, although a few granaries are larger than the smallest living room. Because of this situation, regularity of shape was combined with size in an attempt to better assess room function. This method is based on the assumptions that (1) based on architectural trends elsewhere, regular trapezoids approaching rectangles or squares are the preferred room shape, (2) people prefer to spend more

time in rooms of the preferred shape, (3) living rooms are the enclosed rooms in which people spend the most time, (4) therefore living rooms will tend to be of regular rectangular or square shape. Kivas are excluded. Admittedly, this is not a very strong argument, but since size has not proven to be foolproof criterion for identifying individual rooms, perhaps if the two are used in concert, more accurate results can be obtained.

Location. Although properly discussed as part of village layout, the location of rooms was used to infer their function. Sliding Rock's village plan is similar to other sites in which living rooms are located at the front, with storage rooms at the rear. Lancaster et al. (1954: 38) have made this inference at Mesa Verde, and Judd (1954: 47) has added that rear rooms on the ground floor are almost always storage rooms at Pueblo Bonito. At Pecos Pueblo, Kidder (1958) notes a similar situation for ground floor rooms which were subsequently purposely filled with trash. The difference in layout between Sliding Rock and either Antelope House or Tse-ta'a precludes much in the way of comparison with local excavated sites. Mindeleff (1891: 143) notes that ground floor rooms are used for storage at Hopi, as does Dorsey (1903: 113).

In summary, rooms located at the bottom storey near the rear of the alcove were usually identified as storage rooms. Most were filled with rubble, obviating recognition of any architectural details that would help assess room function. Furthermore, there

is no way to determine if most of these rooms were used to store food-stuffs or other items without reverting to Dean's assumption: unless a storage room can be identified as a granary, it is termed a storage room.

Sliding Rock living rooms. Living rooms at Sliding Rock usually are trapezoidal to rectangular in shape, except where alterations in alcove morphology require modification. Size is rather variable, ranging between 19 m^2 and 3.6 m^2, and although the mean for 13 rooms is 7.39 m^2, the modal size approximates 4.5 m^2. Only highly probable living rooms whose sizes could be fairly accurately computed were included in the manipulations in Table 4 and Figure 20. Generally, living rooms are situated at the front of the room block, or on second storey floors. Only two features were considered diagnostic of living rooms. These are (1) sooting and/or hearths and (2) ventilation ports or windows. Ancillary features recorded at Sliding Rock are ones which are actually shared attributes with certain of the other room classes, including:

(1) one to two finish coats of plaster on interior walls, with occasional painted designs;

(2) puddled, leveled floors;

(3) doorway size. Doorways tend to be larger for rooms identified as living rooms, especially in width, but the sample of exposed doorways is small and all are poorly preserved. No special treatments for any doorways, as noted by Dean (1969) or D. Morris (n.d.), are present.

Room Number	Floor Area (M^2)
3	8.25
7	9.25
9	19.00
16	9.67
20	4.39
21	6.30
22	4.79
24	4.64
30	4.43
31	3.60
33	5.80
35	8.69
56	7.22
N = 13	$\Sigma(M^2) = 96.03$
	$\overline{m} = 7.39\,m^2$
	s.d. = 3.88

Table 4: Sizes of living rooms. Only rooms whose functions are highly probable are included in this distribution. Mean living room size is 7.39 m^2.

A final point should be made regarding two living rooms with design-painted plaster. Room 9 and Room 30 both are immediately adjacent to kivas and may have enjoyed special status as ceremonial rooms or clan houses in addition to their principle function as living rooms. At Kiet Siel, Dean (1969: 97) has related kivas to surfacial rooms based on painting on room exteriors which replicated that of the kiva interior, and Hawley (1950: 287) alludes to the use of detached rectangular moiety houses. It is unlikely that Rooms 9 and 30 functioned formally in such a way, but the analogue should be mentioned (vide Figs. 18 and 19). It is probably coincidental that one such room was found in each major architectural unit of the site.

Sliding Rock granaries. Remaining information of granaries at Sliding Rock is limited, in spite of identifying 20 of them. Almost all had fallen and were inferred from mud lines on the alcove face; however data on size are available for 17 granaries. The mean size is 1.40 m^2 and the median size and mode are both 1.10 m^2 (Table 5, Fig. 20). The small size of granaries may reflect a kind of mini-max strategy in which a portion of the stored foods is left untouched, even if one granary is broached and destroyed by rodents. The other would still be preserved. In addition, if one granary were purposefully opened, the other would remain sealed, and therefore safe from unwanted natural intruders.

Based upon the examples of granaries which still stand, characteristics are (1) occasional use of thicker walls, (2) lack

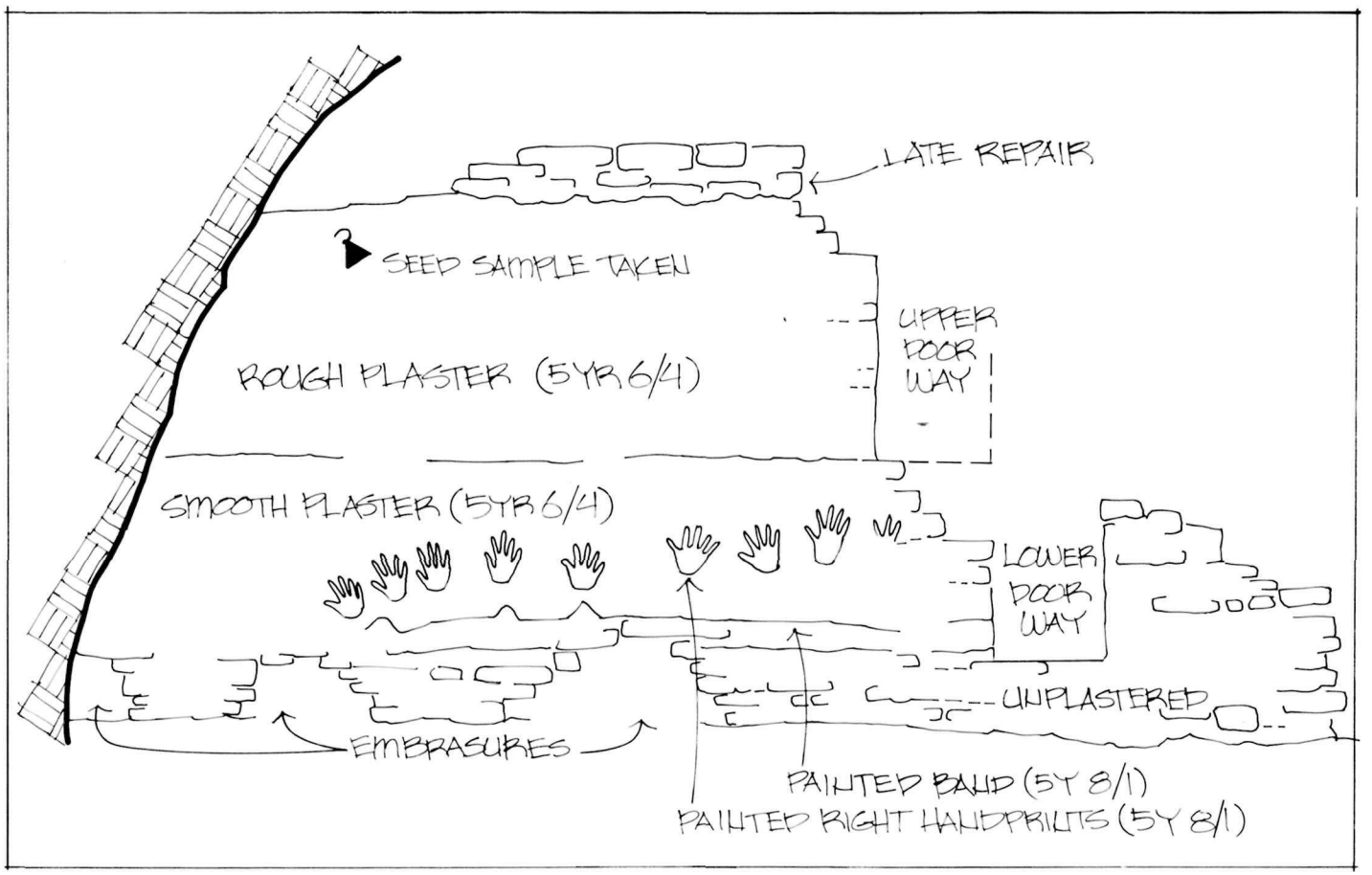


Figure 18: Schematic diagram of northeast wall of Room 9.

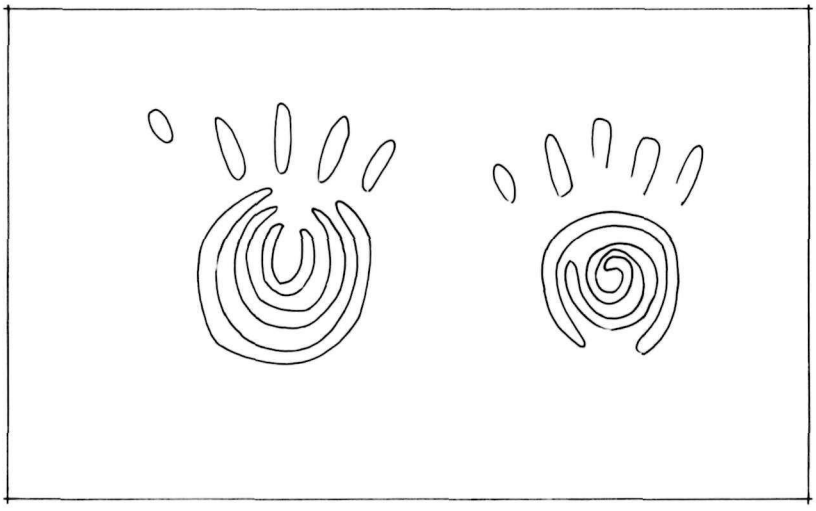


Figure 19: Two of the four handprints painted on the north wall of Room 30 in white (5Y 8/1).

Room Number	Floor Area (M^2)
1	4.50
4	2.47
5	1.80
14	1.43
26	.79
27	.68
28	.88
29	2.31
39	.91
64	1.10
65	1.00
66	.90
67	1.50
68	1.30
69	1.10
70	.85
71	.32
N = 17	$\Sigma(M^2) = 23.84$
	$\overline{m} = 1.40$
	s.d. = .95

Table 5: Sizes of granaries. Only rooms whose functions are highly probable are included in this distribution. Mean granary size is 1.40 m^2. Three unnumbered granaries above Room 14 are identifiable, but floor areas are indeterminate.

of sooting, (3) exterior chinking predominant, with little or none on interior, and (4) irregular shapes with rounded corners. Since virtually all granaries identified as such are built using the alcove face for one wall, it is not surprising they are all situated at the rear of the alcove. Cracks in the alcove face are sealed with mud plaster, presumably to prevent rodent or moisture ingress.

Granaries may be built on the insides of second storey rooms, as Room 70 was, or atop multiple storied rooms. Examples of the latter condition are Rooms 64, 65, and 66, surmounting Room 10, and Rooms 26, 27, and 28, above Rooms 20 and 25. Other granaries were themselves multiple-storied. Room 5 has three other stories above it, forming a kind of multi-floored "silo." Navajo granaries Rooms 12, 13, 14, and 15 are surmounted by mud lines showing that, at one time, Anasazi rooms were present forming a multiple storage unit. It appears that the use of multiple stories may have been a strategy for preventing rodent access to stored foods.

Only two granary doorways were noted at Sliding Rock. Both are narrower than the mean doorway width for living rooms (32 cm and 36 cm vs. 47.91 cm). No doorways in the ruin had intact lintels, so heights cannot be compared. Almost all granaries apparently had wall entries, but none of the sealing conventions noted by Dean (1969) for Tsegi Phase granaries are visible on the doorways which remain.

Sliding Rock storage rooms. Store rooms have proven to be

the greatest challenge in terms of identification at Sliding Rock. Dean's (1969) criterion distinguishing storage rooms from granaries is of no direct value because few doorways are presently exposed and there are no physical remains of attempts to seal granary doorways. Furthermore, there are no diagnostic architectural features which can be used to separate store rooms from living rooms. The sizes of storage rooms range from 1.80 to 5.42 m^2, with a mean size of 3.33 m^2, and a mode approximating 2.5 m^2. Only ten storage rooms had definable boundaries which could be used for calculating floor area (Table 6, Fig. 20). Shapes tend to be slightly more irregular than living rooms, although this factor is related to alcove fluctuations generated by store room location against the cliff face. As was noted previously, location was used extensively to identify store rooms. Two differences between store rooms and living rooms may be the use of roof hatch entries in store rooms, and lower ceilings than living rooms. Neither are foolproof characteristics, since Dean (Ibid.: 31) notes that it may not be possible to stand upright in living rooms. D. Morris (n.d.: 59) implies that headroom can be used successfully, but is difficult to determine in rooms having multiple floor levels.

In summary, the relationship between architectural features of storage and living rooms is complex. Although storage rooms have been identified here based upon location and lack of sooting, the distinctions between these classes are so minimal that certain

Room Number	Floor Area (M^2)
8	2.50
18	1.95
19	5.42
36	2.58
40	2.28
43	4.16
55	5.18
57	4.39
58	3.03
60	1.80
N = 10	$\Sigma(M^2) = 33.29$
	$\overline{m} = 3.33$
	s.d. = 1.27

Table 6: Sizes of storage rooms. Only rooms whose functions are highly probable are included in this distribution. Mean storage room size is $3.33m^2$.

identification must await excavation. The presence or absence of certain floor features, and variation in material culture residues recovered, may be the only way of valid identification. Storage rooms are also difficult to distinguish from granaries, based on available evidence. The salient nature of multistory granaries alleviates this problem somewhat, yet some store rooms may have been misidentified, and vice versa. This is not meant to imply that living rooms may have been termed granaries, however. Reference to Figure 20 indicates a degree of overlap in size and function of all room classes, except kivas, between ca. 4 and 4.5 square meters. Larger store rooms can thus be identified as smaller living rooms, and smaller ones are easily confused with larger granaries in the absence of other details. In spite of this problem, it is likely that store rooms do exist in fact, simply because not all inedibles can be stored in living rooms. Archeological and ethnographic support of this assertion from elsewhere are overwhelming. Only excavation will help unravel this dilemma.

Sliding Rock ceremonial rooms. All kivas at Sliding Rock are circular in shape, except Kiva C whose shape may be distorted by the pressure of fallen rubble. Its shape is best described by viewing Figure 13. Sizes of kivas are rather variable, and may relate primarily to the number of people using each one, as observed by Mindeleff (1891: 118). Only Kivas A, B, and C were intensively examined during the analysis, because Kivas D and E were virtually covered with rubble and situated in hazardous locations. A brief

synopsis of the general attributes of the three analyzed kivas is given here. Appendix A discusses other details:

Kiva A
- Diameters: 5.89m E-W; 5.72m N-S
- Floor area: 26.4m^2
- Number of finish plaster coats: 7
- Remodeled: no
- Banquette: no
- Ventilator: sub-floor type
- Floor: flagged
- Unusual features: shallow recess along southern quadrant

Kiva B
- Diameters: 5.08m E-W; 4.88m N-S
- Floor area: 13.73m^2
- Number of finish plaster coats: 38
- Remodeled: yes
- Banquette: yes
- Ventilator: subfloor type
- Floor: puddled adobe
- Unusual features: exterior wattlework framing

Kiva C
- Diameters: 4.32m E-W; 4.35m N-S
- Floor area: 16.9m^2
- Number of finish plaster coats: 6
- Remodeled: no
- Banquette: no
- Ventilator: above floor, with vertical slab deflector
- Floor: unknown
- Unusual features: shape, if not caused by wall deformation

Apparently, all kivas at Sliding Rock had flat roofs, perhaps supported in part by posts extending above the floor. These roofs were used as courtyards.

Obviously, kivas were the easiest room class to identify at Sliding Rock, although one enigmatic room with somewhat peculiar construction may have functioned as a kiva. Room 46 apparently underwent remodeling at some point. The newly added wall curves slightly, also creating an impression of subterraneity from the

room's interior. The multiple stories above Room 46 tend to negate this argument, however, and the remodeling is more likely to have resulted from structural buttressing attempts. That Rooms 9 and 30 may have had some ceremonial ties has already been noted, and Room 46 may have been used similarly.

Sliding Rock grinding rooms. Tentatively identified rooms of this class are rare at Sliding Rock. Identification is based upon the presence of jacal or open-sided walls since mealing bins are either buried (Room 6), or supplanted by a mortar ground into bedrock (Room 61) which may antedate enclosure as a room. Excavation is needed to reject or verify these identifications.

Sliding Rock courtyards. Courtyards at Sliding Rock are defined as unenclosed areas where a wide spectrum of activities probably took place. As a result, the large frequency and highly variable floor features alluded to by Dean (1969: 33-34) do occur. Two kinds of these areas are found at the ruin: (1) Kiva top courtyards are bound only by the front walls of rooms adjacent to them and the topmost course of the retaining wall which forms the site perimeter. Exterior walls of rooms nearby were plastered white (5Y 8/1). Laterally, kiva top courtyards may have been demarcated by wing walls, but there are presently no remains. Nevertheless, it is possible that social conventions served as intangible boundaries which tended to reduce interactions between courtyards. (2) Extramural courtyards appear as work areas outside of architectural units, mostly constituting use of the

Room Suite Number	Member Rooms	Number of Rooms	Total of roofed area (M^2)	Living		Granary		Storage		Grinding		Indeterminate		Period Used	
				Number	Floor Area (M^2)	Number	Floor Area (M^2)	Number	Floor Area (M^2)	Number	Floor Area (M^2)	Number	Floor Area (M^2)	Pueblo II	Pueblo III
2	1,2,3,4,72	5	39.00	1	8.25	2	7.97	0	—	0	—	3	18.28	?	?
9_1	5,6,7,9,67,68,69	7	38.30	2	28.25	4	5.70	0	—	1	4.35	0	—		X
7	5,6,7,8,67,68,69, 70	8	22.65	1	9.25	5	6.55	1	2.50	1	4.35	0	—		X
9_2	9,10,64,65,66	5	35.92	1	19.00	3	3.00	0	—	0	—	1	13.92		X
16	16,17,18,73	4	23.41	1	9.67	0	—	1	1.95	0	—	2	11.79		X
22	20,22,23,24,25, 26,27,28,55,57, 58	11	36.44	3	13.82	3	2.35	3	12.60	0	—	2	7.67	X	X
30	29,30,59	3	9.05	1	4.43	1	2.31	0	—	0	—	1	2.31	X	?
31_1	33/31,32a,32b.60	4	14.88	1	9.40	0	—	1	1.80	0	—	2	3.68	X	
32_2	31,32a,60	3	7.20	1	3.60	0	—	1	1.80	0	—	1	1.80		X
33	32b,33	2	7.68	1	5.80	0	—	0	—	0	—	1	1.88		X
35	35ab,36,61,71	4	15.09	1	8.69	0	—	1	2.58	1	3.50	1	.32	X	?
37	37,38,39,40	4	13.29	0	—	1	.91	1	2.28	0	—	2	10.10	X	?
56	19,55,56/21	3/4	16.14 / 24.12	1/2	5.54 / 13.52	0	—	2	10.60	0	—	0	—		X

Table 7: Composition of hypothetical room suites, by room class and floor areas of each room and entire suite. Only rooms with functions infered to be highly probable are included.

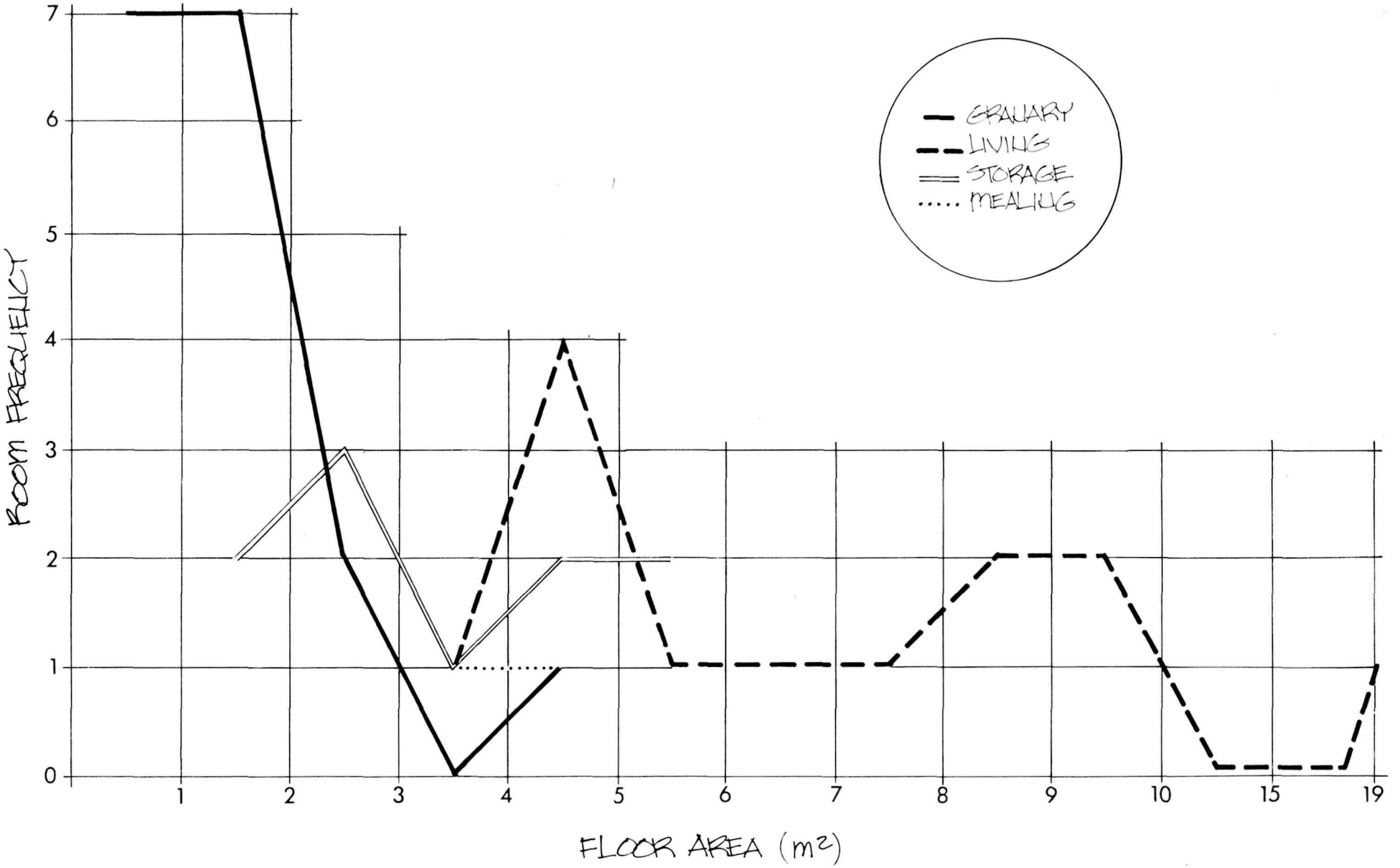


Figure 20: Plot of room frequencies and floor area for each Anasazi room class, except kivas. Only rooms whose functions are highly probable are included, although both grinding rooms are shown. Area of size overlap for all four room classes lies between ca. 4.00 and 4.50 m^2.

remainder of Sliding Rock alcove for doing daily tasks. Axe abrading grooves; incised sharpening grooves, perhaps for awls; and bedrock pits used as postholes, storage cists, or mortars are various exposed floor features marking the alcove floor. The entire alcove which lacked structures has been put to use as in this fashion. The alcove face above both courtyard types is frequently covered with rock art. Examples are located above Kiva A and in courtyards between major architectural units. These pictographs appear in a variety of colors and motifs, but were not examined in any detail by the study. De Harport (1959: 170) provides the best available discussion, however cursory.

CHAPTER VI:

ROOM GROUPINGS

Based upon both ethnographic and archeological analogues, it is apparent that rooms at Sliding Rock can be clustered into groups. These room clusters coincide with intravillage subdivisions, and include three hierarchical levels which will be examined here. These are the room suite, the courtyard complex, and dual divisions, all of which are once again offered as tentative working hypotheses for structuring future research. It is difficult to infer the social concomitants of each of the clusters from available archeological or ethnographic evidence, although residence patterns have been inferred from archeological data by some researchers (Longacre, 1970). These attempts generally have been criticized on methodological grounds (Lischka, 1975), as well as by assertions that they are but oversimplified models of ethnographic reality (Stanislawski, 1973: 114). The assumption that is made herein is that inferences regarding formal social structure are the domain of the ethnographer. Archeology is better suited to investigate informal and largely economic human groups. For this reason, the basic social unit for this study is the household, a perspective based upon ethnographic analogy (Titiev, 1944: 11; Beaglehole, 1937: 18). Its variable composition precludes any assignments of formal social structure (Bunzel, 1932:

477). It is assumed that this rather amorphous informal and essentially economic human group occupies the smallest of the room clusters at Sliding Rock: the room suite.

Room Suites

Ethnographically, a wide degree of variance exists in the number of rooms found in a room suite. For example, Bunzel (Ibid.) indicates that a house consists of one kitchen drawing from a single store room. At Zia, White(1962: 47) records that the typical house has three rooms: a living room, where sleeping and frequently eating take place; a kitchen for food preparation and occasional dining; and a smaller storage room. Mindeleff (1891: 101) suggests that only one room equates with his informants' idea of a house, although he discusses multiple rooms and houses as well, a seemingly vague contradiction. Stevenson (1905: 292) stipulates a range in room numbers per suite between two and eight while indicating that at Zuni the modal number lies between four and six.

In 1891, Mindeleff (1891: 109) observed that related rooms communicated with each other by doorways. This ethnographic information has been expanded upon archeologically to infer room clusters by the presence of doorways or other apertures. Dean (1969:34) uses this rudimentary concept, plus an assessment of wall abutments and room function, in defining room clusters:

> "A room cluster consists of at least one living room, one to four storage chambers, and, in all but a few cases, a courtyard. The rooms of a cluster open onto

> the courtyard or are connected with other rooms that do; consequently, a room belonging to a particular cluster can usually be entered only from its courtyard, either directly or by way of another room. Thus, the courtyard is the focal point of the grouping."

He then explains why he has used the term "room cluster" instead of courtyard complex used by Lindsay, et al. (1966: 19-20). This study will use courtyard complex as the next higher level of architectural agglomeration, as do both Dean and Lindsay, et al. Because room cluster is a less specific term, I will here use the term "room suite" in the same way as Rohn (1971: 31) does, meaning it to be synonymous with Dean's room cluster. Room cluster is used here to mean all identifiable groupings of rooms. Rohn's (Ibid.) definition of room suite is centered around one of the rooms in the suite, rather than around a courtyard:

> "The primary criteria used in delimiting suites center around mutual accessibility of their component spaces and relative isolation of these same spaces from other room blocks. Throughout the ruin, doorways tend to connect clusters of rooms and outdoor areas around one large nuclear space. Wall abutments generally indicate separate building stages between suites as well as sequential construction within a single unit."

Thus, a distinction between Rohn's and Dean's use of room suite or room cluster is that at Mug House, courtyards are replaced by rooms as the nucleus upon which the room suite is based. Rohn has identified suites using the room number of the room of central importance within it. These rooms frequently are larger than others in the suite and often are living or habitation rooms. Exceptions are the use of the earliest room in the suite to provide the identifying number. Because courtyards at Sliding Rock

are open spaces shared by more than one room suite, its village layout is more similar to Mug House than to the Tsegi Phase sites, albeit much less complex.

Hypothetical Sliding Rock Room Suites

Room suites at Sliding Rock are primarily identified by the presence or absence of connecting apertures, predominantly doorways. These doorways are best preserved in structures of the earlier room block, although the latter rooms also show them whenever walls of the multiple-storey dwelling have not fallen or are uncovered by rubble. Ancillary criteria are provided by similarities in village layout with other excavated sites. Because the later pueblo is more fragmented and rubble covered, while also being more complex in layout, room suites are significantly more difficult to identify. Not all rooms can be assigned to suites even with reasonable certainty. Rohn's practice of delegating the number of the primary room to a suite for identification and reference purposes will be followed. By primary is meant largest, and with the restrictions noted in Chapter V, probably coincides with one of the living or habitation rooms in the suite.

A secondary problem in suite identification resides in the occasional remodeling of initial room suites into new ones which incorporate only parts of the older ones, and may involve changes in individual room function. Ordinarily, this remodeling is visible by certain architectural details present inside rooms. The most frequent examples involve rooms of the earlier Pueblo II

room block reused as component rooms of Pueblo III suites upon site reoccupation: In these cases, explanations which account for the architectural variability will be offered as tentative guidelines for later verification or rejection. A summation of room suite data is given in Table 7.

Room Suite 2. Very poorly preserved, and consequently difficult to identify, rooms in this suite (Fig. 21) and their functions are:

Room 1:	granary	Room 4:	granary
Room 2:	living room (?)	Room 72:	?
Room 3:	living room		

The presence of Room 72 is inferred from mud viga sockets adhering to the alcove face, and the presence of pictographs well above Room 2 which it surmounts. Its function cannot be determined. It is possible that Room 2 was used for storage, but based upon its size (14 m^2), it was classified as a living room. Room 3 is sooted, and Rooms 1 and 4 are classed as granaries based upon architectural details. The total roofed area for the suite is 39 m^2, including an interpolated area for Room 72.

Room Suites 9_1, 7, 9_2. These room suites (Figs. 22, 23, and 24) have a complex history, based upon architectural details. The most apparent of these is the doorway joining Rooms 7 and 9, which was later plugged. Two doorways connecting Room 9 with the rooftop courtyard above Kiva A were used at different times. It is possible that, initially, ground floor Rooms 7 and 9 were a suite, along with Rooms 5, 6, 67, 68, and 69. Total roofed floor area is 38.3 m^2. When second stories were added, two suites oriented side by side

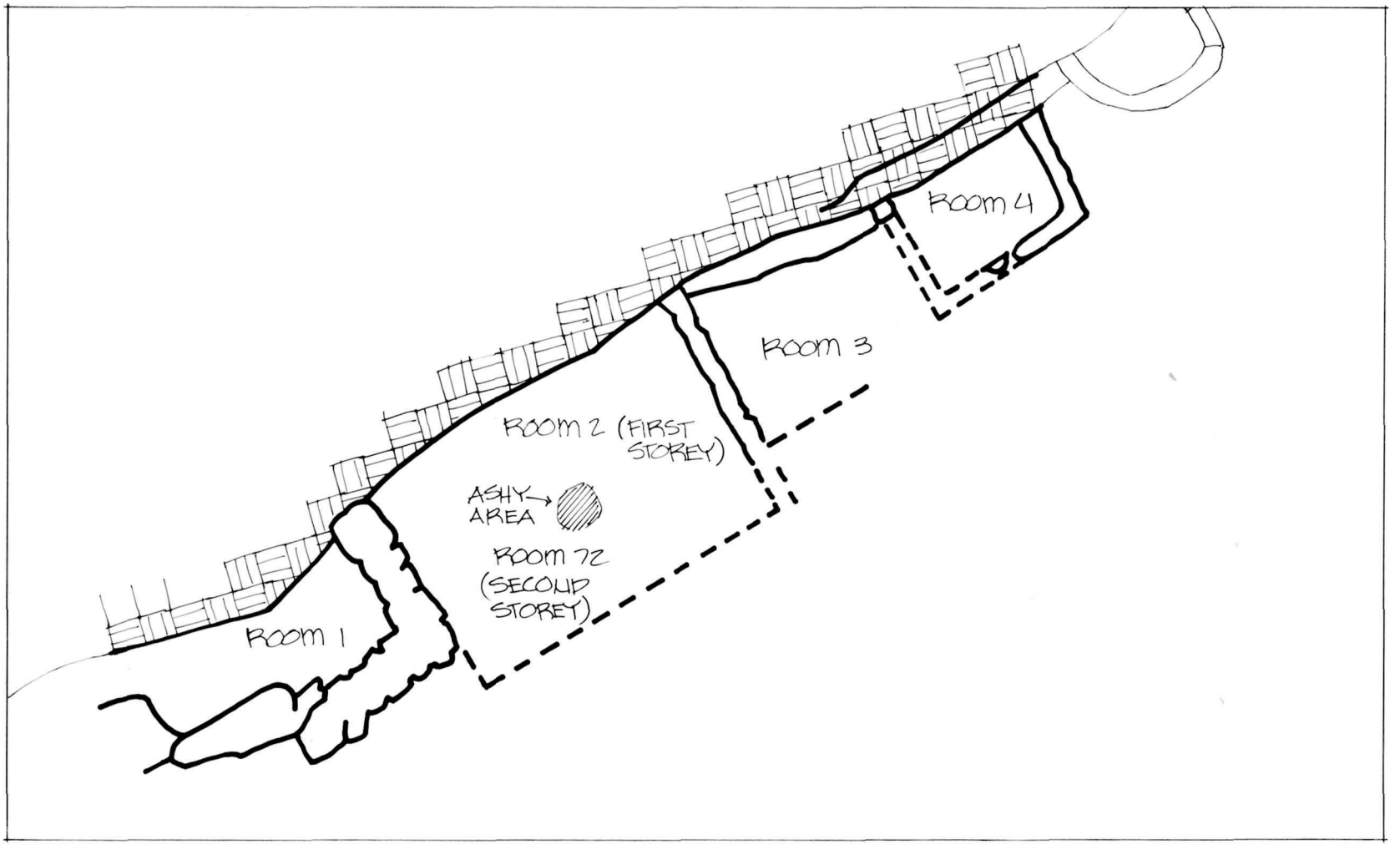


Figure 21: Room Suite 2, consisting of Rooms 1, 2, 3, 4, and second storey Room 72.

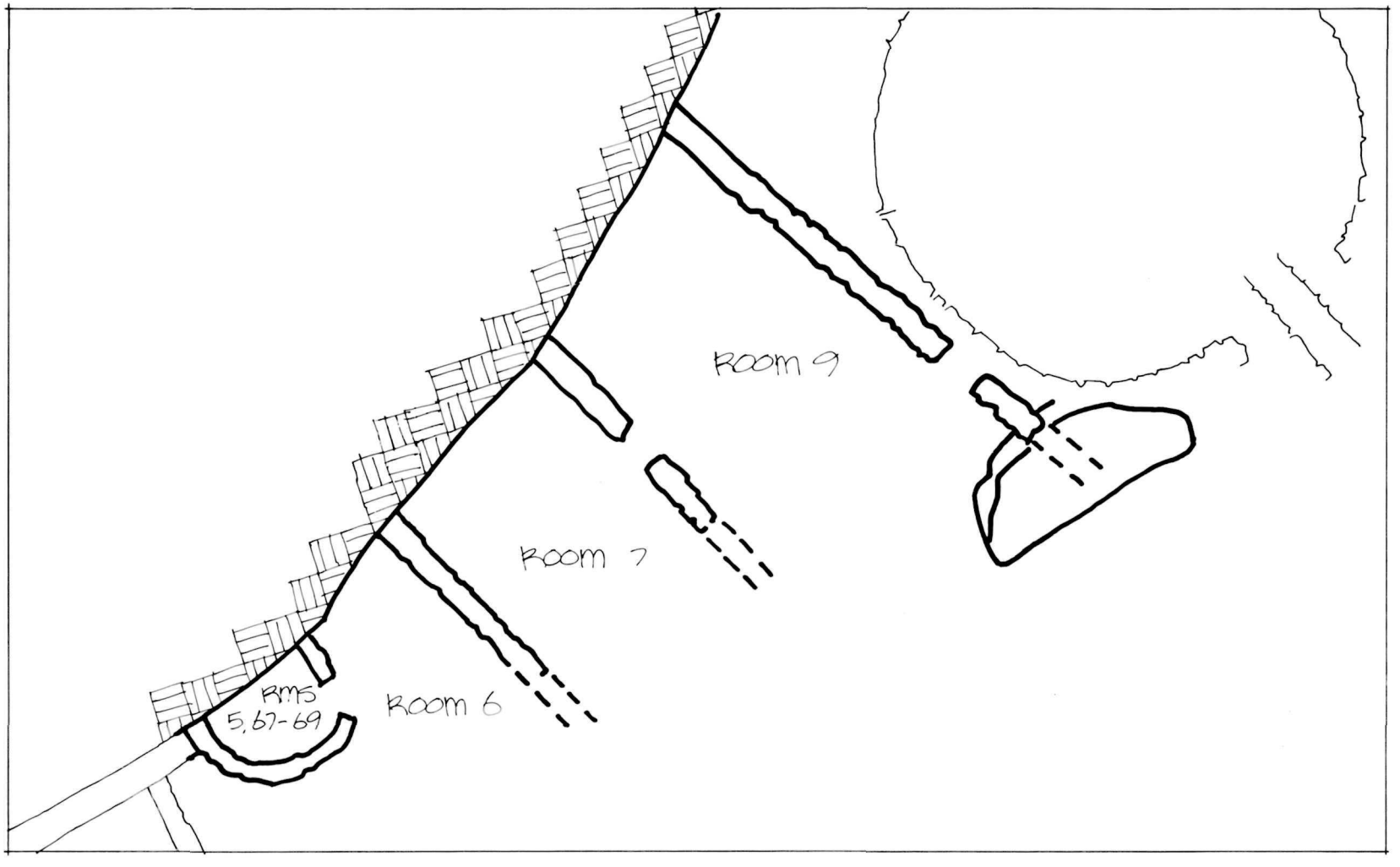


Figure 22: Room Suite 9_1; consisting of Rooms 5, 6, 7, 9, 67, 68, and 69.

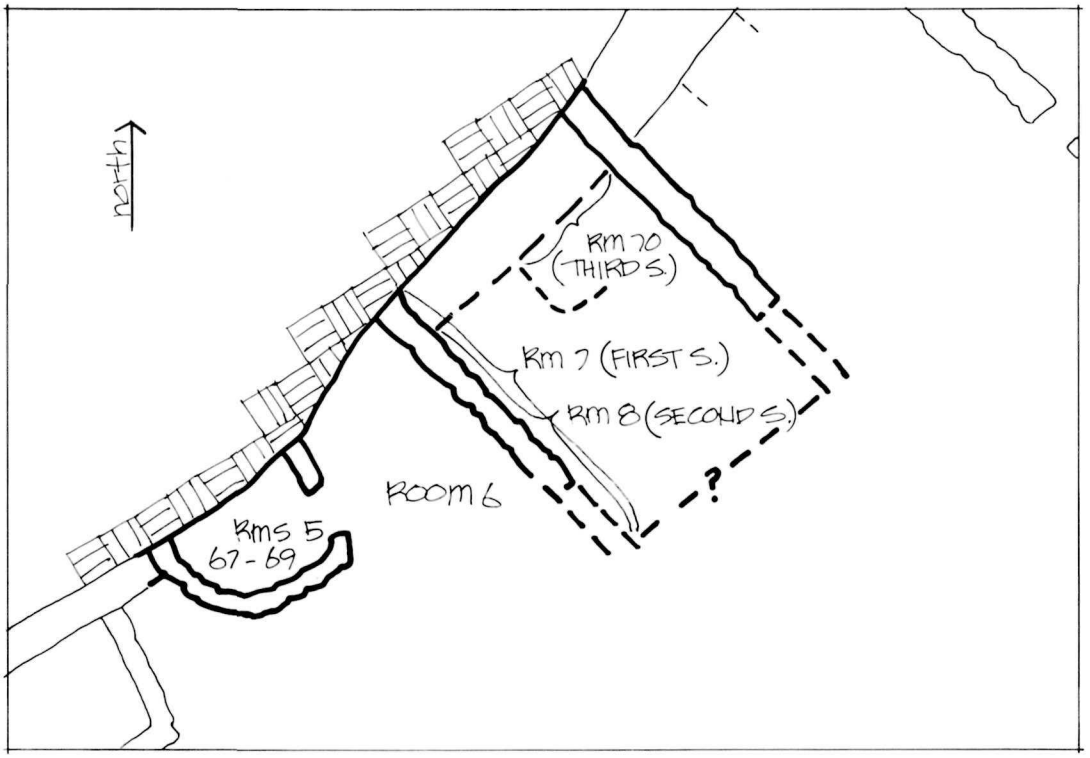


Figure 23: Room Suite 7, consisting of Rooms 5, 6, 7, 8, 67, 68, 69, and 70.

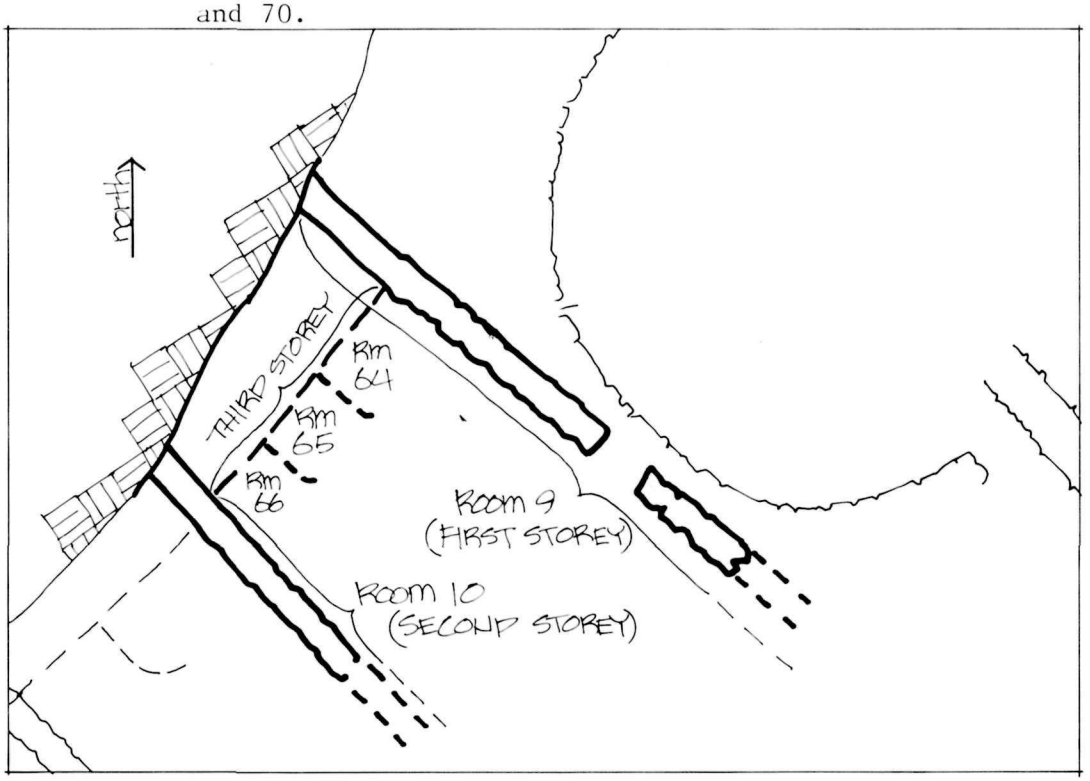


Figure 24: Room Suite 9_2, consisting of Rooms 9, 10, 64, 65, and 66.

were formed, and access between Rooms 7 and 9 was removed, with each of these rooms now the principal room of different suites:

> Room Suite 7; including Rooms 5, 6, 7, 8, 67, 68, 69, and 70 (1 living room, 1 grinding room, 1 storage room, 5 granaries; total roofed floor area: ca. 22.65 m^2)
>
> Room Suite 9_2; including Rooms 9, 10, 64, 65, and 66 (1 living room, 1 living room?, 3 granaries; total roofed floor area: 35.92 m^2)

These latter two room suites are the ones whose residues now remain. It should be noted that this conjectural reconstruction accounts for all known architectural variability within the various suites, but that it is again subject to confirmation by excavation. Unfortunately, the potential for verifying or rejecting these room suites is poor, because of the discontiguity of remaining walls, the lack of now fallen second storey floor features, and only limited amounts of fill reposing in the rooms.

Room Suite 16. As in the previously described suite, this one (Fig. 25) apparently underwent considerable remodeling caused, in part, by the addition of a later room block to one already extant. Other renovations involve changing the room size and perhaps the function of Room 18. The suite is two stories high, consisting of either three or four rooms whose functions are difficult to ascertain because much of the structure has fallen:

Room 16:	living room	Room 18:	storage room
Room 17:	living or storage room	Room 73:	?

Doorways which may connect Room 18 with Room 55, and Room 16 with Room 73 may indicate use of areas previously utilized by the earlier room block, although only one definable room is present

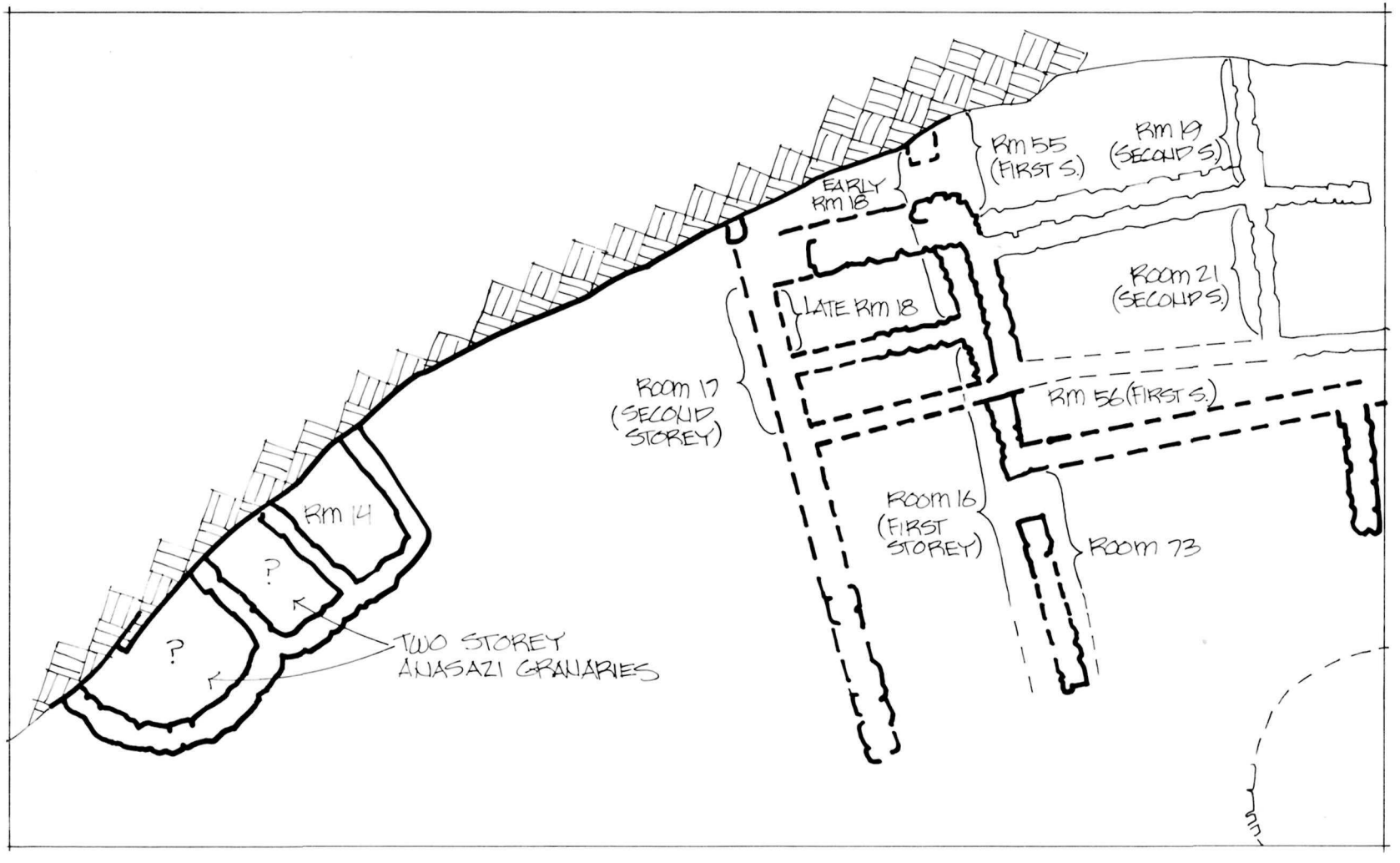


Figure 25: Room Suite 16, consisting of Rooms 16, 17, 18, 73, and possibly Rooms 14, 19, 21, 55 and 56. Also note Figure 34 and Room Suite 56.

(Room 73). The doorway to Room 55 may well have preceded the addition of the later rooms. Based on its proximity, the external area containing Rooms 12-15 may once have contained an Anasazi storage unit for food. Room 14 and two or three other unidentifiable rooms may have been a granary for this suite, although that area later was reused by Navajos. Excluding the granaries, total roofed floor area for the room suite approximates 23.41 m^2, although Rooms 16 and 73 are poorly defined.

Room Suite 22. This is the largest room suite at Sliding Rock in terms of numbers of rooms, with eleven (Fig. 26). It forms an easily definable unit which is fairly well preserved, with doorways connecting all rooms with standing wall. The rooms and their functions are:

Room 20:	living room	Room 26:	granary
Room 22:	living room	Room 27:	granary
Room 23:	living room?	Room 28:	granary
Room 24:	living room	Room 55:	storage room
Room 25:	storage room?	Room 57:	storage room
		Room 58:	storage room

Among the earliest room suites at Sliding Rock, at least part of it was cleaned out and reused during the Pueblo III rebuilding; and the suite may have been annexed to Room 74, or a later suite which originally contained it, but fell. Room 62 may also have been an original member room of the suite. Total roofed floor area is 36.44 m^2.

Room Suite 30. This small room suite (Fig. 27) typifies a frequent kind of cluster at Sliding Rock, especially for the Pueblo II room block:

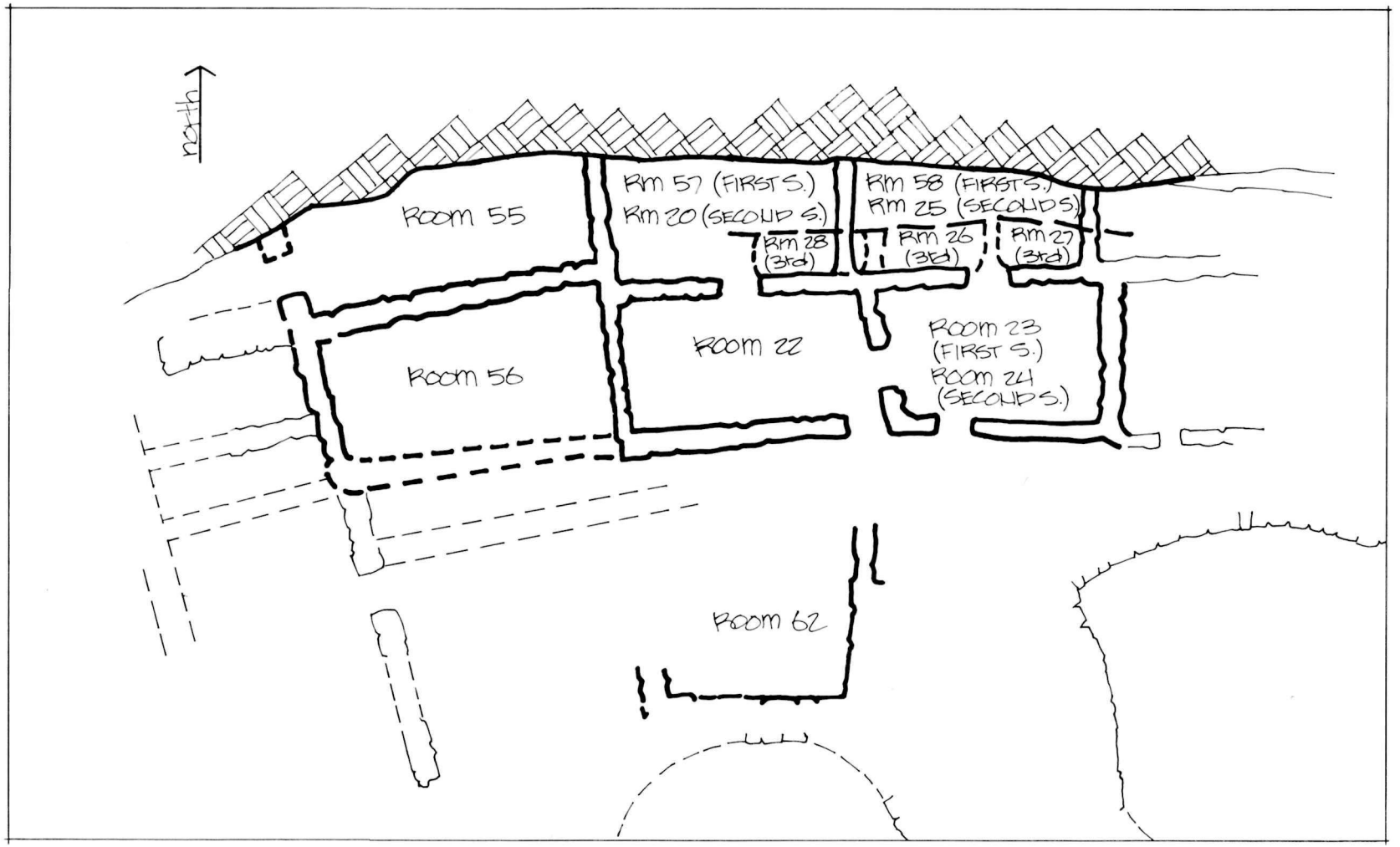


Figure 26: Room Suite 22, consisting of Rooms 22, 23, 24, 25, 26, 27, 28, 55, 57, and 58, and possibly Rooms 56 and 62.

Room 29: granary
Room 30: living room
Room 59: granary or storage room

The three rooms are arranged with Room 30 in front, connected with the lower of two stories at the rear by a doorway. Room 30 may have played a special role in the life of the village, based upon designs painted on the interior plaster. Total roofed area of the suite is only 9.05 m^2.

Room Suite 31. This suite (Figs. 28 and 29) has a complex history based upon architectural details. During the occupancy of the Pueblo II room block, Rooms 31 and 33 may have been joined. The wall which divides them is a compound wall of Pueblo III vintage; based upon available evidence, there was originally none present. This indicates that Room Suite 31_1 included:

Room 33/31: living room
Room 32a: granary?
Room 32b: granary?
Room 60: storage room

At this point in time, the total roofed floor area is 14.88 m^2.

After remodeling and apparent reuse, two comtemporaneous room suites were formed: Room Suite 31_2 and Room Suite 33. Room Suite 31_2 is a small one, composed of only three rooms:

Room 31: living room
Room 32a: granary?
Room 60: storage

Total roofed floor area is 7.2 m^2. Excavation can be expected to illuminate further this situation because all rooms in both the early and late suites are fairly well preserved and contain debris.

Room Suite 33. This suite (Fig. 30) may have been the end one for an initial Pueblo II use of the shelter, based upon the doorway

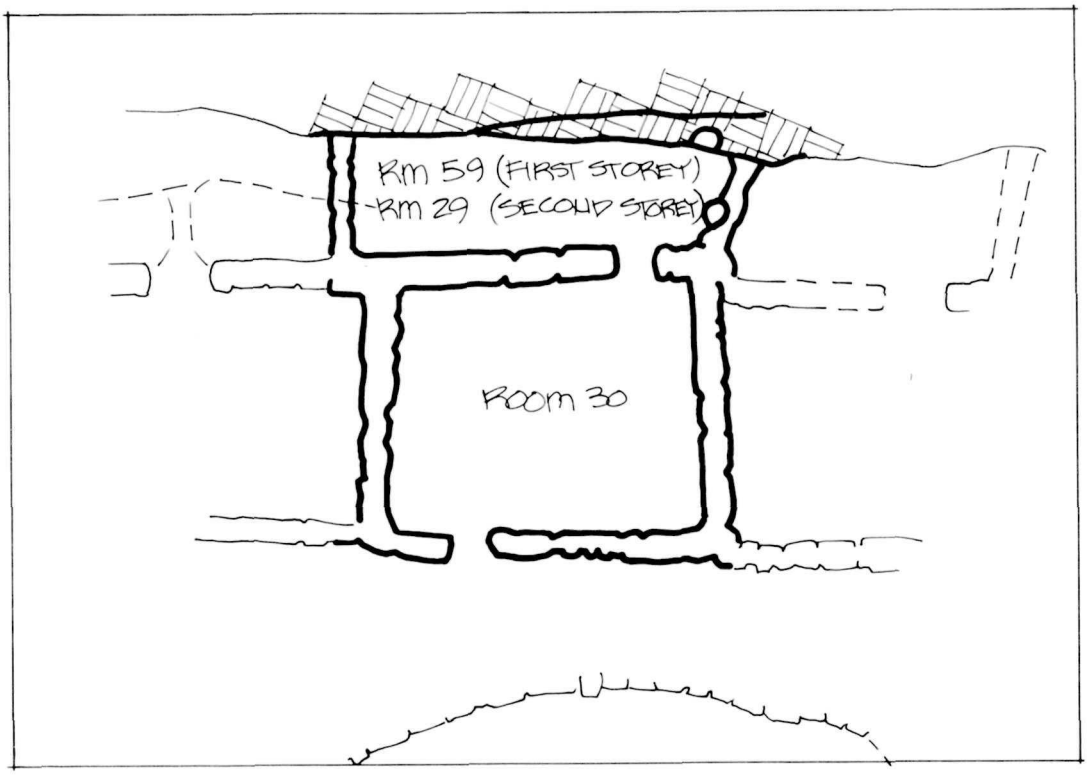


Figure 27: Room Suite 30, consisting of Rooms 29, 30, and 59.

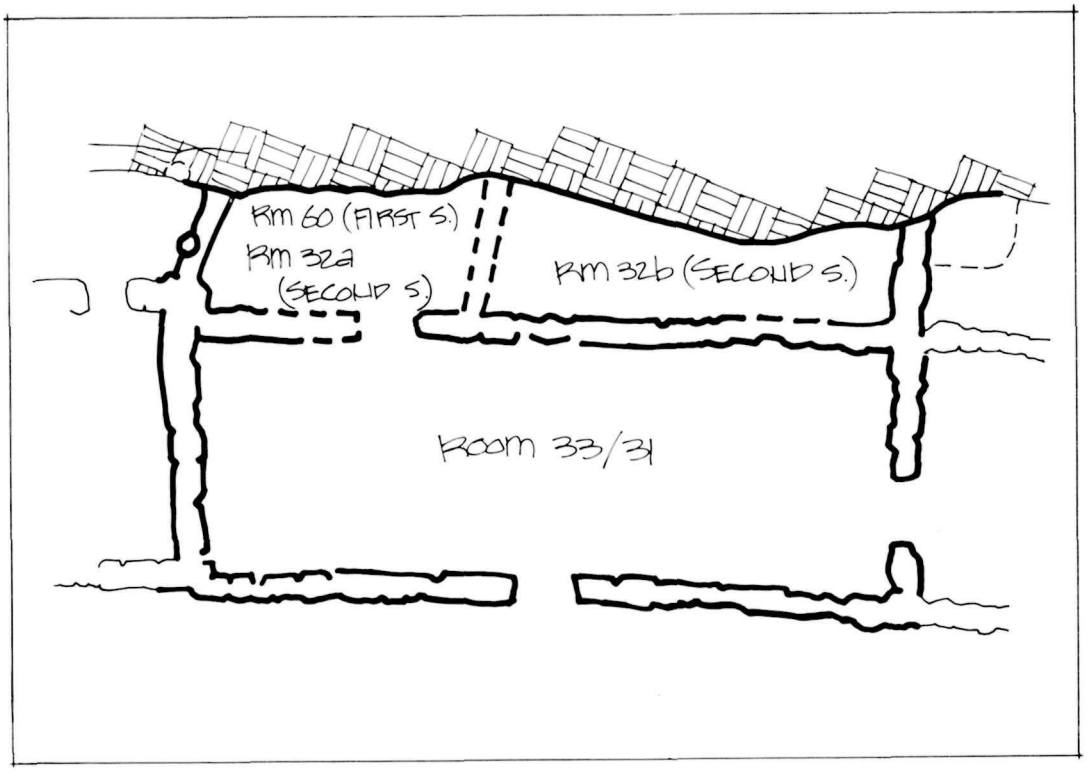


Figure 28: Room Suite 31_1, consisting of Rooms 33/31, 32a, 32b, and 60.

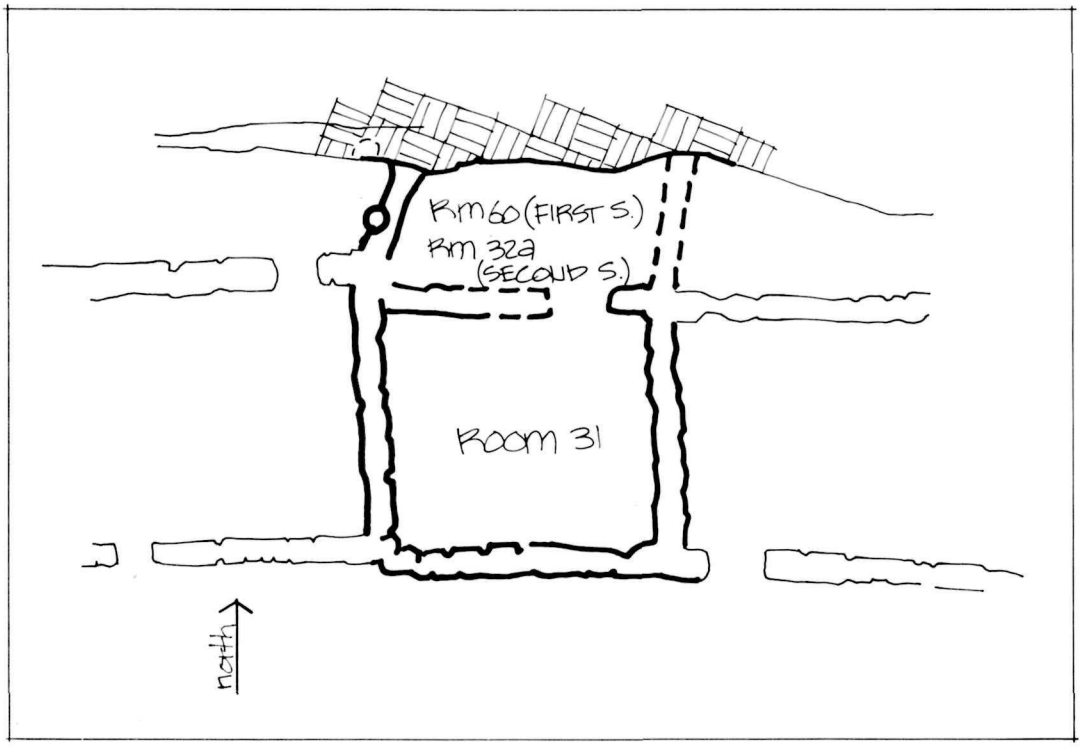


Figure 29: Room Suite 31_2, consisting of Rooms 31, 32a, and 60.

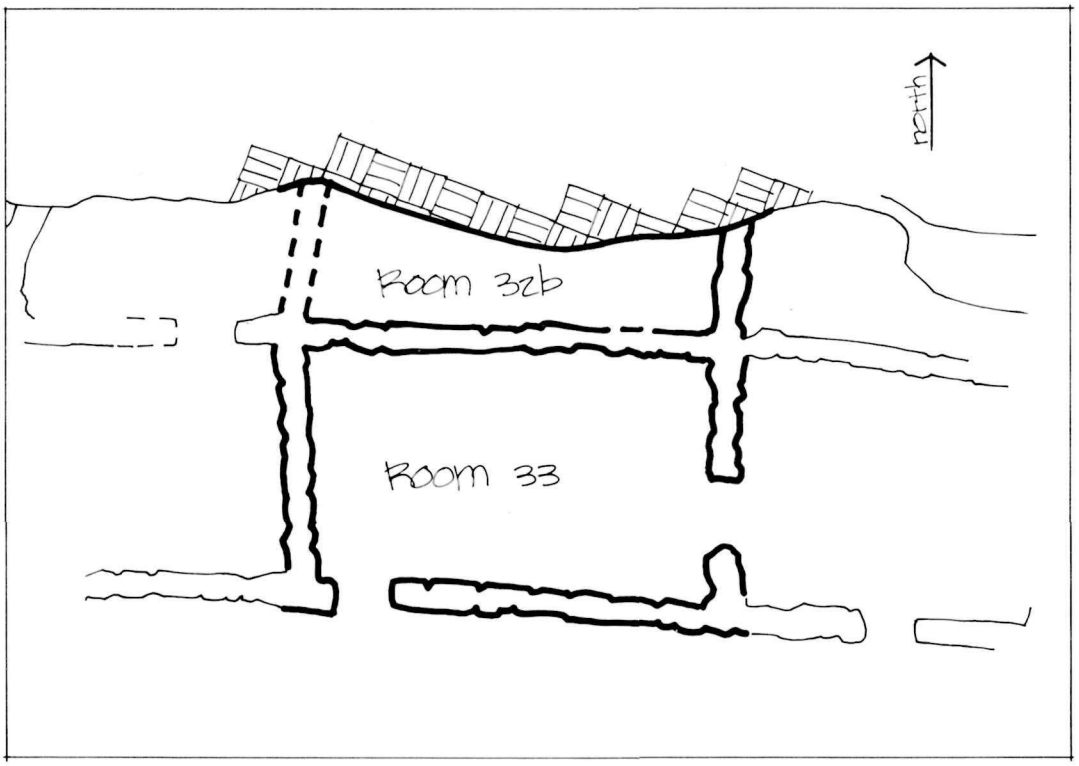


Figure 30: Room Suite 33, consisting of Rooms 32b and 33.

in the east wall of Room 33. It consists of only two rooms, which originally may have been part of Room Suite 31_1:

Room 32b: granary? Room 33: living room

Total roofed area of the latter suite is only 7.68 m^2.

Room Suite 35. Perhaps this room suite (Figs. 31 and 32) was appended to others in the Pueblo II room block, as village size increased by population accretion. Excavation would be required to test this assertion. Rooms in the suite are:

Room 35, a and b: living room
Room 36: storage room
Room 61: grinding?
Room 71: granary

Total roofed floor area of the suite is 15.09 m^2, including Room 61, which may not have been roofed.

Room Suite 37. Based upon the lack of bonding scars on the exterior walls of Rooms 35 and 61, the missing rooms and Rooms 37-40 were added later to an already established block of Pueblo II rooms. Rooms in the suite (Fig. 33) may or may not have been associated with the missing rooms at the suite level. Those still present were probably associated with each other, however:

Room 37: living room?
Room 38: storage room?
Room 39: granary
Room 40: storage room

Total roofed floor area approximates 13.29 m^2.

Room Suite 56. This room suite (Fig. 34) has a complex history engendered by Pueblo III reuse of one end of the Pueblo II room block. Originally, the room suite contained:

Room 56: living room
Room 55: storage room
Room 19: storage room

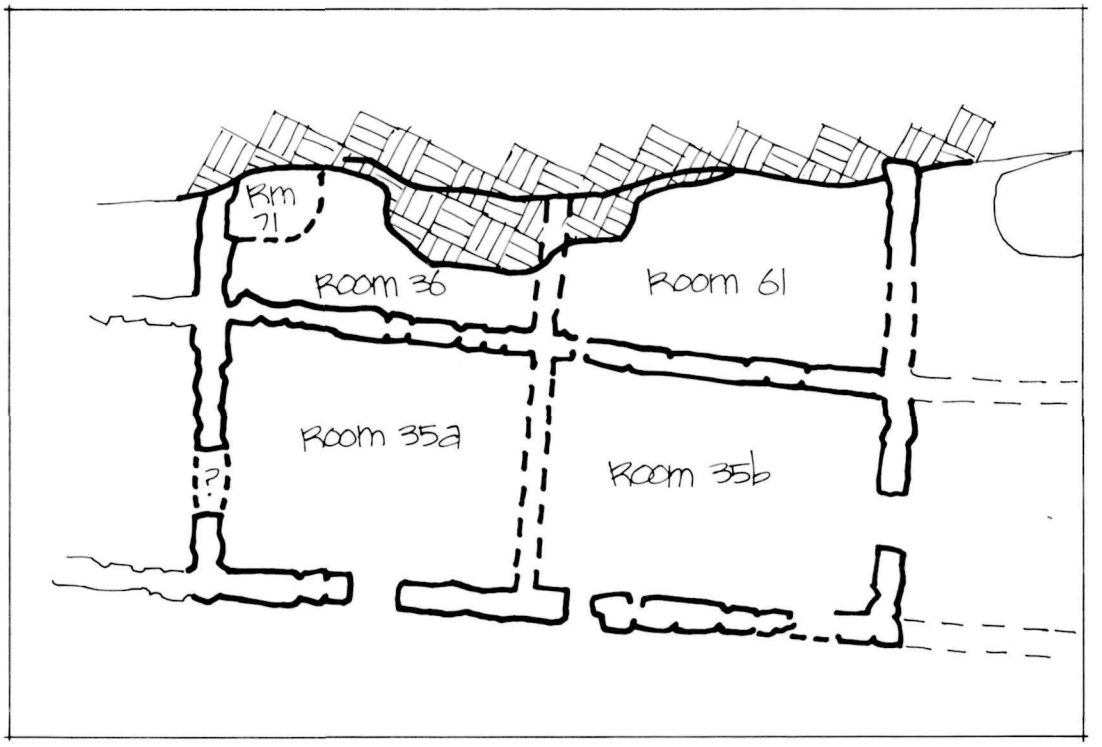


Figure 31: Room Suite 35, consisting of Rooms 35a, 35b, 36, 61, and 71.

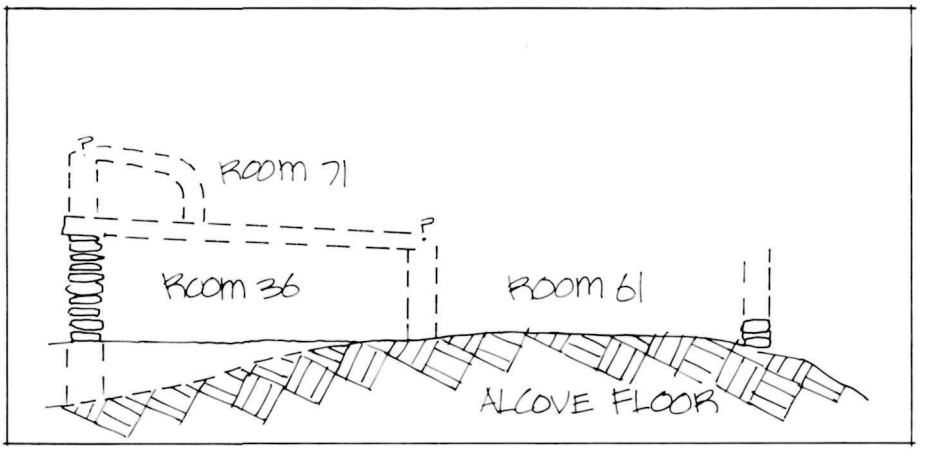


Figure 32: Idealized section across Rooms 36, 61, and 71.

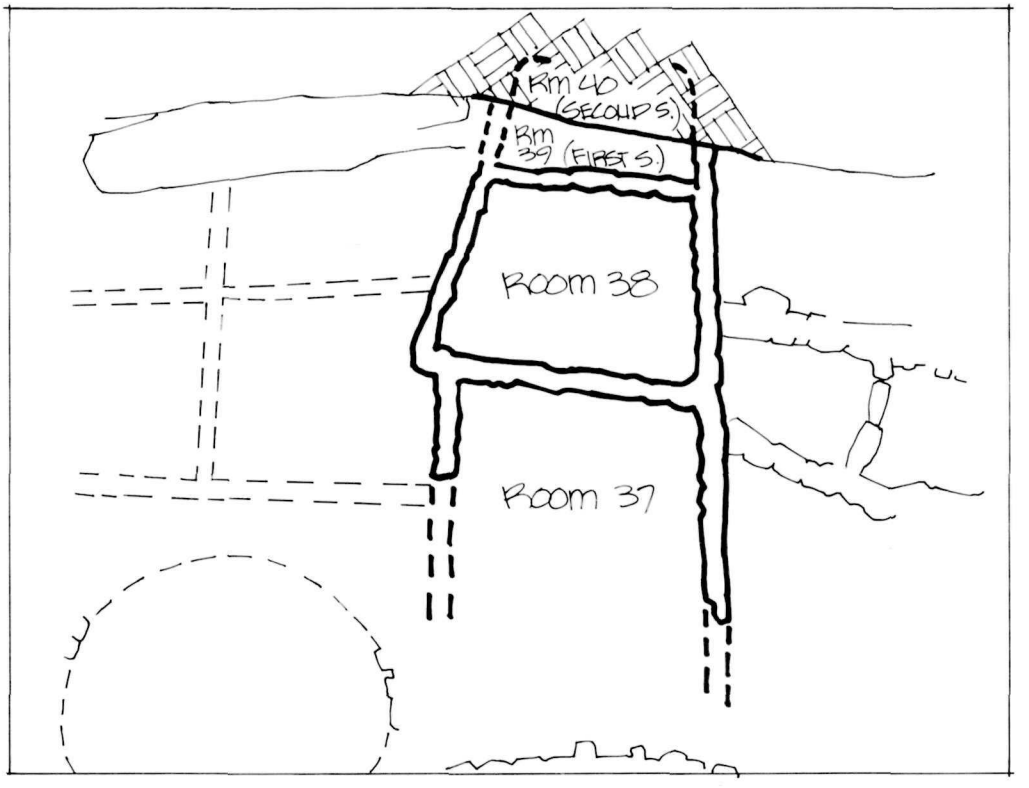


Figure 33: Room Suite 37, consisting of Rooms 37, 38, 39, and 40.

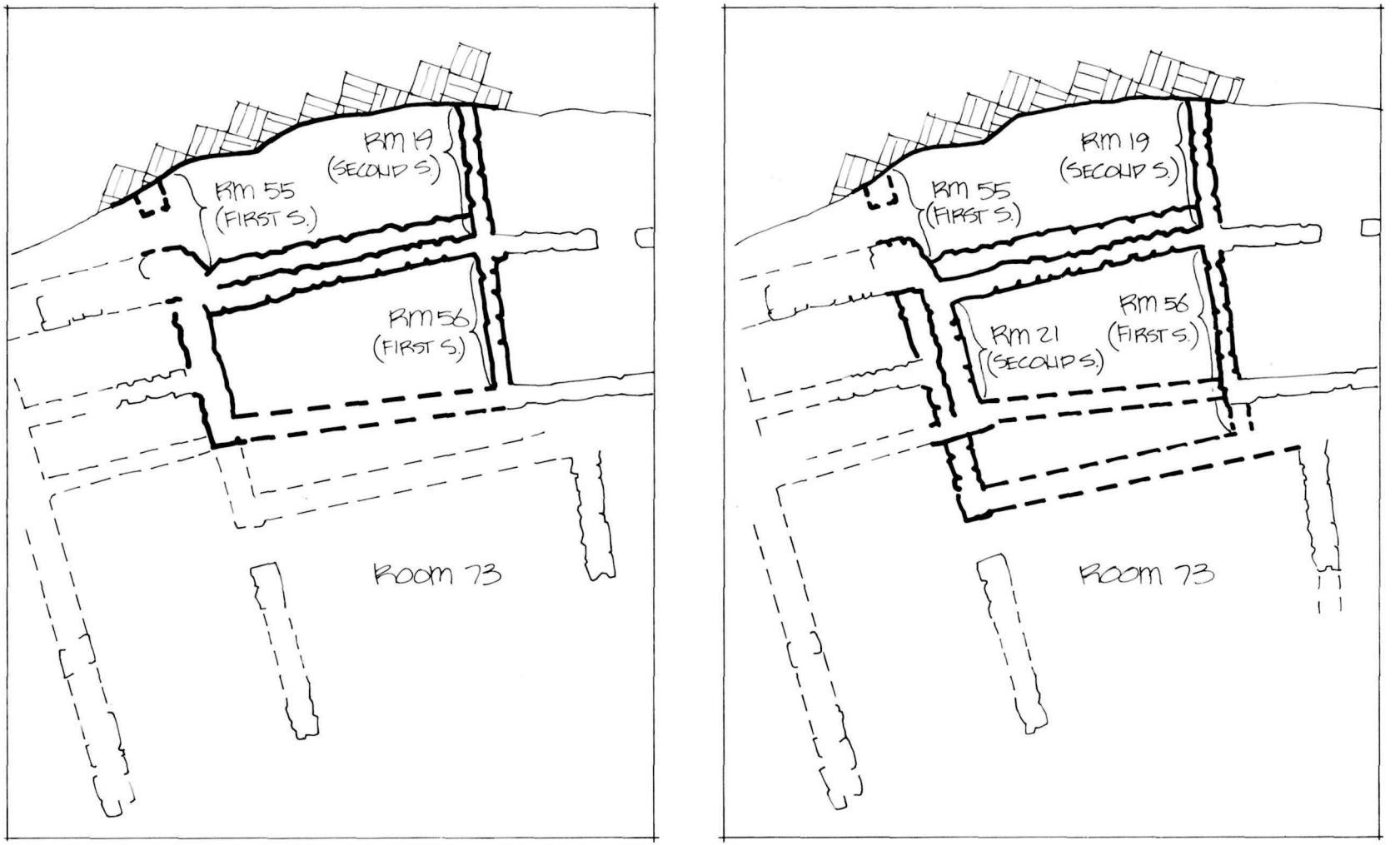


Figure 34: Room Suite 56, consisting of Rooms 19, 21, 55, and 56, and possibly Room 73. Room 21 was added, and Room 56 enlarged after the suite was originally built.

Total roofed floor area was 16.14 m^2. Pueblo III occupancy involved constructing Room 21 (living room) as an addition, and enlarging Room 56, bringing the total roofed floor area to 24.12 m^2. Room 73 may or may not have been involved in the suite as well.

Other rooms. Some rooms could not be assigned to any hypothetical suite because of their isolation or location in situations where architectural details were unknown or unexposed. These are especially prevalent in the multi-storied construction at the east end of the East Ruin. Rooms 47 and 48 were probably built as a unit, but their relationships cannot be ascertained at this time since it is likely Rooms 43-46 and 49-53 were also contemporaneously constructed. Rooms 63 and 44 are connected by a doorway, but not enough evidence is present to identify a suite.

Courtyard Complexes

Another hypothetical room cluster at Sliding Rock is the courtyard complex. Dean (1969: 34-35) defines it as:

> "A larger structural unit made up of room clusters [suites] whose association is usually determined by their possession of a courtyard in common.... Courtyard complexes consist of two or more room clusters grouped around a single courtyard, or two or more room clusters [suites] associated with related courtyards."

At Mug House, Rohn (1971: 37) records the presence of "courtyard units " and makes at least a tentative connection between them and Prudden's (1903: 234-239) unit pueblo as the units of site accretion in the Mesa Verde area. Perhaps this implies that new additions to the site occur neither as individual rooms nor room suites,

but as courtyard complexes. Whether this is true at Sliding Rock must remain conjecture. The chief feature of courtyard units or complexes, according to Rohn (1971: 37), is the use of kiva roof tops as courtyards, a condition almost certainly replicated at Sliding Rock. Architecturally, and perhaps socially, kivas are inferred to have integrated several room suites which are proximal to them. For this reason, kiva designations (Kiva A,B, etc.) have been used to identify courtyard complexes here. Again, courtyard complexes are simply a model based upon available architectural information. This model is subject to revisions resulting from new data recovered by excavation.

A final note on courtyards and courtyard complexes concerns extramural courtyards (those not on kiva roof tops). Considering the architectural information, these are very unlikely to have been tied to room suites, seeming rather to be related to overall village use.

Hypothetical Sliding Rock Courtyard Complexes

Courtyard Complex A. This structural unit is virtually synonymous with the West Ruin. Kiva A may be viewed as an integrative edifice which relates Room Suites 2,7, and 9_2. Room Suite 9_1 probably also used the complex before the other room suites were built. The location of Kiva A at one end of all rooms is probably caused by alcove morphology, with insufficient space present to front the rooms with the kiva.

Courtyard Complex B. This complex is difficult to define because of various remodeling episodes, both of Kiva B and the room suites nearest it (Figs. 35a and b). Although it is premature and perhaps overly optimistic to suggest it, perhaps the kiva renovations align temporally with changes in room suite composition. Initially, the complex may have consisted of Room Suites 31_1 and 35, which, parenthetically, would correlate maximum room suite floor area with maximum kiva floor area. After reuse of parts of the Pueblo II room block and Kiva B by Pueblo III Sliding Rock immigrants, Room Suites 33 and 35 may have been part of this courtyard complex.

Courtyard Complex C. Kiva C was built after Kiva B, based on wall abutment patterns, and may only be related to the Pueblo III reuse of the Pueblo II room block. Without excavation, it is impossible to be certain. If not, it may have included Room Suites 22 and 30 as part of the complex (Fig. 36a). Terminally, it may have also included Room Suites 30 and 31_2. These interpretations are closely related to the excavation both of Kivas C and D. Knowing when Kiva D was built, i.e. as part of early or late room blocks, is critical to this problem.

Courtyard Complex D. This complex may have included Room Suites 16, 22, and 56 (during the later occupation). Based solely on its location at the juncture of both Pueblo II and Pueblo III room blocks, anything is possible. The kiva is almost entirely filled with rubble from the collapse of multistoried construction and no details are visible. Excavation of Kiva D would prove

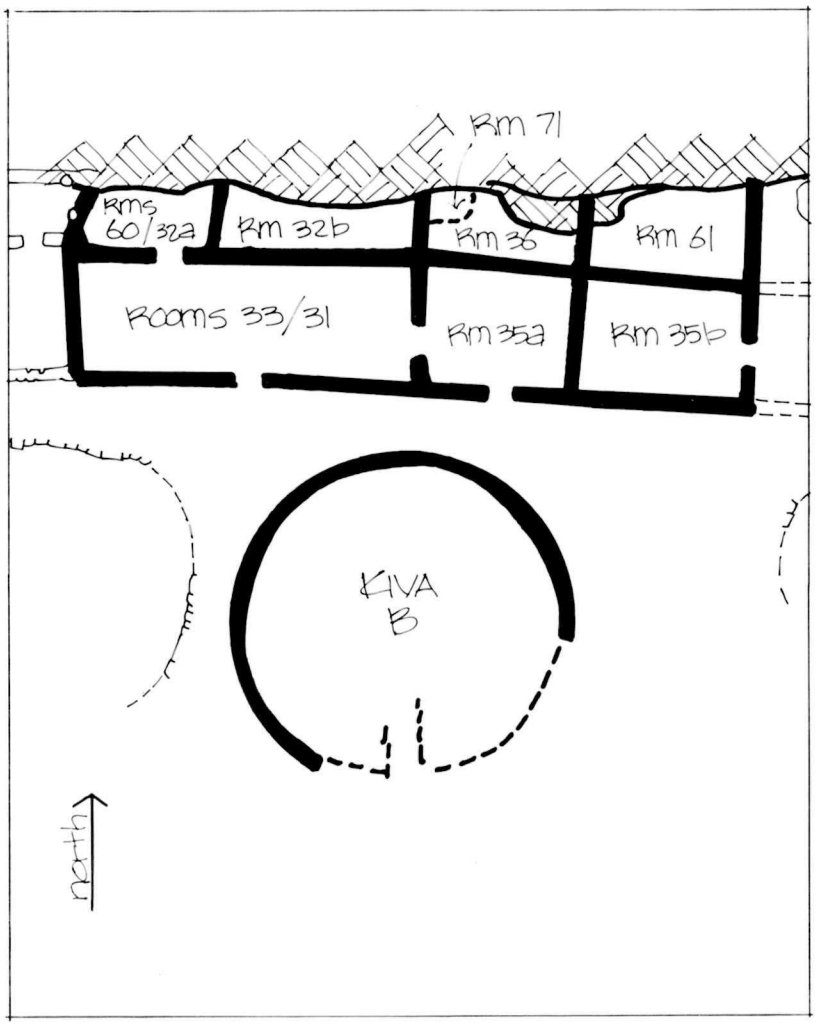


Figure 35a: Courtyard Complex B, earlier phase (Room Suites 31$_1$ and 35).

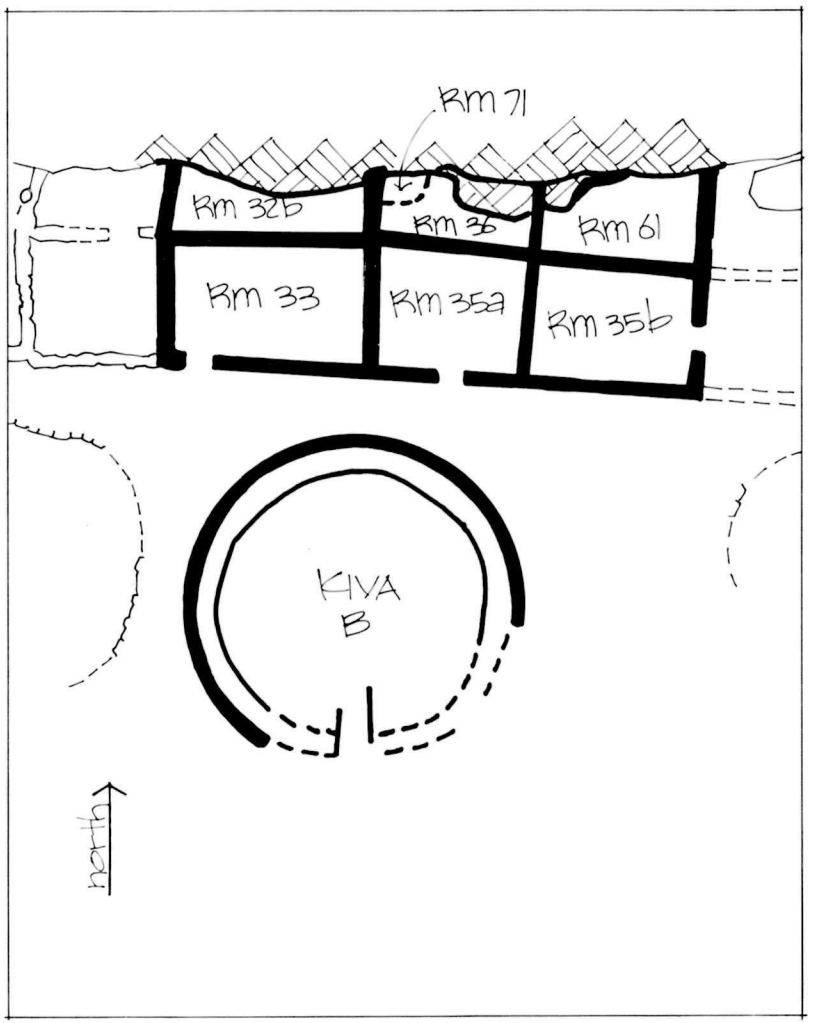


Figure 35b: Courtyard Complex B, later phase (Room Suites 33 and 35).

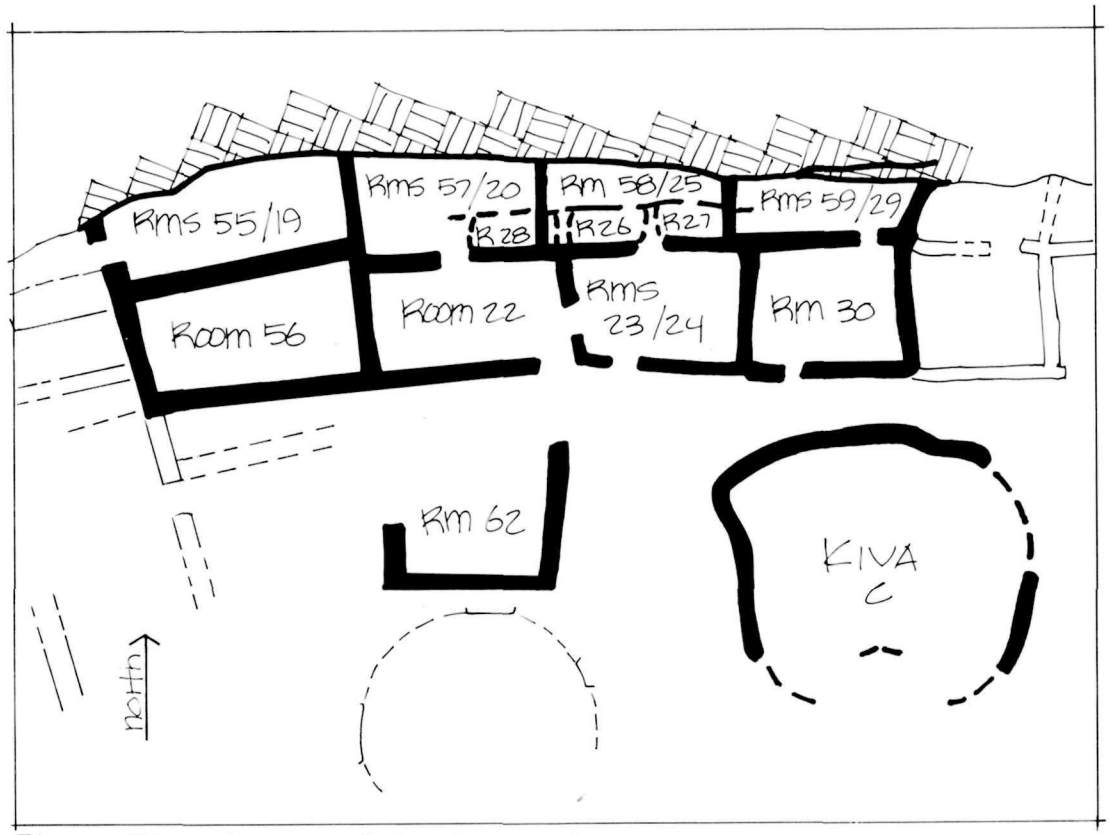


Figure 36a: Courtyard Complex C, during its early use, including Room Suites 22 and 30.

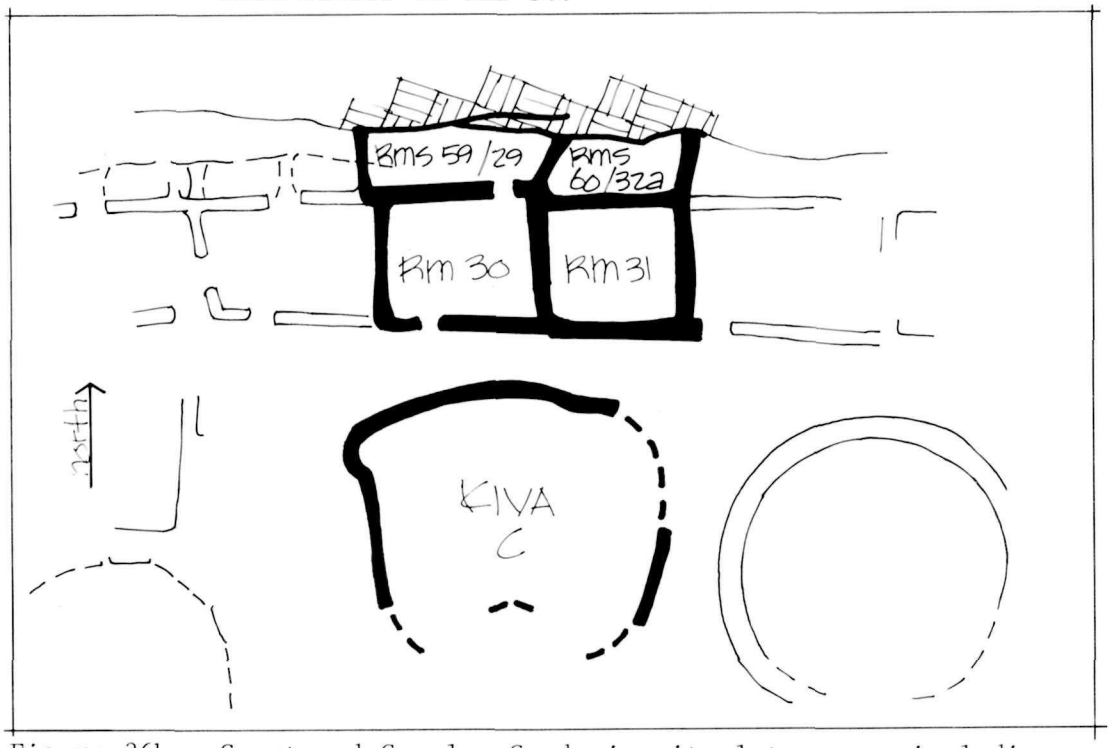


Figure 36b: Courtyard Complex C, during its later use, including Room Suites 30 and 31_2.

interesting in terms of overall site accretion and growth, and room suite/courtyard complex definition.

Courtyard Complex E. Missing rooms which have fallen, added to Room Suite 37, comprise this complex. Based upon the absence of bonding scars on the exterior walls of Rooms 35b and 61, the entire courtyard complex was a later addition to the Pueblo II room block, but antedated Pueblo III multistoried engineering. Whether Kiva E was reoccupied by the Pueblo III occupants is unknown, since it is almost entirely filled with rubble, or fallen. It is the nearest kiva to the major Pueblo III construction, unless another lies buried below the rubble.

Dual or Triadic Divisions

Frequently, dual division in archeological site layout has been inferred as the physical concomitant of prehistoric social conventions such as the moiety. Dean (1969) was unable to identify any architectural unit larger than the courtyard complex or unit for Tsegi Phase Sites. A dual division in overall village plan, however, has been noted at various Anasazi population epicenters such as Chaco Canyon. Rohn (1971: 39-40) encapsulates a variety of ethnographic information while noting the presence of dual divisions at Mug House after A.D. 1200. Architectural features which he cites are (1) access restrictions imposed by village layout and the absence of doorways joining major architectural units of the site, (2) details in kiva architecture, and (3) overall abutment evidence. In addition to architectural evidence,

D. Morris (n.d.) has identified a number of material cultural distinctions at Antelope House which permit him to build a strong case for the reality of dual divisions during the late Pueblo III stage. Exactly what human groups are represented by the dual division is difficult to determine archeologically, and is best left to the ethnographer.

At Sliding Rock, the implicit assertions that dual divisions are present after A.D. 1200 are borne out architecturally. There is no evidence to support this phenomenon during occupation of the Pueblo II room block. After this time, however, there are three Pueblo III additions which support the concept of a dual or triple village plan, especially when the vagaries of alcove morphology are considered. The problem of contemporaneity of these new units cannot be addressed without substantial excavation:

East Ruin: the block containing Rooms 16-19, 21, 73, and 74.
East Ruin: the block containing Rooms 43-53, and 63.
West Ruin: the block containing Rooms 1-10, 64-70, and 72.

If the addition of these new units occurred simultaneously, their locations are understood better if some social convention is used to explain it, when considering the alcove. Unless a much larger now fallen ruin was present between the East and West Ruins, the most level and theoretically best part of the alcove was available for building the additions. This area was not selected for some inexplicable reason, leaving a large open area between the room blocks. Furthermore, it would have been much safer and

easier to build all new rooms added to the East Ruin to the west of where Rooms 16-18 now stand. The alcove is much flatter at this point. Addition of the Pueblo III rooms at the east end of the East Ruin required a substantial investment of energy, especially considering the ultimate height of the new room block and the slope of the alcove floor. The extensive network of retaining walls, and leveling floors for rooms behind them was a major engineering achievement for prehistoric Indians. These retaining walls, and the multiple stories surmounting them, must have been singularly impressive to view, but the point remains that some strongly held convention must be responsible for what seems to be technologically a misuse of labor, time, and building material.

CHAPTER VII:

MISCELLANEOUS ANASAZI CONSTRUCTION

Two groups of constructs have not yet been discussed. These are retaining walls, and now-fallen constructed units which are not part of the chief room blocks, i.e. the East or West Ruins. This chapter will briefly discuss these constructs.

Retaining Walls

Without the extensive use of retaining walls, the major architectural unit at Sliding Rock, the East Ruin, could not have been built. The sloping alcove floor required major leveling prior to extensive building (Fig. 14). This was accomplished by erecting massive retaining walls and filling the area behind them with debris. Much of this debris consists of ash and perishables, with sherds and lithic fragments rather scarce. Its source may have been cultural fill from occupations prior to the building of the walls which was removed during cleaning of portions of the site for re-use.

The walls themselves were built in the numerical sequence given in Figure 14, but there is no way now of telling precisely when each one was built when compared with the architectural sequence of East Ruin domiciles. Presumably, a smaller area would have been encompassed during Pueblo II occupation than during the

Pueblo III multistoried construction. Although the first walls would have to have been built during the Pueblo II stage, others may constitute later buttressing. It is likely that these walls were built for additional strength needed as the earlier ones began to move, causing cracking of structures surmounting them. Table 2 provides the dates of logs removed from central buttresses: 936r, 957+r, and 986r. These probably came from the later walls which were built, but could well be from logs taken from elsewhere and reused in building the wall.

The present height of the aggregate of all walls is 6.7 meters. Thickness is variable, but the maximum is 1.5 meters. Length is difficult to assess because of their fragmentary nature. Minimal length originally was ca. 40 meters. All are built of variably-sized stone. The largest blocks measure ca. 66 cm. long, 20 cm. wide, and 6 to 10 cm. thick. As far as is now visible, no seats for footing any of the walls were cut or pecked into the sloping ledge. The facades of all walls lean inward to add stability.

Walls 1 and 2 have a rough face created by laying undressed stone without mortar. These walls also lack plaster, and it is possible that when they were built, Walls 3, 4, and 5 were planned to provide the finished appearance. Only one stone in thickness, both walls are composed of rather flat slabs, a more stable endeavor than thick blocks.

Walls 3, 4, and 5 are mortared, with a finished facade produced more by judicious stone selection than by pre-emplacement

Figure 37, View down along face of retaining walls. Note unfinished face at left, multiple terracing of walls, and incorporated logs.

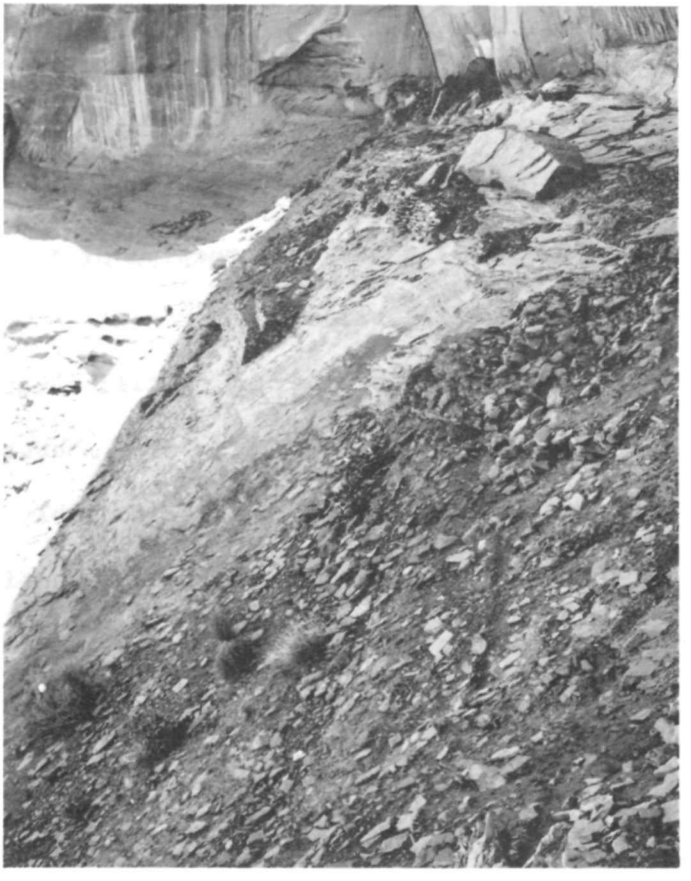


Figure 38: Sections of unfallen retaining walls located downslope from Room 12-15 area.

treatment consisting of flaking, pecking, or pecking-and-grinding. Walls are both one and two stones thick with spall chinks worked into the horizontal joints. Vertical and horizontal wooden logs originally were used to provide better wall ties, but most of these are now absent. Mindeleff (1897: 172, Fig. 69) shows them protruding from the wall, however, and records several methods of installing logs (Ibid: 171):

> "It sometimes happened that walls had to be placed on a foundation of smooth, sloping rock. In such cases the rock was never cut away, but timbers were employed to hold the wall in place. In some instances the timbers were laid at right angles to the line of the front wall, at points where cross walls joined it inside. The front wall thus rested partly on the ends of timbers and partly on rock, while the other ends of the timbers were held in place by the cross walls built upon them.... Still another method of using timber in masonry occurs in a number of ruins. This consists of the incorporation into the masonry of upright logs. Figure 69 shows an example that occurs at the point marked 32 on the map. The site here is an especially difficult one, as the builders were compelled to place walls not only on sloping rock foundations, but also on loose debris, and the vertical timber support is quite common."

During stabilization, several of these now-missing logs were replaced. It should be noted that elsewhere in the ruin, log construction is found only in new Pueblo III construction or in structures remodeled and reused during the period.

Other remnants of former retaining walls still adhere to the sloping cliff face in locations given by Figure 2. Several form smaller terraces which delineated work areas or possibly a dance plaza. Enough stubs are present to suggest that the entire site, including the area between the East and West Ruins, was expanded

somewhat by terraces behind walls which have since tumbled into the canyon. These were less ambitious than those by the East Ruin, however. On the canyon side, the West Ruin also was originally encompassed by a retaining wall which has now fallen. This wall was apparently seated on talus and large boulders. A low compound wall connecting the rear of the alcove with its open side is found north of Kiva A, and may be the remnant of such a wall, which also aided in defining the West Ruin unit.

Now Fallen Room Units

The presence of these units has been inferred by mudlines or toeholds which remain on the alcove wall, or ledges on the alcove floor. Similar units which are part of the major constructed room blocks have also been noted previously, but rooms discussed here are not incorporated into larger units, standing isolated at proveniences shown in Figure 2. Three such units are present at Sliding Rock in addition to those mentioned elsewhere.

The first is located on a small ledge at the extreme southwest end of the alcove. A few stones of rock rubble atop this ledge are all that remain of two or three storage rooms with low overhang ceilings. No room outlines are discernible, but one could tentatively suggest that these are storage rooms affiliated with Room Suite 2.

North of the West Ruin, the remains of four to five ground floor rooms surmounted by eight or nine second and third storey

Figure 39: Work area at east end of alcove. Note abrading grooves in depressed area formed by hammering the alcove floor.

rooms consist of mudlines on the alcove. No stones are present on the small ledge upon which these small rooms sat, and it is possible that they were produced by an earlier component whose stones were stolen for use elsewhere. The small size and configuration of these rooms suggest one or two habitation rooms plus associated rooftop granaries, much like Room Suite 22 but less extensive.

At the east end of the alcove is a work area with a narrow ledge behind it. Toeholds run from the area up to the ledge and stop, suggesting that rooms for storing processed foodstuffs sat on the ledge. No building stone is currently visible atop the ledge, having presumably fallen.

Other Architectural Units

Excavation to obtain stabilization materials from the borrow pit marked on Figure 2 disclosed several buried pit structures or hearths at that vicinity. As soon as the general nature of these deposits was determined, these excavations ceased, consequently no features were documented, nor were their relationships to the cliff ruins ascertained. It is possible that this vicinity contains extensive and stratified cultural material, none of which is visible from the surface. Such features as might be disclosed by further excavation may be related to functionally specific resource processing areas associated with Sliding Rock, or to other components or occupations.

CHAPTER VIII:

NAVAJO RE-USE OF SLIDING ROCK

Navajo use of the alcove is presaged by the presence of a hogan on the flood plain below it. Resided in by the wife of one of the stabilization workmen, Dinet Yazzie, it is situated near an orchard and small garden plots, or fields. Sheep and horses graze in the rincon immediately below the overhang. No ethnohistorical work was attempted in efforts to link the hogan or earlier structures at the same location with use of the alcove, which was of two kinds.

One form is the use of Anasazi rooms for Navajo interments. At least two burials are found in the West Ruin, and another may be located in rooms at the edge of the flood plain. These burials may have been covered by pushing Anasazi walls over on top of the body, or by stones gathered at various locations in the ruin, presumably nearby the grave. Weathered wood protruding from these rubble and stone areas may form a marker by which they can be distinguished from other piles of fallen stone in the ruin. These areas can thus be identified as places to avoid. Stabilization workmen, all of whom are Navajo, passed by both areas in the West Ruin without comment on the way to and from work. They were not asked specifically about the possibility of graves in the ruin.

The second kind consists of Navajo re-use of Anasazi structures and their modification into storage rooms. Steen (1966: 60) terms them corncribs. All appear in the East Ruin with room details listed in Appendix C, and certain data summarized in Table 8. Description and analysis of these units will follow the previously presented method, moving from walls which are described in terms of building components, to rooms and room combinations. There is a scarcity of comparative literature concerning Navajo storage structures, with archeologists instead emphasizing Anasazi ruins or Navajo open sites most often accompanied by hogans.

Walls

Navajo walls are abutted either against earlier Anasazi structures or against the alcove wall. If built against the alcove, the face of the cliff is sealed with a mud wash. The principal building stones are of the edge-chipped variety (Fig. 37), probably salvaged from the rooms of the Pueblo II occupancy, although the possibility that they were shaped by Navajo masons cannot be entirely eliminated. Also similar to the Pueblo II architectural style is the uniform size and dimensional proportions of these blocks, which can be summarized as tabular sandstone slabs. Chinking differs, however, in that the size of chinks is irregular, and they are wedge-shaped.

Mortar is frequently of a slightly different color because of inclusions which apparently integrate Anasazi trash into the matrix. These inclusions subsume ash, charcoal, walnut shells, sticks,

sherds and other organics. Copious amounts of mortar are used, approximating a parged surface on both sides of the wall. A coating of light brown plaster has been applied to interior room walls, but in no case has this treatment been utilized for the exterior walls.

Because of the presence of earlier structures or irregularities in the alcove wall, walls are frequently built with some degree of curvature in plan view (Fig. 41). Exterior walls are also built showing marked leaning from wall top to bottom producing a domelike or beehive-like cross-section (Figs.40 and 41). Walls between adjacent granaries tend to be straight in plan view, and without the overhang found in exterior walls. They are also plastered on both sides. As a result of the lack of exterior plaster and inward leaning of the upper wall tops, the exterior wall facades are extremely rough and uneven.

Rooms

Enclosed areas are formed using earlier Anasazi structures as cores. Walls may be built contiguously to enclose corners which then become the room interior. This practice results in frequent rounded corners and irregularly shaped rooms. The floors of some rooms are bedrock, with only minimal amounts of fill present inside the room. Others have been at least partially excavated into Anasazi debris before the walls were erected, so the floors are apparently formed by unexcavated debris below the room. Wall

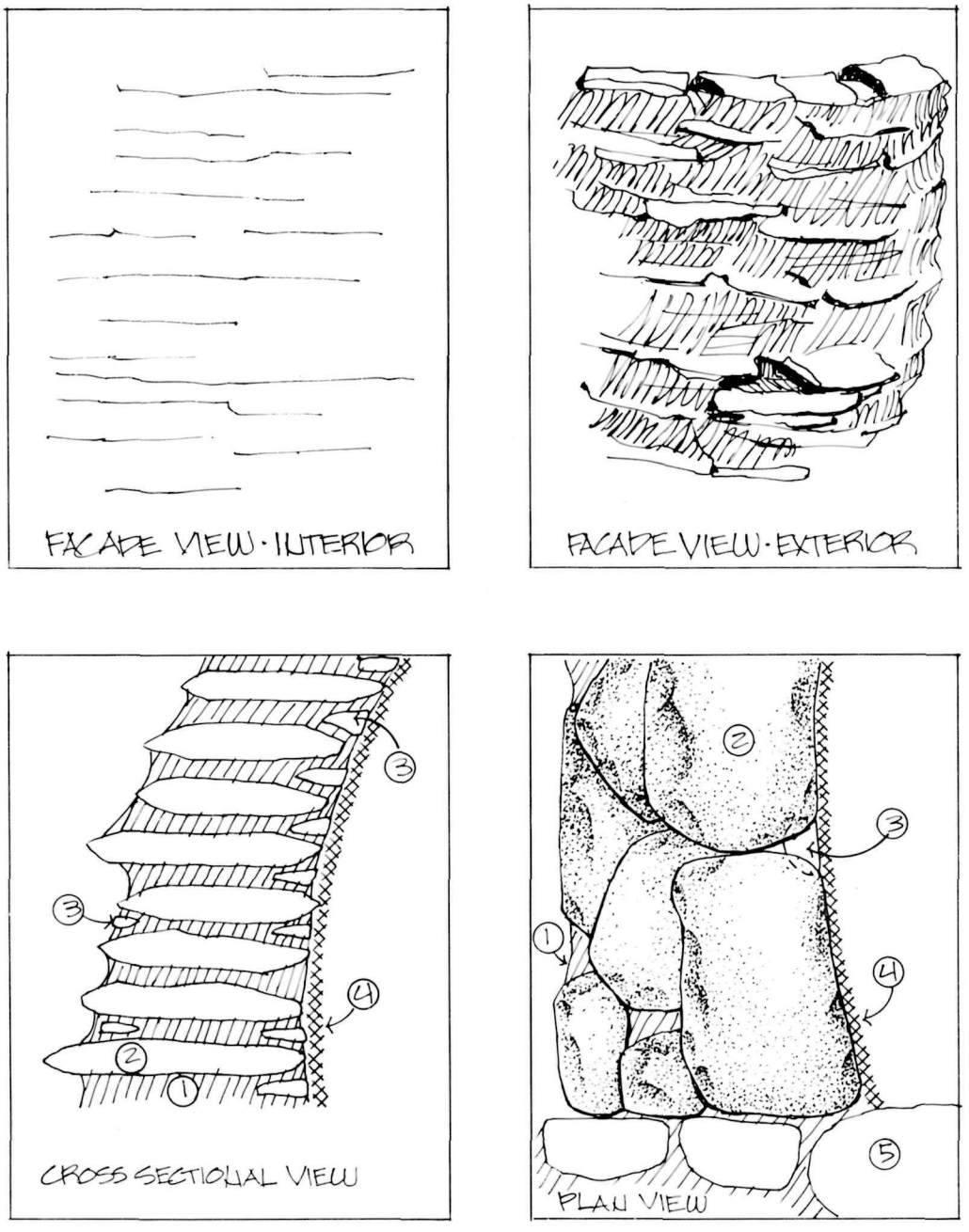


Figure 40: Views of masonry style characteristic of Navajo construction at Sliding Rock. Key: 1-mortar bed; 2-edge-chipped slab; 3-"wedge-shaped, chunk" chinks; 4-interior plaster; 5-Anasazi wall to which Navajo masonry is abutted.

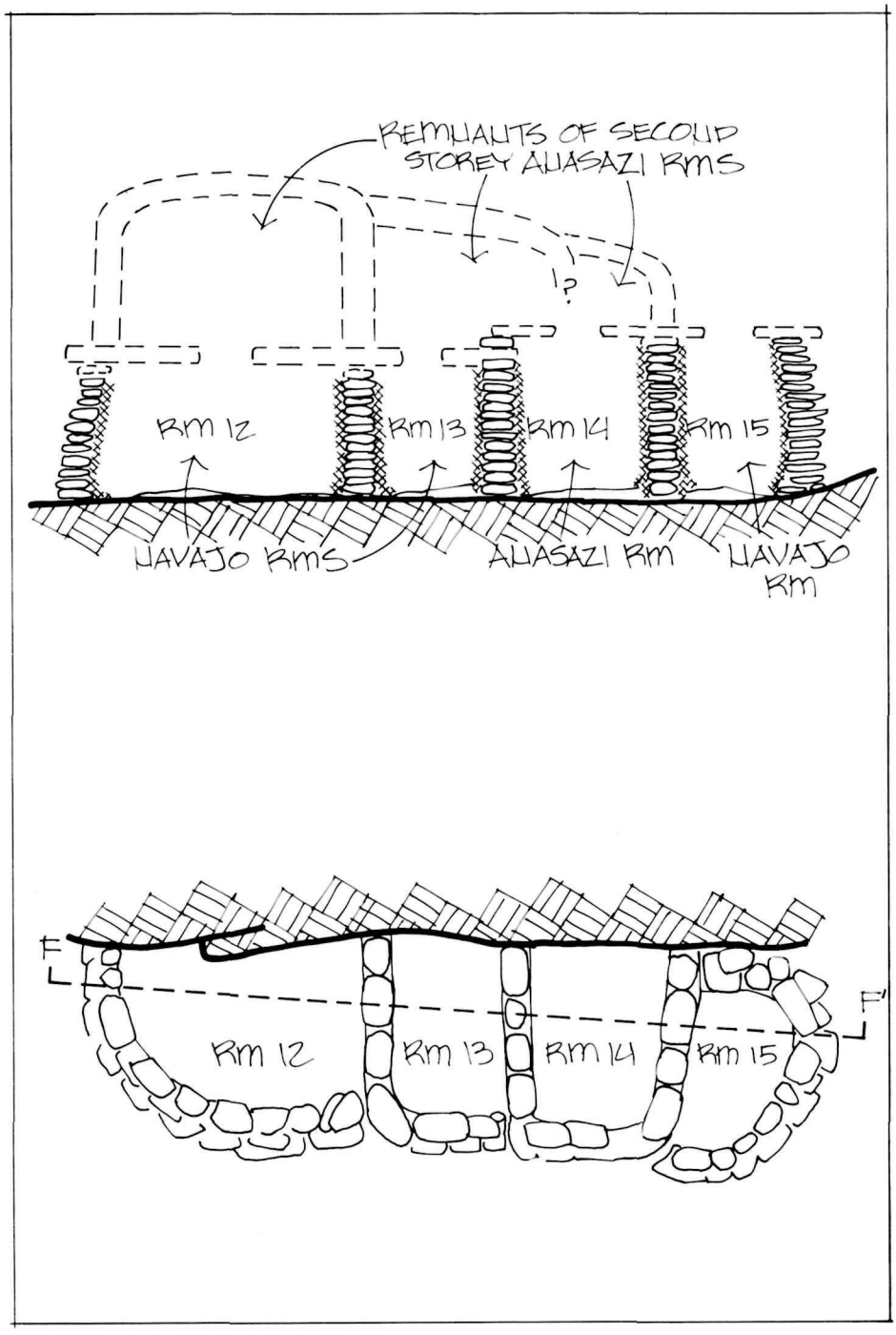


Figure 41: Plan and idealized profile F-F' across Navajo Granaries, with ancillary second-storey rooms now represented by mudlines on the alcove.

features and doorways are absent with access to stored items supplied by roof hatch in all cases. The method of roof construction has left no evidence at Sliding Rock, except that the rooms which have rooflines on the alcove have a mean height of 124.75 cm. above the floor. At Tse-ta'a, Steen (1966: 60) reports a pole and brush roof coated with clay, the hatch sealed either with a flat stone or board.

Room Clusters

Two clusters of related rooms are present. Room 14 is the core for several other rooms added in successive phases, as is shown by the abutment pattern in Figure 41. At one time other Anasazi rooms were situated near it, forming a small but compact storage unit which stood two stories high. Three Navajo rooms were added in single room increments. Room 13 preceded Room 12, although the relationship between Room 15 and Rooms 12 and 13 is unknown.

Rooms 41 and 42 form a second cluster built by digging into the debris filling Room 63, and building a wall across its northern portion. A cross-wall was then built to separate this larger room into two smaller ones. The reasoning behind making two small rooms with the same function from one room also used for storage is unknown, but it may relate to the same thoughts that prompted small but numerous Anasazi granaries. Purposeful removal of foodstuffs from one room still left the other sealed, or unwanted entry by rodents into one granary still left the other preserved.

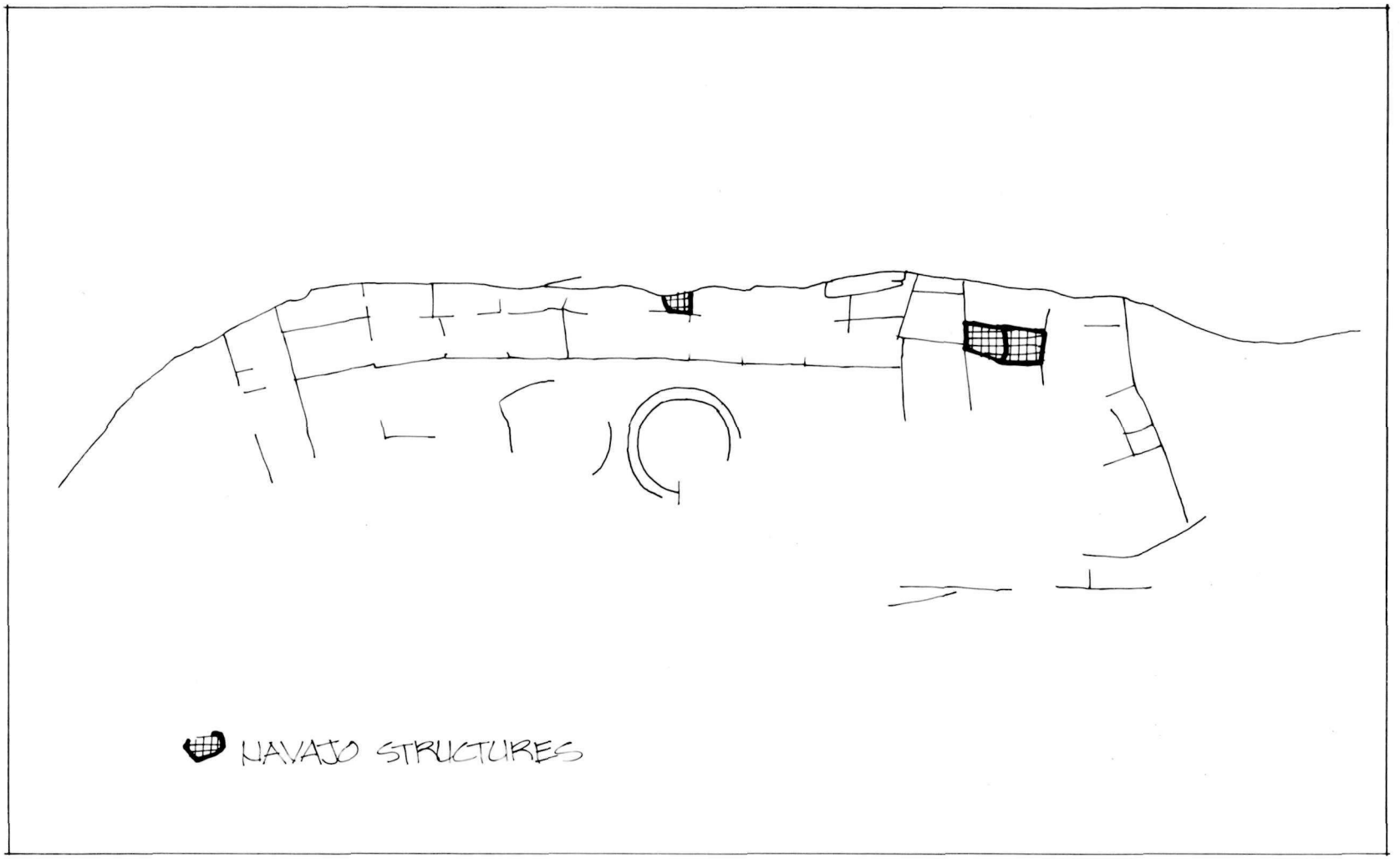


Figure 42: Navajo use of the East Ruin, Sliding Rock. Anasazi structures shown for reference.

Room Number	Associated Rooms	Floor Area (M^2)	Total Area of Associated Rooms
12	13, 14, 15	2.15	
13	12, 14, 15	1.17	5.75
14	12, 13, 15	1.43	
15	12, 13, 14	1.00	
34	none	.76	.76
41	42	1.45	2.99
42	41	1.54	

Table 8: Summary data of Navajo Rooms at Sliding Rock. Mean room size is 1.85m.

Dating the Navajo Component

There is little to be said regarding this issue. The earliest tree-ring dates for the Navajo in the monument area indicate use in the last quarter of the eighteenth century (McDonald, 1976: 67), although post-Revolt and Reconquest refugees may have entered the area somewhat earlier. Mindeleff's map (1897: Fig. 21, 120) is not extensive enough to show Rooms 12-15, nor does he show Room 34. This may indicate that Room 34 post dates the 1880's when the map was drawn. Rooms 41 and 42 are shown on this map, however. None of the Navajo burials are discussed in his text. In all probability, all the Navajo rooms were built in the ninteenth century.

CHAPTER IX:

EXCAVATIONS AND MATERIAL CULTURE

As noted elsewhere, one of the principal objectives of this study has been passive data retrieval, involving a minimal adverse impact upon the future data bearing potential of the cultural resource represented by Sliding Rock. For this reason, the collections acquired are limited in scope, and of two kinds. Surface collections were taken on the flood plain and talus area below the ruin. Areas collected are termed "localities," and designated with letters. Excavations in two places in the ruin related to stabilization activities are termed "areas," and also designated with letters. All fill has been screened through ¼-inch mesh. No excavation of entire architectural features was done.

Units

Surface Collections

Random surface collections within localized areas below the ruin were taken in order to identify any spatial changes in sherd type frequency from East to West Ruin and to supplement de Harport's earlier collections. It was also hoped that these collections could be used to at least roughly concur with the architectural observations that had already been made. Localities A, B, C, and D represent these proveniences, and are shown in Figure 2.

Excavated Areas

Two areas were excavated in the ruin in conjunction with the stabilization work. Area A, located adjacent to a Basketmaker cist upslope from the retaining wall, can best be characterized as shallow, unstratified, and unconsolidated debris placed as fill materials behind the original retaining walls. Substantial movement of the unit contents accompanied the collapse of the wall, and it cannot be determined whether these materials were originally at the same provenience, because of the slope. Excavation was further minimized by loose material situated upslope of Area A, which created a dangerous situation for excavators. When enough space was cleared to bedrock to permit installation of stabilized retaining wall supports, this unit was abandoned. Since the total depth of the debris ranged from zero to 15 cm., the collection produced is very small. The area is shown in Figures 43 and 44.

Area B is situated at the east end of the stabilized retaining wall. Excavation has been done in order to locate the original footing of one of the retaining walls which could be used as a foundation for the stabilized one. Once again, this area is small and shallow, consisting of unstratified loose fill. A large proportion of the fill is composed of perishables, perhaps used as packing because of light weight behind the wall. Excavation in the fill dichotomized Level 1, the upper 10 cm., from Level 2, 10-20 cm. These two levels have been combined during the analysis because they do not constitute individual strata, are essentially mixed by their location on a slope, and are no longer in situ deposits. The area is depicted via Figures 45 and 46, with location given in Figure 13.

Figure 43: Area A, before excavation.

Figure 44: Area A, after excavation.

Figure 45: Area B, before excavation.

Figure 46: Area B, after excavation.

Material Culture

A total of seven proveniences were collected in the field, as implied by the foregoing. These proveniences were each assigned a "field specimen" number, which is used for designating collections in this report. These numbers are:

F.S. 1 Locality A surface collection
F.S. 2 Locality B surface collection
F.S. 3 Locality C surface collection
F.S. 4 Locality D surface collection
F.S. 5 Area A, Level 1 excavated material
F.S. 6 Area B, Level 1 excavated material*
F.S. 7 Area B, Level 2 excavated material*

*Combined for analytical purposes.

Ceramics

Sherd type frequencies and proveniences for all surface and excavated collections are given in Table 9. As is obvious, more sherds of diagnostic value were produced by the surface collections than by the excavations. Most of the excavated specimens were burned. For more technical data, the reader is invited to examine Breternitz, Rohn, and Morris (1974), Colton (1952, 1955a, 1955b, 1956) and Abel (1955), used to classify the sherd sample into types. The sherd sample is too small to form many conclusions, except to note that the Canyon de Chelly area seems to receive numerous external influences which are evident in the ceramics. Secondly, types from Basketmaker III to Pueblo III are represented in the sample, even though de Harport did not recover many sherds of the former period.

For example, Lino Gray is altogether absent from de Harport's collection, but was common enough from these latter collections.

Provenience / Type		Locality A	Locality B	Locality C	Locality D	Area A	Area B	Totals	
Tusayan White Ware	Kana-a B/W	2	1	1	2		1	7	
	Dogoszhi B/W	1						1	
	Unid. Tusayan White ware			1				1	
	Total Tusayan White								9
San Juan White Ware Mancos B/W				1	1			2	2
Mesa Verde White Ware	Mesa Verde B/W			2				2	
	Unid. Mesa Verde White Ware						2	2	
	Total Mesa Verde White								4
Chuska White Ware Todadlena B/W		1						1	1
Cibola White Ware	Red Mesa B/W		2	1	2			5	
	Gallup B/W	1			1			2	
	Escavada B/W			1				1	
	Unid. Cibola White Ware	1						1	
	Total Cibola White								9
Tsegi Orange Ware	Medicine B/R	1						1	
	Tusayan B/R				1			1	
	Total Tsegi Orange								2
Unid. White ware				2	2	5	2		11
TOTALS		7	3	9	9	5	5		38

Table 9: Frequencies of decorated ceramics.

Culinary Ceramic Types		Locality A	Locality B	Locality C	Locality D	Area A	Area B	Totals	
Tusayan Gray Ware	Lino Gray			1		4		5	
	Obelisk Gray					4	1	5	
	Kana-a Gray						1	1	
	Tusayan Corr.	2	2	2		2	2	10	
	Honani Tooled	2						2	
	Unid. Tusayan Gray Ware			7	2	8	8	25	
	Total Tusayan Gray								48
Chuska Gray Ware	Bennett Gray		1					1	
	Unid. Chuska Gray Ware			1	1			2	
	Total Chuska Gray								3
Unid. Mesa Verde Gray Ware (corrugated-blind indented)					2			2	2
Unid-Misc. temper gray ware		1					4	5	5
TOTALS		5	3	11	5	18	16		58

Table 10 : Frequencies of culinary ceramics.

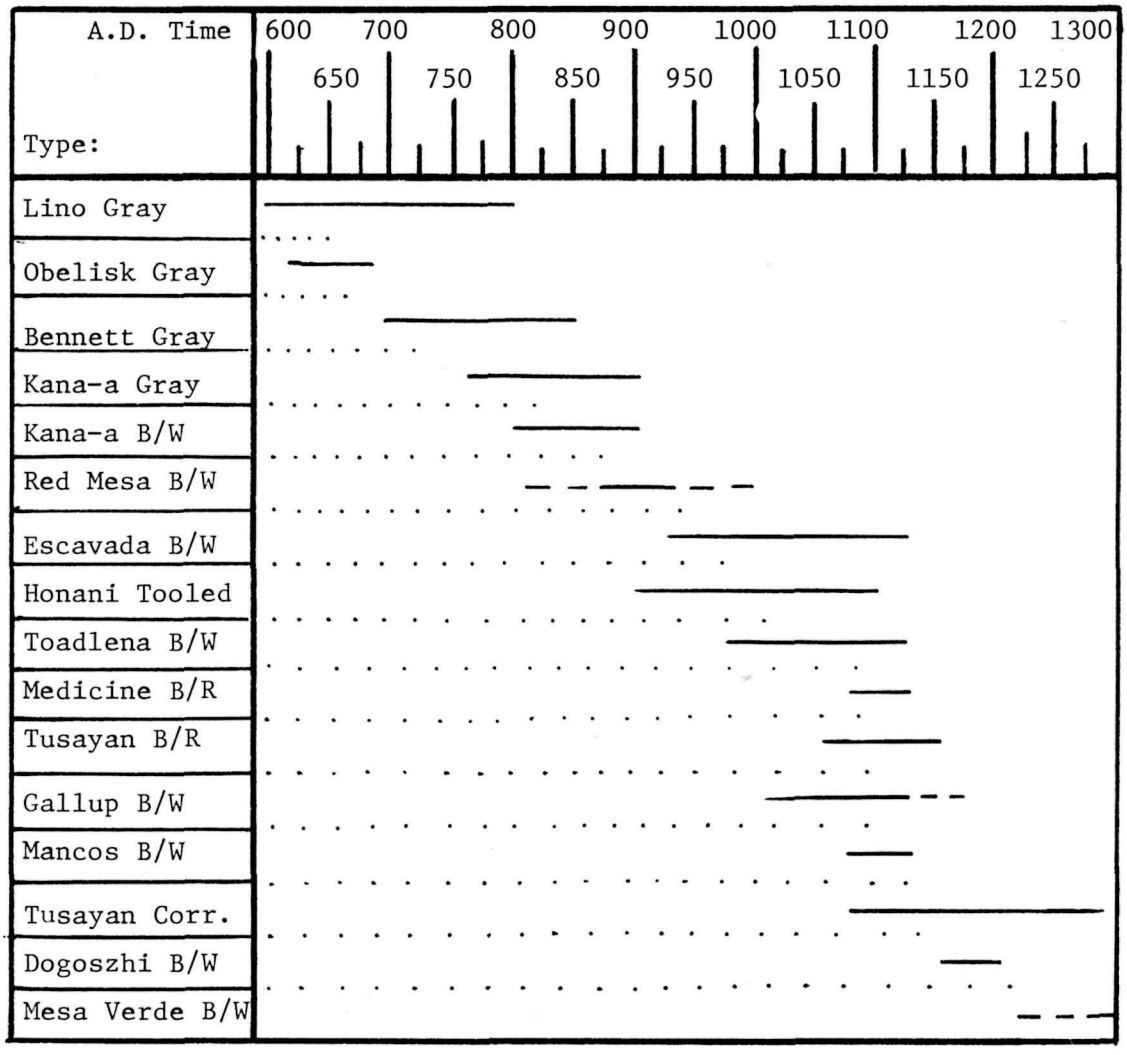
Only rim sherds were identified as Lino Gray, but virtually all of the unidentified Tusayan Gray Ware are plain gray body sherds. These specimens are either from Kana-a Gray or Lino Gray vessels. The parameters of classification are:

1. Unidentified Tusayan Gray Wares are plain gray body sherds which are either from Lino Gray or Kana-a Gray vessels. No distinction was made between these types, but the implication remains that there is a somewhat more intense Pueblo I and Basketmaker III component than indicated by de Harport's sherd counts.

2. Sand tempered gray wares are assumed to be part of the Tusayan Gray Ware series; trachyte tempered wares are assumed to be part of the Chuska Gray Ware series; crushed and andesite temper has been used to identify Mesa Verde Gray Wares.

3. Sherd tempered, vegetal painted white wares have been classified as Mesa Verde White Wares; most mineral painted sand tempered White Wares are termed Cibola White Wares; Tusayan White Wares are vegetal painted, sand tempered decorated specimens.

Regarding the spatial distribution of sherds at the site, the sample of sherds is too small to indicate much. One point is noteworthy, however: Basketmaker III and Pueblo I sherds from surface collections are more prevalent from Localities C and D than elsewhere, possibly indicating some use of the alcove immediately above them during these periods. The presence of Lino Gray rims from Area A also indicates Basketmaker III use of the East Ruin, an assertion borne out by the presence of the slab-lined cists. Struever's report (Appendix E, this volume) hints at expanded early Pueblo III occupation. The presence of large numbers of types dating to A.D. 1100-1150 (Figure 47) may be interpreted as at least tentative support.



Lino Gray (Breternitz, 1966:83)
Obelisk Gray (Breternitz, 1966:87)
Bennett Gray (Windes, 1977:300)
Kana-a Gray (Breternitz, 1966:79)
Kana-a B/W (Breternitz, 1966:79)
Red Mesa B/W (Cibola White Ware Conf., 1958)
Escavada B/W (Breternitz, 1966:74)
Honani Tooled (Breternitz, 1966:78)
Toadlena B/W (Windes, 1977:319)
Medicine B/R (Breternitz, 1966:85)
Tusayan B/R (Breternitz, 1966:99)
Gallup B/W (Breternitz, 1966:76)
Mancos B/W (Breternitz, 1966:85)
Tusayan Corr. (Breternitz, 1966:100)
Dogoszhi B/W (Breternitz, 1966:73)
Mesa Verde B/W (Breternitz, 1966:86)

Figure 47: Dates of Sliding Rock ceramics

Several of the sherds also show abraded edges from having been worked. These are shown in Figure 48, and have often been termed kajepes or pot scrapers.

Chipped Stone

Virtually all of the stone materials recovered are chipped. Chips and flakes were numbered in the laboratory and examined according to two kinds of attributes. All specimens were evaluated according to attributes of manufacture on a technological analysis form designed to monitor only selected attributes. These attributes and their method of evaluation are given by Nordby (n.d.), available to the interested reader. A summation of this data is given in Table 11.

Any edge modification in the form of utilization marks was monitored on the edge analysis form. The morphology of utilized edges and the nature of utilization were both recorded on the edge analysis form. Each edge on each flake was construed as an independent unit of observation; consequently some flakes having two utilized edges are entered twice, once for each edge. Specimens were viewed under 20 power magnification. A review of Table 12 indicates both that a number of flakes did exhibit more than one utilized edge and that a high percentage of flakes have been utilized. Although the number of utilized flakes could be interpreted as expectable in light of (1) the long term occupancy of the site, and (2) the wide range of activities performed at habitation sites, another possibility should be mentioned.

Provenience: Site Number	Field Specimen Number	Specimen Ident. Number	Material: Color and Modifier (LT/DK)	Color Variation (Enter X): Uniform	Variegated	Mottled	Mossy	Banded	Material & Source	Heat Treated (Enter X)	Dimensions: Max. Length (MM.)	Max. Width (MM.)	Max. Thickness (MM.)	Weight (Grams)	Fragmentary (Enter X)
SR	1	13	white	X					quartzite		25.0	30.0	7.0	9.0	
SR	1	14	maroon		X				chert		29.0	30.5	7.0	11.5	
SR	2	7	white			X			chalcedony		20.5	17	3.0	1.2	
SR	3	21	white		X				chert		49.0	49.0	17.0	42.6	
SR	3	22	white			X			chert		N	N	N	187	
SR	3	23	white			X			petrified wood		N	N	N	5.5	
SR	3	24	gray			X			chert		35.0	23.0	9	8.9	
SR	3	25	pink		X				chert		14	26	3	2.4	
SR	3	26	pink			X			chert		N	N	N	136	
SR	3	27	rose			X			chert		N	N	N	171	
SR	3	28	gray					X	chert		24.5	26	3	3.8	
SR	4	15	purple			X			chert					182	X
SR	4	16	white			X			chert					5.3	X
SR	5	24	tan			X			chert		12	14	8.5	1.5	
SR	5	25	white	X					chalcedony		10	11	2	.25	
SR	5	26	rust	X					chert		24.5	12.5	2	.8	
SR	5	27	yellow					X	chert					.4	X
SR	5	28	white			X			chert		22	36	2	5.2	
SR	5	29	gray					X	chert					1.7	X
SR	5	-	white		X				chert		10	13	1	.2	X
SR	5	-	gray	X					chert		8.5	6.0	1	.2	
SR	6	11	pink					X	chert		21.5	15	2	1.2	
SR	7	12	gray			X			chert		N	N	N	10.1	X
SR	7	13	white					X	quartzite		N	N	N	148	X
SR	7	14	pink	X					chert		16.5	13	2.5	.4	
SR	7	15	white	X					chalcedony					.4	X

Site Number	Field Specimen Number	Specimen Ident. Number	Specimen Geometry: Outline (Enter X): Lamellar	Ovate-Elongate	Conchoidal	Expanding	Triangulate	Acuminate	Squarish	Irregular	Maximum Width Position	Dist. X-Sec.: Feather Taper	Hinged	Stepped	Latral X-Sec.: Rounded Dorsus	Med. Spined Dors.	Trapezoidal	Irregular	Longitudinal X-Sec.: Blocky	Straight	Incurvate	Excurvate	Incurvate-Excurv.	Irregular
SR	1	13					X				3/4			X		X			X					
SR	1	14								X	1/4			X		X				X				
SR	2	7								X	1/2		X				X			X				
SR	3	21								X	1/2	X					X			X				
SR	3	22								X														
SR	3	23								X														
SR	3	24							X		3/4		X			X				X				
SR	3	25								X	3/4			X	X					X				
SR	3	26																						
SR	3	27																						
SR	3	28								X	1/2	X				X			—		X			
SR	4	15							X															
SR	4	16								X		X					X			X				
SR	5	24								X	1/2			X	X				X					
SR	5	25								X	1/2		X			X				X				
SR	5	26		X							1/2	X					X				X			
SR	5	27								X					X									
SR	5	28							X		1/2			X			X				X			
SR	5	29								X														
SR	5	-								X	1/2	X					X				X			
SR	5	-								X	1/4	X				X				X				
SR	6	11					X				3/4			X				X			X			
SR	7	12								X								X						X
SR	7	13								X								X						X
SR	7	14						X			1/2					X					X			
SR	7	15								X								X						X

Site Number	Field Specimen Number	Specimen Ident. Number	Striking Platform: Preparation: Absent (X)	Cortex (X)	Struck (X)	Prep.: Ground: Down/Back	Chipped: Down/Back	Max. Dorso-Ventral Width	Max. Lateral Width	Plat. Angle: Striking Platform-Ventrus	Striking Platform-Max. Len. (x<90°)	Ventrus & Bulb: Bulb Prominence: Absent (X)	Diffuse: P/H<.10 (X)	Strong: P/H>.10 (X)	Thinning of Bulb (X)	Lip (X): Weak	Strong	No. of Erailures	Dorsus: Cortication (X): None	1/3	2/3	3/3	All	No. of Dorsal Fl. Scars	Modal Dorsal Fl. Sz.: Mostly Large (>8mm)	Mostly Med. (3-8mm)	Mostly Small (<3mm)	Mixed	% Hing/Step Dors. Fl.
SR	1	13			X		D	10.0	14	51	88			X	X			1	X					2	X				
SR	1	14			X		B	8	22	55	86		X					0	X					3	X				
SR	2	7			X		D	2.0	55	80	82		X		X			0	X					6		X			33
SR	3	21			X			12	20	55	78			X				0		X				1	X				
SR	3	22	X									X							X										
SR	3	23	X									X									X			2	X				
SR	3	24			X			10	16	70	85		X		X			0			X			2				X	
SR	3	25		X			D	3	7	90	84			X	X			0	X					2	X				
SR	3	26																											
SR	3	27																											
SR	3	28		X				7	16	60	84		X			X			X					2	X				
SR	4	15	X									X							X										
SR	4	16	X									X							X										
SR	5	24			X			65	8.5	105	74		X						X					7		X			14
SR	5	25			X			1.5	5	50	85		X		X				X					2				X	
SR	5	26			X		D	.8	25	40	81		X					1	X					6				X	33
SR	5	27	X									X								X									
SR	5	28			X		D	2	2	90	80			X	X				X					3	X				
SR	5	29	X									X							X										
SR	5	-	X									X							X										
SR	5	-			X		D	.5	1	N	76		X						X					3		X			
SR	6	11			X		D	1	3	N	80		X					1			X			2				X	50
SR	7	12	X									X										X							
SR	7	13	X									X							X										
SR	7	14					D	.5	1	N	N		X							X				3	X				
SR	7	15	X									X																	

Table 10: Technological attributes of flakes recovered from Sliding Rock. "N" denotes measurements which are not measurable or meaningless because of individual flake morphology.

FLAKES--EDGE ANALYSIS FORM

PROVENIENCE			EDGE LOCATION							EDGE OUTLINE (ENTER X)						LATERAL PROFILE (ENTER X)					DIMENSIONS			UTILIZATION Enter Dorsal (D), Ventral (V), Unifacial (U), or Both (B)																CONFIDENCE RANK	
																								Micro-spalling		STRIATIONS															
																								Feathered		Hinged-stepped		Orientation (D, V, B)					Configuration (D,V,B)									
Site Number	Field Specimen Number	Specimen Ident. Number	Proximal (Enter X)	Distal (Enter X)	Lateral (Enter X)	Juncture (Enter Degrees)	Cortex (Enter X)	Mixed (Enter X)		Straight	Convex	Concave	Concavo-convex	Projection	Serrated	Straight	Curved	Incurvate-Excurvate	Other		Edge Length (MM)	Edge Protrusion Meas. (MM)	Edge Angle (Degrees)	Regular	Irregular	Regular	Irregular	Perpendicular	Parallel	Oblique-Distal	Oblique-Proximal	Mixed	Straight	Curved	Mixed	Polished (D,V,B)	Ground (D,V,B)	Pecked (D,V,B)	Battered (D,V,B)	Hand-Haft Polish (D,V,B)	Silica Gloss Build-up(DVB)	Other	Possibly (X)	Probably (X)	Certainly (X)	Retouch (X)
SR	1	14		X								X						X			17.5	1.8	60		V		V									V					V			X	X
		14			X							X					X				4.0	1.2	55		D		D,																X	
SR	2	7			X								X			X					19	5.5	20		B		B																X		
SR	3	21			X											X					22.5	5.0	50				V												V			X		
		23						D-7		X						X					8.5	0	20			V																X		
		23	X							X							X				9.0	0	15			V																X		
		24			X					X						X					7.0	0	55				V																X		
		24			X							X				X					7.0	1.8	65				D																X		
		26								X						X					14.0	.5	20		B		B																	X	
		26								X						X					15.5	.5	40		V		V																X		
		27									X					X					19.5	.8	63		U		B																X		
		27										X					X				24	2	62		B		B																X		
		27											X			X					15	1.0	52		B		B																X		
		28							X						X		X				26.0	2.0	35		B		B																X		
SR	4	15								X						X					19	0	50				U																X		
	4	16									X					X					17.5	1	48		B		B																X		
SR	5	26			X					X						X					23.5	.5	34	B		B																	X	
		26			X										X	X					20.0	2.0	15		B		B																X		
		28		X								X				X					16.0	2.0	18	V																		X		
		28	X							X								X			23.0	2.0	60		D		D																X		
SR	7	12								X							X				8.0	0	59				U																X		

Table 11: Utilized edge analysis of Sliding Rock chipped stone specimens.

This involves the presence of the sheep flock which frequents the rincon below the ruin, foraging almost constantly and concurrently trampling everything underfoot. Although Tringham, et al (1974) have expressed the opinion that it is possible to discern between microspalling caused by foot traffic and that caused by utilization, others have been more cautious when working with surface collected materials.

Ground Stone

Only one piece of ground stone was recovered. This is a fragment of a thin slab shaped along its edges by grinding. The faces are unworked, but show the effects of smoking. It is shown in Figure 48.

Faunal Remains

Faunal bone is encapsulated in Table 13. Only two of the specimens show evidence of having been worked. One of the two is an epiphyseal end which has been cut using a metal tool. The other is a very small piece of long bone which has been burned and the edges ground. Nonetheless, it is too small to have been used as a tool. Several other specimens from Area A are also burned, suggesting that much of the deposit is the direct result of discarded hearth material. Perishables are largely unburnt, however.

Most of the bones in the assemblage are too small for identification, or lack diagnostic characteristics. Only cottontail (Sylvilagus sp.) could be identified, and the remainder of the collection indicates a strong reliance upon large numbers of rodents,

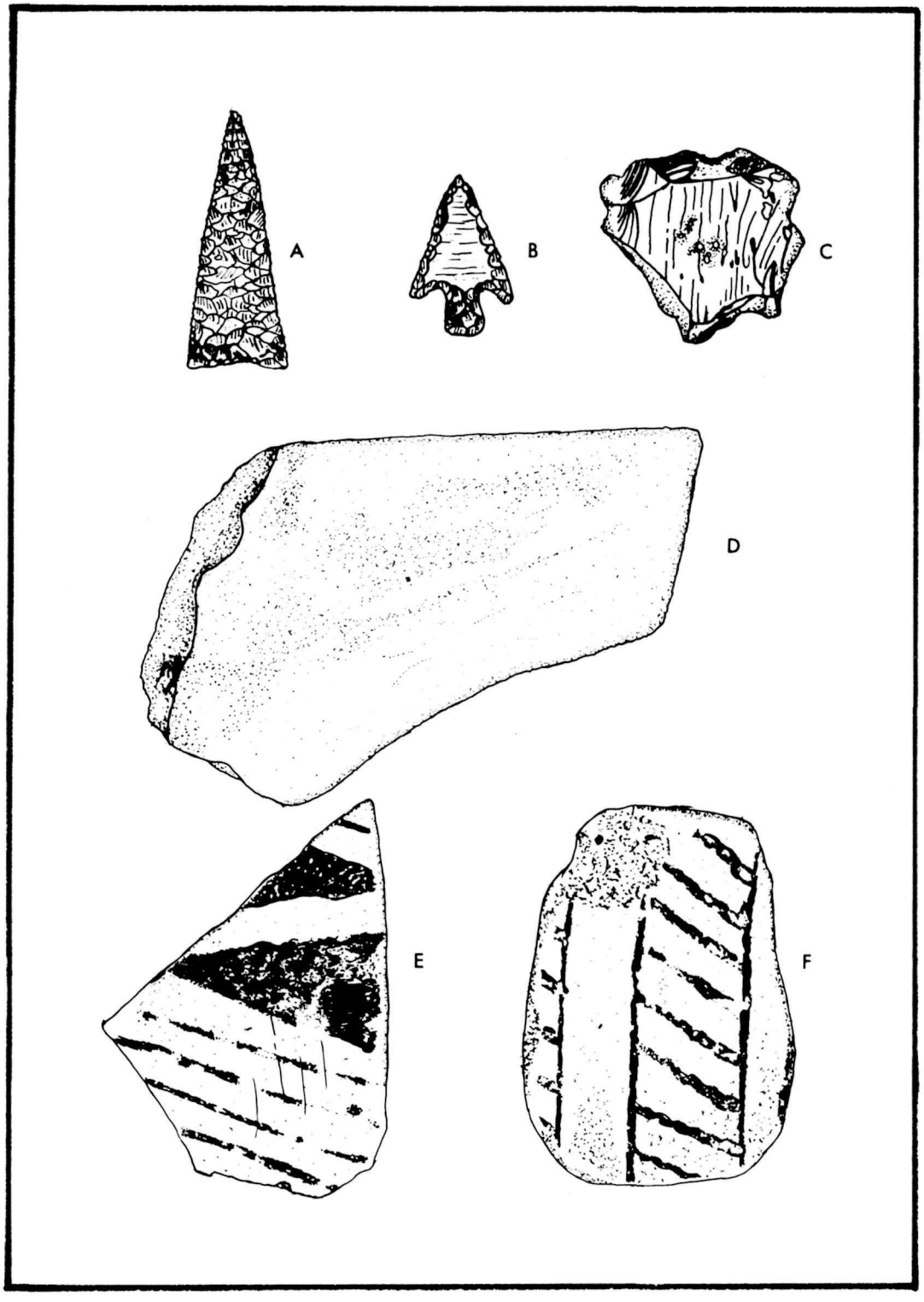


Figure 48: Stone and ceramic objects. A,B-projectile points; C-spokeshave; D-ground stone slab; E, F-worked sherds. All shown actual size.

Faunal Bone Analysis Sheet

Management		Identification								Condition and Modification							
F.S. No./ Ident. No.	Provenience	Genus, species	Right	Left	Element	Prox.	Dist.	Immature	Adult	Frag.	Splint.	Gnawed	Butcher/ cut mks	Polish	Striat.	Other
5/33	Area A	Sylvilagus sp.			Femur	X				X						
5/34	Area A	rodent/lagomorph			long bone						X					burned
5/35	Area A	Sylvilagus sp.			humerus		X		X	X						burned
5/36	Area A	medium mammal			long bone					X						burned
5/37	Area A	bird			long bone					X						
5/38	Area A	?			long bone					X						
5/39	Area A	rodent or bird			long bone					X						burned
5	Area A	Sylvilagus sp.			tibia		X			X						burned
5	Area A	rodent or bird			?					X						
5	Area A	medium mammal			long bone					X						burned
5	Area A	medium-large mammal			?					X						burned, edges ground
6/12	Area B	Sylvilagus sp.	X		scapula				X	X						
6/13	Area B	Sylvilagus sp.	X		scapula				X	X						
6/14	Area B	Sylvilagus sp.		X	mandible				X	X						
6/15	Area B	rodent			long bone				X							
6/16	Area B	rodent/lagomorph			long bone					X						
6/17	Area B	Sylvilagus sp.	X		mandible											
6/18	Area B	?			epiphyseal end											intrusive, cut with metal tool
6/19	Area B	Sylvilagus sp.		X	innominate				X							
6/20	Area B	?			vertebra											
7/16	Area B	small-medium mammal			scapula					X						
7/17	Area B	small mammal			long bone					X						

Table 13: Faunal bone from excavated proveniences at Sliding Rock.

lagomorphs, and birds for food. Small, medium, and perhaps large mammals form ca. 26% of the collection; rodents/lagomorphs/birds comprise the remainder.

One piece of fur, apparently from a very small animal, perhaps a rodent, was located during sorting of the collection produced by Area A. A few small isolated feathers were produced by both proveniences, but these have not been identified. Feather and fur cordage is described in the section on cordage.

Modified Perishable Plant Remains

Use of ¼-inch mesh screen greatly increased the amount of perishable plant parts recovered from Areas A and B during excavation. The paucity of other kinds of remains, coupled with the dry nature of the deposit and the use of this debris as fill behind retaining walls all combine to cause perishables to form the largest class of materials in the assemblage. The identification of these items as to genus and species is the subject of Appendix E, prepared by M. Struever. The purpose here is to describe the few specimens showing human alteration in order to identify processes used during artifact manufacture and use. These are described as follows:

Corn. Corn is represented by husks, leaves, stalks, cobs, and two kernels. A few uses of these items are shown in the small sample from both areas. At least part of the harvest was simply pulled from the ground, as shown by the root ends at the base of the stalk. Harvest of the stalks was apparently not done by cutting

with implements. Some of the specimens show burning, perhaps indicating use as fuel, or accidental damage during cooking. Storage of suspended ears is shown by two butt/stem fragments out of eleven. Both have been perforated by knife cuts, and one has been tied with a yucca leaf which extends through the aperture. Kernel removal by scraping or obliquely cutting the cob is shown in about 4% of the 157 cob or cob fragments; other specimens have been chewed or shelled by other means.

Reeds. Approximately 260 fragments of reed stems were recovered from the various proveniences. Pieces of several leaves were also recovered; the leaves showed no use. Returning to the reed stems, the ends were examined for signs of reed harvest by cutting. Approximately 8% have been cut on one end, and a single specimen shows cutting on two ends. Burning, perhaps induced by use of reeds as fuel or accidental lighting, appears on 14.6% of the specimens. Unifacial smoking, probably resulting from the use of reeds as roof packing for rooms containing hearths, is found on four specimens, and six others show smoking of all circumferential surfaces. Kinds of modification are shown in Table 14.

Knots. The only knots recovered during the excavation are single square knots joining two pieces of either split or whole yucca leaf. Other than the splitting of most leaves, no other preparation is evident. In all cases, split leaves are joined to split leaves or whole leaves are joined with whole leaves. It is possible that both ends of a single leaf were knotted after having been wrapped around an object, but the intervening length of leaf

is not found on any of the specimens. Specimens have been measured to derive the mean size of the knot; length is parallel to the long axis of the leaf, and width is transverse to it. Mean sizes are: length 1.7 cm., and width 1.2 cm. Although the larger knots were made with unsplit leaves and the smaller ones are produced by split leaves, there appears to be considerable overlap in this very small sample. Table 15 summarizes the data which was monitored. Five twisted and bent leaves representing the remains of other knots were also found in Area B.

Quids. Zauderer (1975: 65-70) has produced an interesting replicative discussion of Antelope House quids, as well as introducing a typology of specimens. Following his definition, quids have been determined here to be masses of vegetal matter which appear to have been chewed or otherwise reduced (Ibid.: 65). The implications of this definition are that quids are not only produced by chewing, but also by the performance of some utilitarian activity. For example, Zea quids were chewed for nutritive value while green. For purposes of this discussion, only the material and dimensions have been systematically monitored (Table 16).

Matted fiber. A single mass of matted cedar bark was recovered from Area A. This object appears to have been destroyed by rodents.

Wood. About two-thirds of the wood specimens recovered from Areas A and B are unmodified, other than by breaking. These specimens have been submitted for species identification to M. Struever. The remaining objects show the effects of such workings as are shown in Table 17. Of this number, only splitting and burning are

	broken, but otherwise unmodified	Modified						
		cut, 1 end	cut, 2 ends	burnt, 1 end	burnt, 2 ends	shaft burnt	uni-facial smo-king	over-all smo-king
Area A	82	14		10	4			
Area B	108	6	1	23		1	2	6

Table 14: Raw frequency counts for modifications to reeds.

	Length	Width	leaf preparation
Area A	1.7	.7	split
Area B	2.5	1.9	unmodified
	2.9	1.9	unmodified
	1.6	1.2	unmodified
	1.6	1.1	split
	1.4	1.8	split
	.9	.7	split
	.9	.8	split
	1.3	.9	split
	1.8	1.4	split

Table 15: Monitored data for knotted Yucca leaves.

Provenience	Material	Dimensions (cm.)			Remarks
		Length	Width	thick-ness	
Area A	?	3.4	1.7	.8	Charred
	?	3.7	2.8	.9	
Area B	Zea husk	4.5	2.8	.9	
		2.2	1.4	.5	
		3.0	1.8	1.0	
		5.6	3.3	1.1	
		2.7	2.4	1.4	
		4.2	2.6	1.3	
		3.7	2.4	1.4	
	Grass stem?	3.8	1.9	.6	
	Unidentified fiber	5.7	3.8	1.4	
		3.9	3.9	1.2	
		5.7	4.6	1.2	
		4.0	2.2	1.4	
		3.5	2.3	.8	
		4.8	1.3	.9	
		4.1	2.7	.9	
		1.9	1.7	.9	
		3.9	1.8	.5	
		2.7	1.7	.3	
		4.9	1.4	.6	
		2.8	1.8	1.3	
		2.7	2.1	.6	
		1.8	1.5	.7	
		3.9	1.4	1.1	tooth indented
		2.2	1.8	.6	

Table 16: Monitored data for quids.

expressed in appreciable frequencies. Presumably the burning indicates discarded hearth materials, Some, however, are of suitable size to resemble the fire drill spindle described below, but are broken. With burning on one end, they may also be fragments of firepokers. Splitting includes sticks and fragments which have been purposely prepared for manufacturing other items, as well as fortuitous fragments too small to ascertain if purposely split. Wooden splints wrapped with stem or leaf parts in an artifact later described are identical to many of the split wooden fragments, and would show potential use of these specimens if the artifacts function were known.

The most salient examples of human activity are the carved pieces, which are not numerous. Nevertheless, they do show practices associated with sectioning sticks and other actions. These are briefly shown in Figure 49.

Miscellaneous wooden artifacts. A few specimens show the remains of enough activity to identify them as wooden tools. These are both from Area A:

Fire drill spindle (F.S. 5; identification no. 71)
Length: 18.9 cm.; diameter: 1.1 cm.
This specimen is burnt on both slightly pointed ends, and retains identations around its midsection from having been wrapped with a cord during the ignition process.

Awl or bodkin fragment (F.S. 5; identification no. 72)
Length: 6.15 cm.; diameter; .45 cm.
This specimen tapers to a point at one end, but the other end is broken. One rudimentary and ill-defined facet is situated at the tip end.

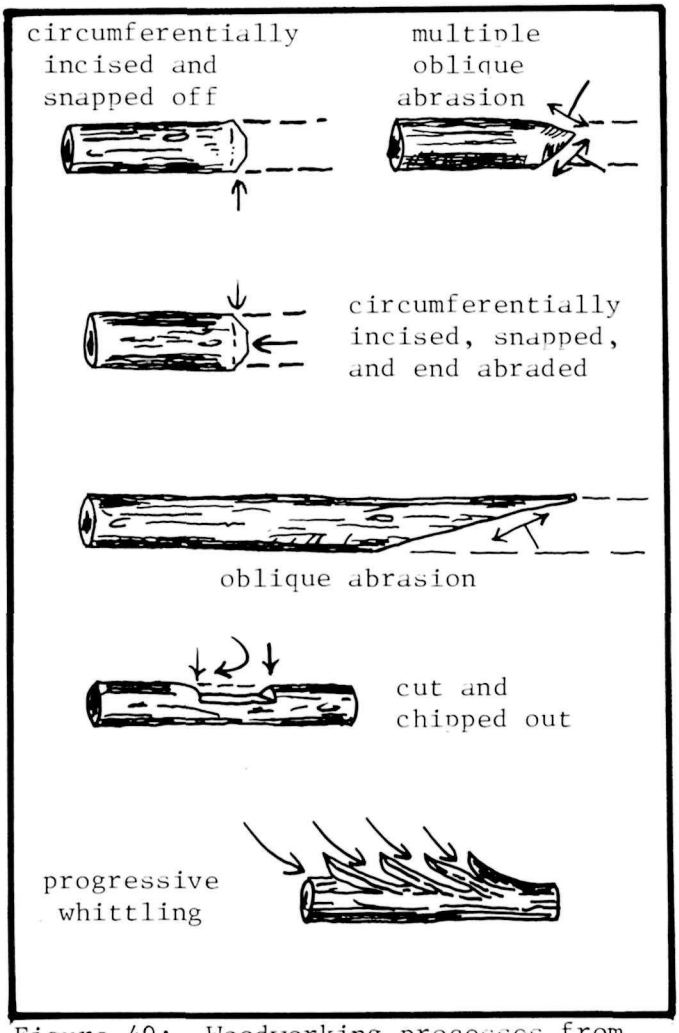


Figure 49: Woodworking processes from "scrap" specimens at Sliding Rock.

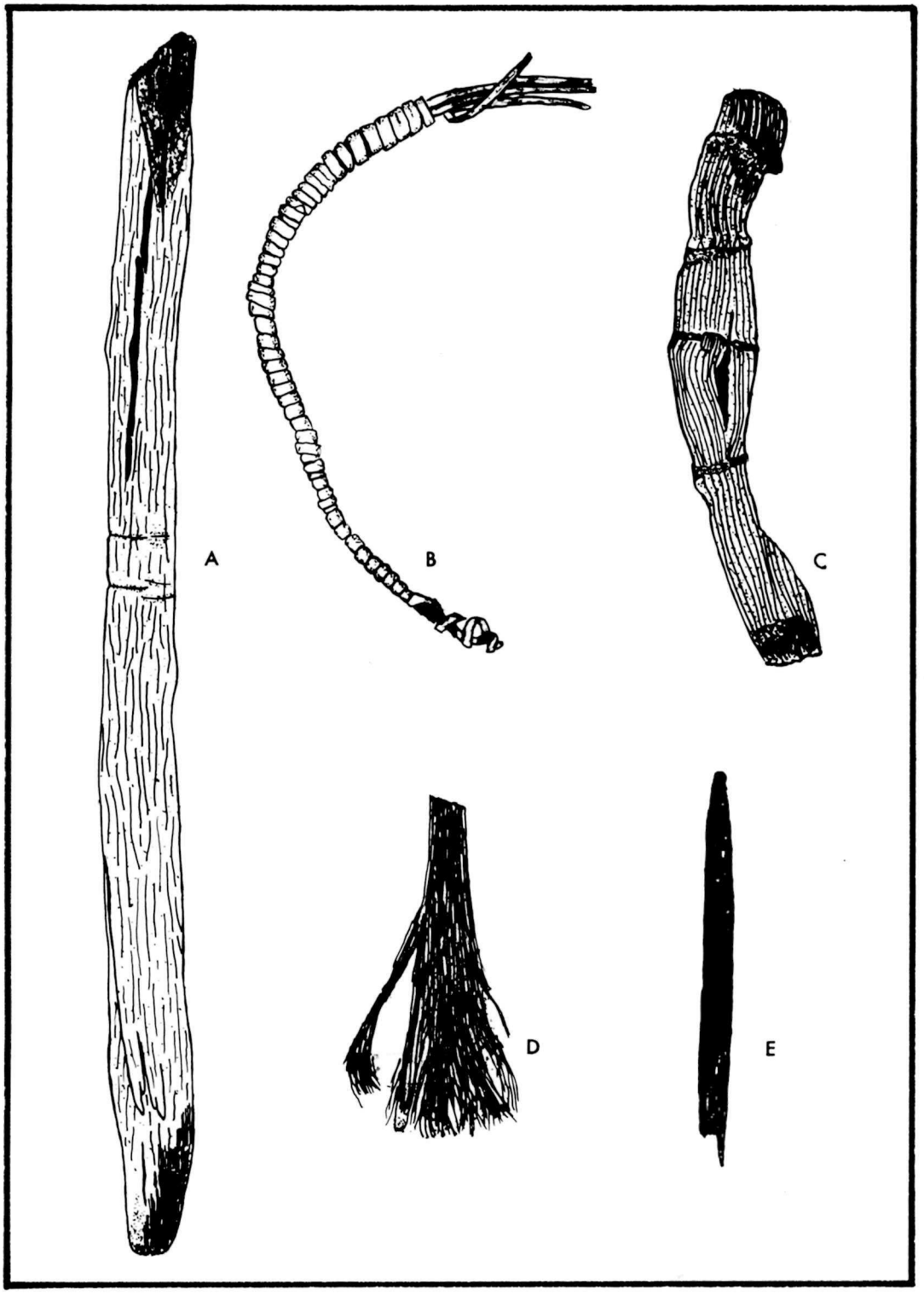


Figure 50: Vegetal artifacts. A-firedrill spindle; B-hoop fragment; C-perforated corn stem; D-yucca leaf brush; E-wooden bodkin or awl fragment.

Miscellaneous objects. A few pieces of artifacts or objects showing human activity to which no function can certainly be applied, should also be mentioned in brief. These are discussed in tabular form:

Area A

Pipe dottle (?) (F.S. 5; identification no. 79)
Length: 1.6 cm.; width: 1.3 cm.; thickness: 1.2 cm. This specimen is a compact wad of unidentified semi-fibrous material charred on one side.

Area B

Brush (?) (F.S. 7; identification no. 50)
Length: 5.2 cm.; width: 2.5 cm. this specimen is made from yucca leaf with the proximal end chewed and either burned or stained with black pigment; the distal end has been cut with a knife. Magers (n.d.: 390) records a similar specimen from Antelope House.

Hoop fragment (?) (F.S. 7; identification no. 51)
Length: 14.2 cm.; diameter: .4 cm. this artifact consists of three splints of an unidentified species wrapped with a leaf or processed bark. The splints are identifical to many of the split wooden pieces listed in Table 17.

Cordage. Included as cordage are all identifiable spun fiber fragments of thread, twine, rope, and feather cord. These pieces have been analyzed on worksheets included as Appendix F. Single, two, three, and four-ply specimens are all present; a few pieces are composed of cotton, but most are fabricated from yucca fibers. Two-ply cords compose the largest class. Of these, 73% are s-spun and z-twisted, 18% are z-spun and s-twisted, and 9% are s-spun and z-twisted. No size distinction as to finely and coarsely spun fiber has been made, although at Antelope House most fine fiber is z-spun and coarse fiber was mostly s-spun (Magers, n.d.: 354). Four-ply cords are represented both by braided and replied specimens.

	Area A		Area B		Total	
Action:	No.	%	No.	%	No.	%
abrading	3	.6	0	0	3	.3
abrading/charring	7	1.3	2	.5	9	1.0
abrading/peeling	0	0	1	.2	1	.1
abrading/splitting	0	0	1	.2	1	.1
bending	1	.2	2	.5	3	.3
burning	36	6.9	2	.5	38	4.1
burning/peeling	1	.2	1	.2	2	.2
burning/splitting	8	1.5	7	1.7	15	1.6
carving	8	1.5	4	1.0	12	1.3
carving/peeling	1	.2	0	0	1	.1
peeling	5	1.0	17	4.0	22	2.4
smoking	5	1.0	0	0	5	.5
splitting	91	17.5	94	23.0	185	20.1
splitting/coating w/residue	1	.2	0	0	1	.1
unmodified	354	67.9	270	67.3	624	67.7
Total	521	100.0	401	100.0	922	100.0

Table 17: Kinds of wood modification on miscellaneous specimens, with raw counts and percentages.

Conclusions

Despite the wide variety of artifact classes present at Sliding Rock, not enough material was recovered from the site to make many lasting observations. Historically speaking, the ceramics support the architectural development in a general sense. The seeds of a few additional interpretations are contained in the foregoing discussions of other artifact classes, but at this point, the sample size precludes the formulation of any more substantive conclusions.

CHAPTER X:

ANASAZI ARCHITECTURAL DEVELOPMENT AND CHRONOLOGY AT SLIDING ROCK

Basketmaker

Ceramics collected by de Harport (1959: 170) suggest that Sliding Rock alcove contains the remains of human groups from Pueblo I to Pueblo III stages. Megalithic slab-lined cists or houses below the floors of these structures indicate a possible Basketmaker component. These cists or houses cannot be certainly assigned to any period without excavation of at least a portion of the site which includes some of these features. Others may be found buried beneath building debris of later rooms. Although the locations of these cists are shown in Figure 51, a few isolated vertical slabs are present in the West Ruin. Not enough remains to identify these as architectural features.

Pueblo I

Other than the cists or small houses herein ascribed to Basketmakers, Pueblo I structures are difficult to identify in the ruin. Based on prior ceramic assemblages, however, they are present, perhaps localized in the East Ruin. Hypothetical proveniences of Pueblo I activity are shown in Figure 52, and relate to jacal structures which are composed of substantial vertical posts. Archeomagnetic and dendrochronological strategies can be expected

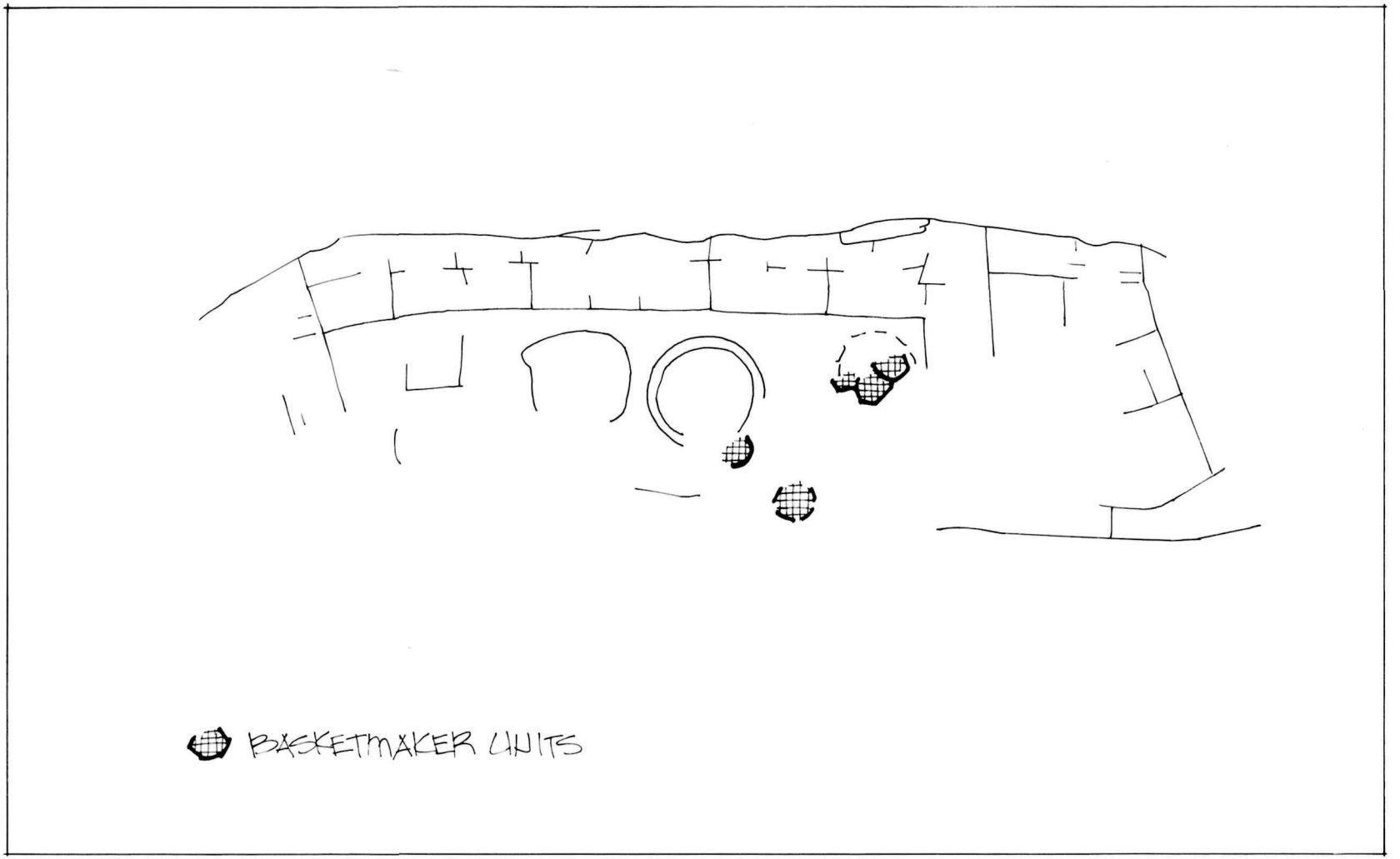


Figure 51: Visible basketmaker units at Sliding Rock Ruin. All are either large cists or small houses. Later architectural units are shown for reference.

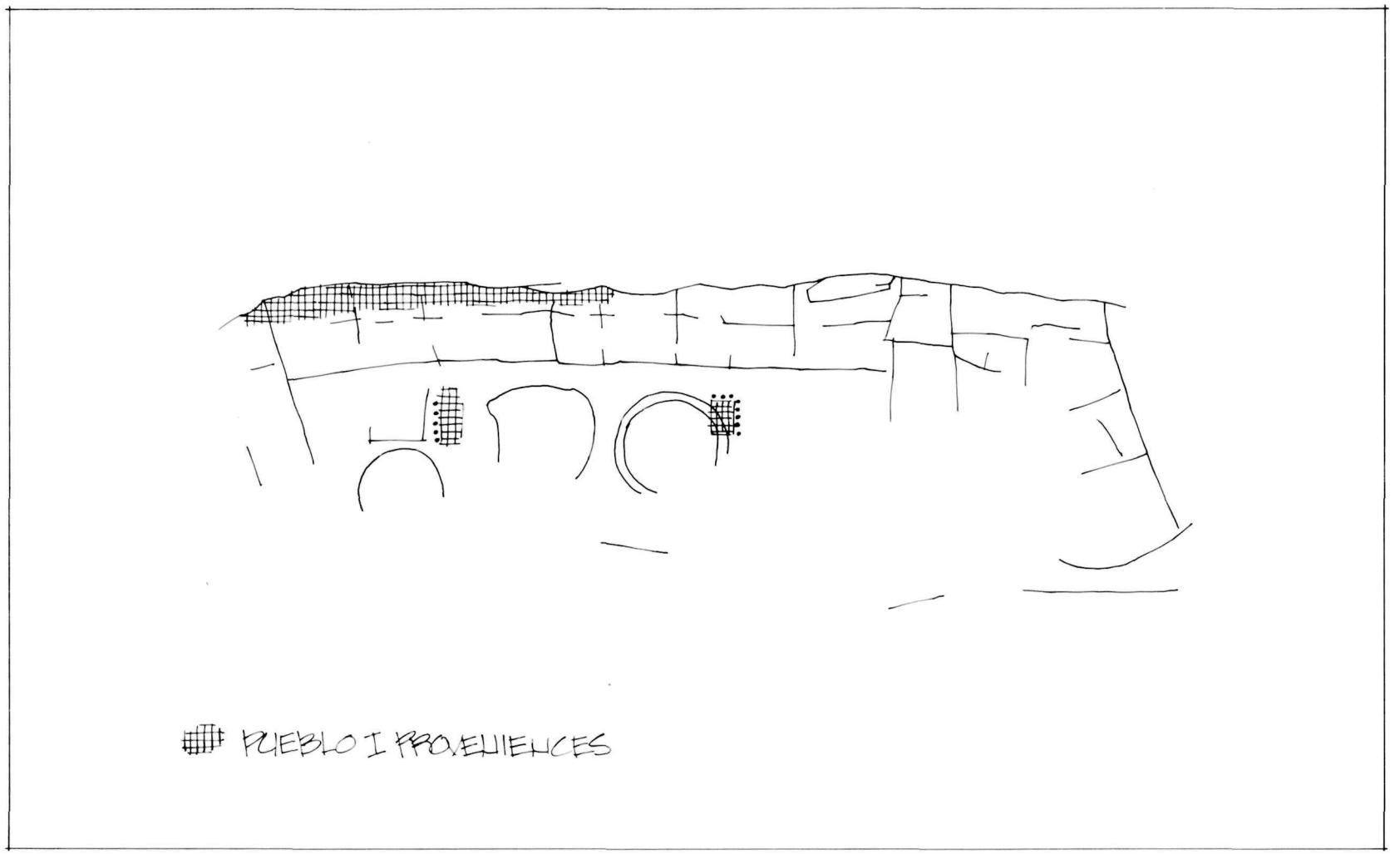


Figure 52: Possible Pueblo I proveniences at Sliding Rock. No definable units which can be definitely assigned to this stage are visible. Later architectural units are shown for reference.

to produce the time of origin, during excavation. The possibility exists that the unburned posts are the remnants of ramadas which are later in time than this stage, since wattlework construction continues into later periods. An adjunct to this aspect is that the burned posts are the remains of screens built to temporarily retain fill during kiva building activities. These burned structures are below the level at which they could have functioned as wattlework ramadas for the final prehistoric use of the alcove, at least in part. In other words, they are below and behind the walls of kivas, an area which would have had to have been filled prior to kiva construction in the East Ruin.

Other possible proveniences are even more tenuous. Slab lined houses may have been built atop the alcove floor where the kivas or other structures now obliterate them. If so, they would by necessity be in areas other than where still preserved slab cists are visible, if the assumption that these cists are Basketmaker is valid. A few rooms may also have been constructed at the rear of the alcove where they are now covered by later building debris. In any case, excavation is needed to learn much about the Pueblo 1 occupancy.

Pueblo II

By contrast, Pueblo II use of Sliding Rock is obvious in several respects, although only the East Ruin is involved. Several households arrived together, building two kivas and a double row of rooms against the rear of the alcove (Fig. 52). The presence of Room 62

indicates that other rooms may also have formed a wing to the west of both kivas, but if so they are buried. The back row of rooms was originally two stories high, and at least one room in the front row was also two stories high. Others may also have been.

The construction methodology was to prepare tabular slabs by bifacially striking off the edges, producing a chisel-like edge. Stones prepared in this fashion show a remarkable tendency toward similarity of size and stone dimensional proportions. Tabular stones have been used as chinks. As the wall was laid the mortar was smeared over the wall face with the fingers until approximately .5 meters had been erected. A rounded mud cap was applied and the wall permitted to at least partially cure. The process was repeated until the roof was put on the top of the completed walls. No extensive evidence of finish plaster remains visible, except where walls were re-used by later peoples. Whether the rooms were originally finished with plaster is unknown.

During the course of this study, the room suite and courtyard complex were used as guiding frameworks along which the archeological analysis was conducted. Both of these units have necessary constraints when evaluating site growth because one premise of the analysis is that related rooms were built together by people who arrived together. Consequently, based upon the architectural analysis presented earlier and details contained in Appendix A, the room suites and courtyard complexes which were a part of this earlier Pueblo II occupation are:

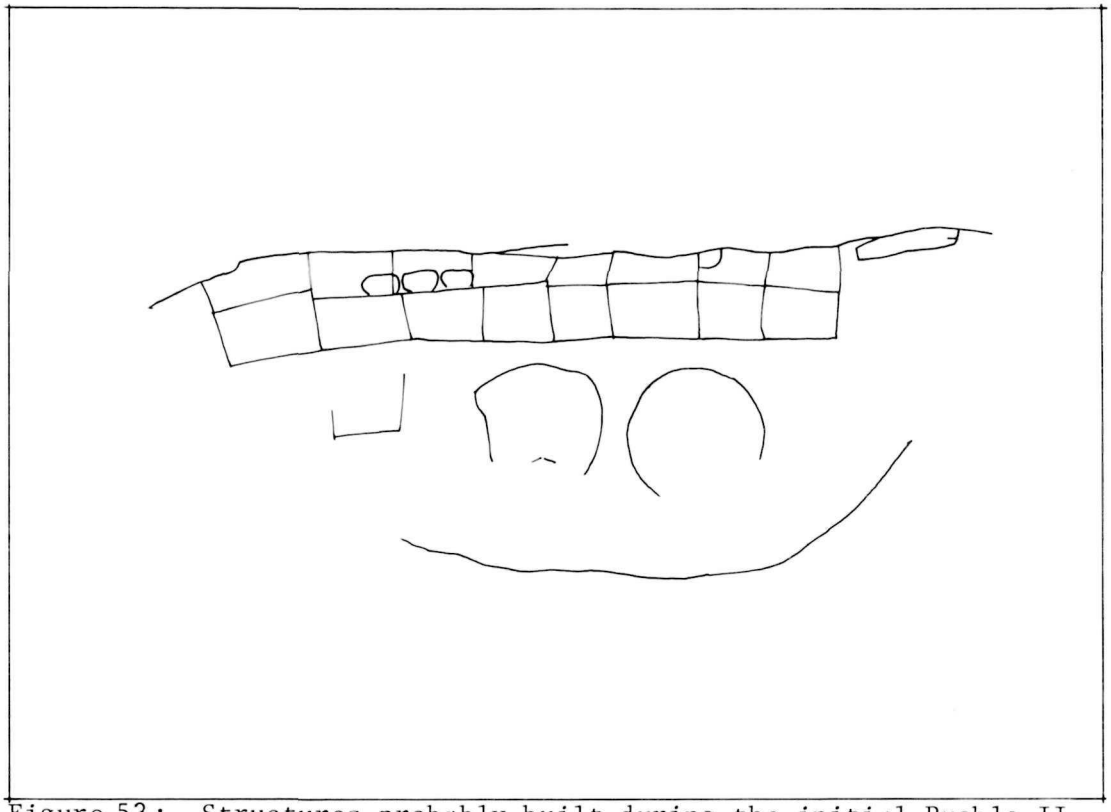


Figure 53: Structures probably built during the initial Pueblo II occupation of Sliding Rock.

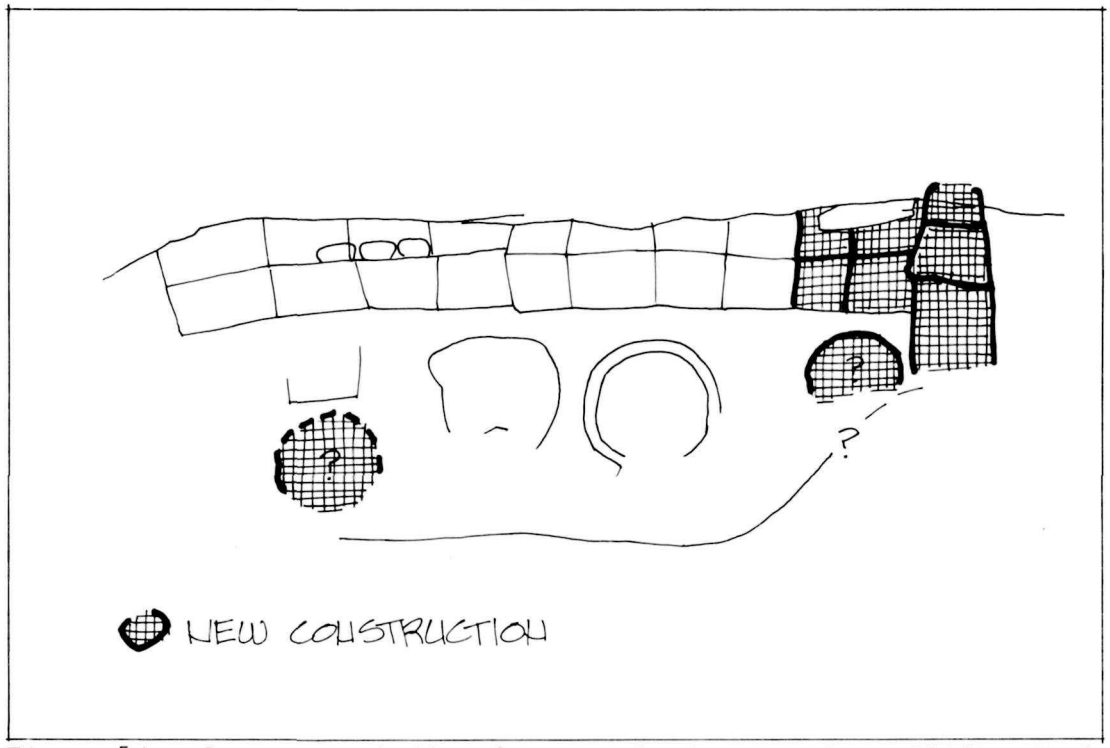


Figure 54: Structures built after population growth at Sliding Rock, also during the Pueblo II stage. Kivas D and E are problematical and were probably built during the Pueblo III stage.

Courtyard Complex B: Room Suites 22 and 30.
Courtyard Complex C: Rooms Suites 31_1 and 35.

There is no way of being certain when this influx of people arrived at Sliding Rock, but it is possible that it was about A.D. 950, based upon the sparse and poorly provenienced tree ring dates given in Table 2. This must remain a "best guess" at the moment.

Population Size of the Initial Pueblo II Influx

Regarding population size of the immigrant group, there are a few estimates available for pueblo sites or modern pueblos available from which to draw conclusions. These will be briefly reviewed here, although it is beyond the scope of this paper to extensively evaluate each. Pierson (1949: 54) used ethnographic data to derive an average of 1.9 people per room at Chaco Canyon. Naroll's method (1962: 588) indicates that roofed floor area (M^2) is ten times greater than the number of occupants of those roofed rooms, also based on ethnographic data. This method has been refined by Drager (n.d.) who suggests that a consideration of roofed ground floor area is a close estimate based upon data from modern pueblo photogrammetric maps. He believes that Naroll's value is a fairly good fit for Chaco sites. D. Morris (n.d.: 91) believes the application of this method to have produced overly conservative results in population size estimates for Antelope House, perhaps because the site's location in an alcove requires less roofed construction. None of the foregoing methods consider the differences of room function which have been evaluated during this analysis.

It is difficult to retrodict population size for such a small unit as a room suite using any means. Most estimates are developed from large population aggregates superimposed upon large room counts or floor areas. The method used here for this risky business has been to calculate a population estimate using each of the three methods outlined previously, and to calculate the arithmetic average of all three estimates. The results of this method are provided in Table 18, and suggest that the initial Pueblo II population influx was between 18 and 19 people.

In light of the three methods used, ratios were developed for comparing each method to the average value of all of them. The results are also shown in Table 18. Based upon the data presented there, .84 persons per room is a plausible number at Sliding Rock, exclusive of room function within the room suite. In addition, one person could be expected per every 4.12 m^2 of roofed floor area, and one person per every 3.19 m^2 of roofed first floor area. These values are reasonable ones, but are only estimates.

Later Pueblo II Structures

Based upon the lack of bonding scars on the exterior east walls of Rooms 35 and 61, rooms comprising the now fallen room suite north of Kiva E and Room Suite 34 were added later. There is no way of assessing whether these units represent gradual population growth or accretion by a more substantial immigration. These units were appended to the east end of the room block, probably forming a wing, as shown in Figure 54. Although Kivas D and

E may have been built along with this new addition, it is more likely that they were built during the Pueblo III work. Only excavation will tell. Population values are shown in Table 18 and if doubled, probably reflect the new occupants of both the fallen suite and Room Suite 34. Approximately seven people may have moved into the alcove, making the ultimate Pueblo II population about 25 people. Like D. Morris (n.d.: 91), I believe this figure to be conservative; perhaps because of the alcove roof, less roofed area was required per person, but any other number of people would be pure speculation.

Pueblo III

Multistoried construction is the hallmark of building during this period. A new group of people concentrated their energies upon building at both ends of the East Ruin, cleaning out some and perhaps all of the Pueblo II rooms for re-use. Roof beams may have been used to bolster retaining wall construction. Kivas D and E were probably built. The West Ruin was also built at this time, which possibly approximated A.D. 1200. Although many rooms have fallen or are buried, rooms within any one of the three major developments were probably built when households entered the site together. Relationships between these developments can only be defined by digging them. Where these groups originated is difficult to determine, but D. Morris (n.d.: 92, 642) demonstrates that movement to Antelope House from the plateau is operative during a stressful Pueblo III stage. This is an equally plausible hypothesis

for Sliding Rock which could be operationalized in a fashion similar to that used by D. Morris.

The construction method is generally to break stones in such a fashion as to produce a flat side, which then becomes the face of the wall when laid. More variable sizes of stone are used, usually without any pre-emplacement treatment. Occasionally, pecking or pecking-and-grinding are used before the stone is laid. Smaller tabular spall and chunk chinks are used between joints than during the previous period. Most walls are two stones thick, with occasional full veneer and rubble-cored masonry style in vogue. A few rooms in the West Ruin are built from unshaped stones laid only a single stone thick. These are mostly part of Room Suite 2. Sometimes vertical or horizontal logs are used as integral members for these walls, New walls are almost invariably plastered, often with a white material, sometimes applied as hand-print designs. Kivas are similarly adorned.

Population size

It is difficult to assess the size of Pueblo III population because so many rooms are now fallen. Presumably the 25 people who lived here during the previous period were replaced by a similar but slightly reduced number. Population accretion is suggested by architectural details in certain room suites, such as changes in composition of Room Suites 7, 9_1, and 9_2 and Room Suite 56 (Fig. 34). The same method used for the previous period has been used to estimate population for Pueblo III room suites which remain

	Room Suite	PIERSON		NAROLL		DRAGER		Arithmetic Average of Pierson's, Naroll's, Drager Method	Ratio of Arithmetic Average to Number of Rooms (R = Avg/Nr)	Ratio of Total Roofed Floor Area to Arithmetic Average (R = $\frac{Am}{Avg}$)	Ratio of Roofed First Floor Area to Arithmetic Average (R = $\frac{AMFF}{Avg}$)
		Number of Rooms	Population $P = N_R$ (1.9)	Roofed Floor Area	Population $P = \frac{AM}{10}$	Roofed First Floor Area	Population $P = \frac{AMFF}{10}$				
Initial Influx	22	11	20.90	36.22	3.62	22.03	2.20	8.9	.81	4.07	2.48
	30	3	5.70	9.05	.90	6.74	.67	2.42	.81	3.74	2.79
	31_1	4	7.60	14.88	1.49	11.20	1.12	3.40	.85	4.38	3.29
	35	4	7.60	15.09	1.51	14.77	1.48	3.53	.88	4.27	4.18
					TOTAL Population			18.25	.84	4.12	3.19
Later Unit	37	4	7.60	13.29	1.33	11.01	1.10	3.34	.84	3.98	3.30

Table 18: Population parameters of the Pueblo II component.

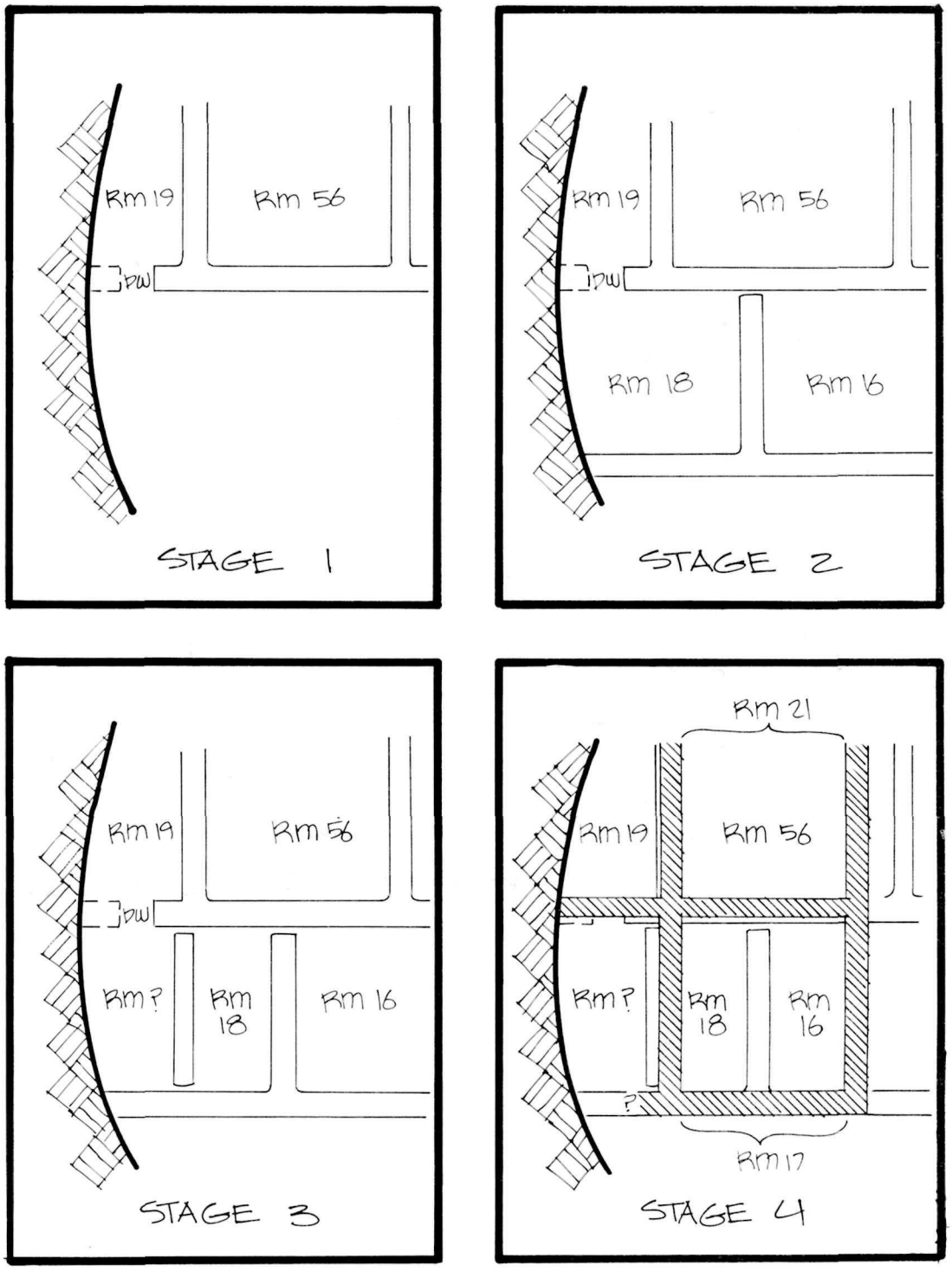


Figure 55: Successive construction stages for west end of East Ruin.

	Room Suite	PIERSON		NAROLL		DRAGER		Arithmetic Average of Pierson's, Naroll's Drager Method.		Ratio of Arithmetic Average to Number of Rooms (R = Avg/NR)	Ratio of Total Roofed Floor Area to Arithmetic Average ($R = \frac{AM}{Avg}$)	Ratio of Roofed First Floor Area to Arithmetic Average ($R = \frac{AMFF}{Avg}$)
		Number of Rooms	Population $P = N_R$ (1.9)	Roofed Floor Area	Population $P = \frac{AM}{10}$	Roofed First Floor Area	Population $P = \frac{AMFF}{10}$					
West Ruin	2	5	9.50	39.00	3.90	29.00	2.90	5.43		.09	7.18	5.34
	7	8	15.20	22.65	2.27	15.40	1.54	6.34		.80	3.57	2.43
	9_2	5	9.50	35.92	3.59	19.00	1.90	5.00		1.00	7.18	3.80
						TOTAL Population		16.77		.96	5.98	3.86
East Ruin	16	4	7.60	23.41	2.34	17.86	1.79	3.91		.98	5.99	4.57
	56	3	5.70	16.14	1.61	12.40	1.24	2.85		.95	5.66	4.35
	56	4	7.60	24.12	2.41	12.40	1.24	3.75		.94	6.43	3.31
						FINAL Population		7.66		.96	6.03	4.08

Table 19: Population parameters of the Pueblo III component.

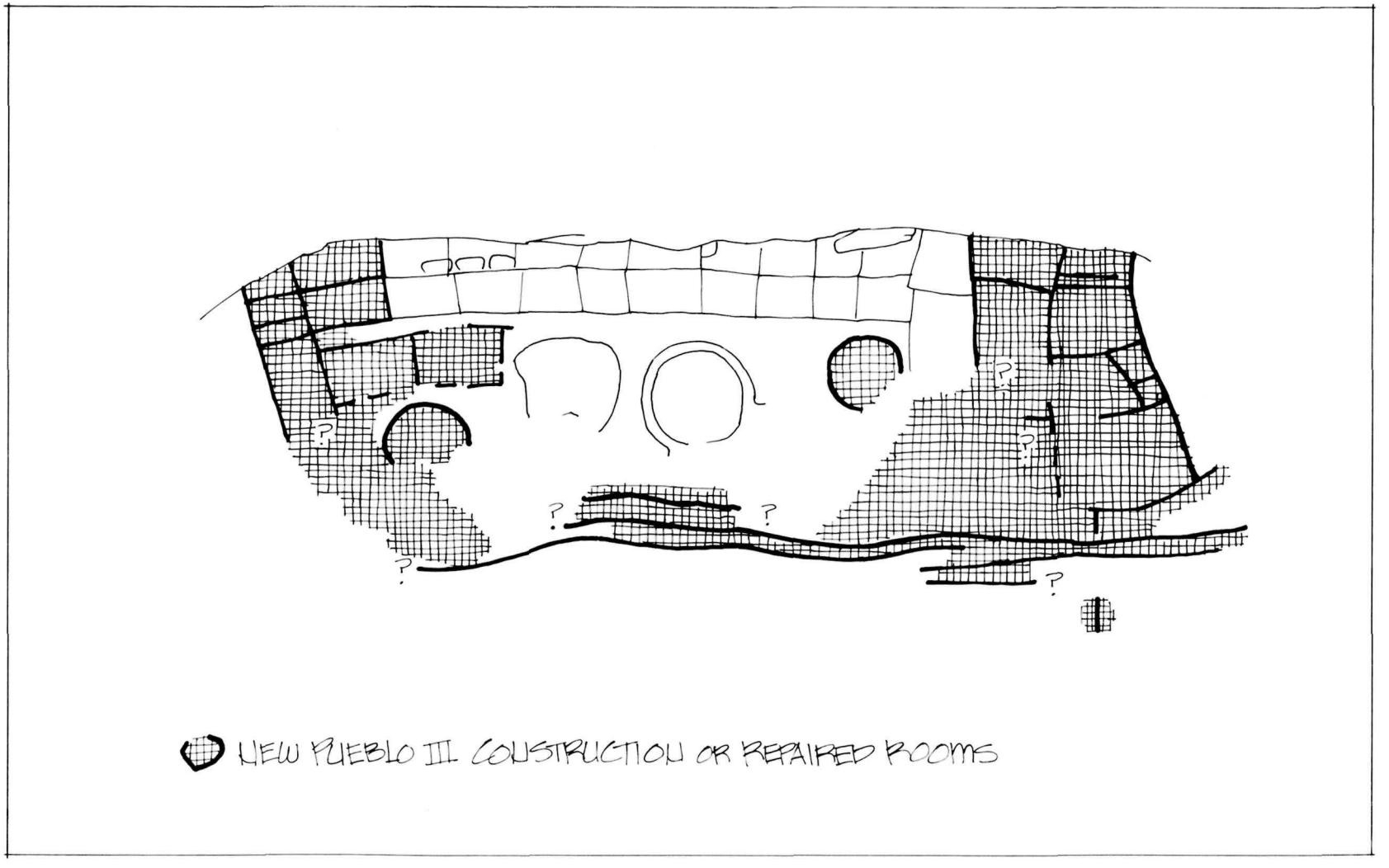


Figure 56: The Pueblo III village at the East Ruin, Sliding Rock. Probably most Pueblo II rooms were re-used.

intact (Table 19). The average values based upon known room suites in the West Ruin are:

1) An average ratio of .96 rooms per person.
2) An average ratio of one person for every 5.98 square meters of roofed floor area.
3) An average ratio of one person for every 3.86 square meters of roofed first storey floor area.

The population of people moving into the West Ruin approximates 17 individuals.

Room suites in the East Ruin are mostly fallen or buried. Those suites with data are listed in Table 19, and values generally compare well with the West Ruin values. Isolated rooms can be added to these totals following Drager (n.d.); they approximate 86 m^2, meaning that ca. 9 people were involved in building the remainder of the East Ruin. This value is probably low, even if one considers the ca. 25 people living in the re-used room block and the 7.66 from Table 19. A total of 42 people would have built and lived in the Pueblo III occupation of the East Ruin. Using the value of 4.08 m^2 per person derived by averaging the first floor area ratios produces a total population of about 54 people during the Pueblo III occupation of the East Ruin. I suggest that between 45 and 50 is reasonable to have accounted for the retaining walls and other constructs, to which should be added the 17 from the West Ruin.

Some Inferences Based on Comparing Pueblo II and Pueblo III Population Estimates

Based on the population estimate discussions, a few suggestions can be made concerning these two components. These

observations may be helpful at Sliding Rock or elsewhere during future research. These are:

1) Pueblo II walls throughout the site are built with surprising regularity in terms of overall form, stone mortar, and chinking attributes. Pueblo III walls exhibit a standardized methodology employed during construction, but pre-emplacement stone treatment is less exacting and less frequent.

2) The ratio of number of rooms per person is more constant for Pueblo II than for Pueblo III, based upon a limited sample.

3) More room is provided per person for Pueblo III people than for Pueblo II people. In other words, Pueblo III rooms are larger as a group, both overall, and in terms of roofed first storey floor area.

4) Pueblo III room suites tend to be larger in area than Pueblo II room suites, but Pueblo II room suites may include more rooms.

These general trends can be noted in rooms at Sliding Rock, but in each case the conclusions are subject to revision in the event that this site is excavated. Perhaps excavation could also shed some light on whether Pueblo III architectural variability is related to alcove or prior construction morphology.

CHAPTER XI:

SUMMARY AND CONCLUSIONS

The foregoing presentation has adopted a hierarchical model of architectural analysis with two objectives, one of which is general, and one of which is specific. The first has been an attempt to assume a viable position congruent with conservation archeology, while simultaneously obtaining archeological and perhaps anthropological data which can help reconstruct a portion of what transpired prehistorically at Sliding Rock. The second goal involves a discussion of these aboriginal occurrences in terms of chronology and architectural implications.

Regarding the first of these ambitions, the following elements were used to construct an architectural model: (1) wall components (stone, mortar, plaster, and wood), (2) walls and wall segments, (3) rooms, (4) room suites, (5) courtyard complexes, (6) dual or triadic divisions, and (7) the entire village. The site was then discussed in terms of each of these components prior to superimposing a chronological framework which would supply general observations regarding intrasite development. In lieu of excavation, these observations have been presented as working hypotheses to be evaluated in the future, should excavation eventuate. They simply represent "best guesses" based upon available data, and are subject to testing. The character of these hypotheses has encompassed both the functional and social aspects implicit in the

architectural model, and the correlates of chronological models traditionally used in Canyon de Chelly. In retrospectively evaluating the architectural model, I believe it to have proven moderately successful, however, it is not a substitute for excavation in terms of elevating hypotheses to the giddy heights of cultural laws applicable to even the local scene.

A second thought regarding the model concerns its reflection of reality. It was developed from prior studies, principally Rohn (1971), and Dean (1969). Although neither the Mesa Verde nor Kayenta region can be totally equated with Canyon de Chelly, a degree of congruence has been demonstrated architecturally. Many of the details of that alignment remain obscure. For example, uncertainty exists when considering functional room classes, especially when basing that function solely upon room size. Consequently it is feasible that the room classes utilized here do not exist. In my opinion, this is unlikely in view of archeological and ethnographic data.

Prior work at Sliding Rock indicated the extent of the ruin. Mindeleff (1897) mapped it, and de Harport (1959) added a chronology extending principally from Pueblo I to Pueblo III times, but also including a Navajo component. Herein, many architectural refinements not found in Mindeleff's text or illustrations have been presented. To de Harport's assessment of the site should be added a Basketmaker component, although its definition will require excavation. The same is true of Pueblo I features.

Pueblo II occupation is represented by more extensive use, with an initial population influx consisting of about four households arriving ca. A.D. 950, a tentative date. Either as a result of population accretion or immigration, a second small group built several rooms later during this period, bringing the total population to 25 or slightly more.

Multistoried construction in use during the Pueblo III period brought Sliding Rock to a visually impressive heyday. Both ends of the prior pueblo were the focus of expansion which led to the approximate final configuration of the East Ruin. About 65 meters away across an open plaza to the west, the West Ruin was built by another group. I have surmised that approximately 70 people were involved in the Pueblo III efforts. The mechanism which prompted the immigration is unknown, as is the time of its occurrence. Whether it is part of a general exodus from plateau to the canyon is uncertain. Reverting to ceramic dating procedures, a number of types in the small pottery collection available are popular from AD 1100 to 1150, perhaps somewhat early to have been part of such a movement. The evidence for refining the chronology is absent without excavation, although finds consisting of buried timbers used for tree ring dating are probable.

In closing, the use of this architectural model for structuring research at other sites, or as an interim non-destructive data gathering methodology, should be considered. Of necessity, its applicability rests with sites exhibiting extensive standing wall,

either as a result of superior preservation or prior excavation without backfilling. The best examples of these kinds of sites are cliff dwellings and large ruins interpreted to the public by federal or state agencies. Often this latter class of sites has not been subjected to an intensive anthropologically oriented analysis. To me, employing such kinds of analyses would constitute anthroplogical and archeological research as well as sound cultural resource management.

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