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NAVAJO INDIAN MOBILE UNIT

CHACO CANYON NATIONAL MONUMENT

BY

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By Archeologist Foreman Gordon Vivian

This report covers ruins stabilization done by the Navajo Mobile Unit, a cooperative project between the National Park Service and the Navajo Service. Equipment, material, funds, and supervision are furnished by the National Park Service while the Indian Division of the Civilian Conservation Corps provides the labor, enrolled from among skilled Navajo living in the vicinity of Chaco Canyon National Monument.

Work this year was confined to Chaco Canyon National Monument with stabilization being carried on at three of its major ruins; Pueblo Bonito, Wijiji, and Pueblo Pintado. Bonito, the largest of these sites, and occupied between 919 and 1150 A.D., has been extensively excavated so that its nearly 400 ground floor rooms and kivas form the focal point of the Service's interpretive program in the monument. Stabilization of this ruin is based on a comprehensive plan to preserve permanently here what can be safely said to represent the acme of prehistoric masonry in the Southwest as well as a building of unique size and architecture.

The other two and smaller ruins, Pintado and Wijiji, are unexcavated, also excellent examples of the Chaco style of architecture but in an untouched state. Here are mounds out of which rise fragments of two and three story walls and numerous rooms partially filled with debris of walls already fallen. Preservation of these sites is done with a view to holding those ruined portions now above ground in an unchanged condition to preserve them both for future archeological study and as a valuable item in the present interpretive program. This year saw all work completed at Wijiji; in its present unexcavated state it is completely stabilized. Work at Pintado, a site of difficult access, is only partially complete.

Stabilization of the east half of Pueblo Bonito and drainage of the two plazas were completed last year. This year work was concentrated on stabilizing the west half of the site, an area of earlier walls, cruder masonry, smaller and less complex rooms - an area architecturally poorer though of equal importance in interpreting the building's life span of more than 200 years. The fall of Threatening Rock in January, destroying 23 ground floor rooms with 123 feet of exterior wall added to the work of the Unit. With money supplied by the Emergency Reconstruction fund, an additional 15 Navajos were added to the crew and the purchase of additional material was made possible. The rock fall, partially or completely filling the 23 rooms, was left as it fell but repairs were made to 87 nearby walls, some struck by flying fragments, some split or buckled by the concussion and others severely cracked by the weight and settling of the adjacent rock mass.

During the year regular enrollees laid a total of 156 square yards of stabilized capping on exposed and eroding wall tops, a capping in which the top courses of the original masonry are relaid in a soil-bitumen mortar. The masonry remains the same, only the soil-bitumen mortar replacing the weak mud used between the joints by the prehistoric builders.

The emergency crew relaid 105 square yards of soil-bitumen brick plating and laid a new 139 square yards of stabilized capping on the tops of cracked and settling walls. The total capping laid this year protects the tops of 1329 lineal feet of wall ranging in height from three to 25 feet.

In the following figures on the preservation of wall surfaces, both the work done to stay the deterioration caused by natural agencies and the more violent damage caused by the rock fall are included. Wall surfaces are affected by a number of natural agents, although most damage is caused by moisture softening the mud in which the stone is set. Various degrees of this damage are apparent: deeply washed mortar between still-standing masonry to large areas of fallen wall caused by failure of aboriginal mortar. In Pueblo Bonito a total of 5490 square feet of wall surface was saved by various techniques ranging from replacement of fallen masonry where necessary to the more important preventative measures of grouting between loosened masonry, the filling of small holes, and the replacement of large areas of exposed mud with soil-bitumen mortar. At the unexcavated sites, wall treatment was of less necessity, 275 square feet having been treated there.

Of equal importance with the capping of walls and repair of their surfaces is drainage of the site, since surface water damages by washing to lower areas causes settling of the loose soil, and in standing in low areas disintegrates the soft sandstone of the masonry itself. As noted above, the two large plaza areas, some 3900 square yards, and 1400 square yards of room area, had been reported drained by the Unit last year. This year an additional 644 square yards of room area was graded and drained, in part by the laying of soil-bitumen brick plating and 119 square yards of impervious seal coating. Eighty eight feet of tile line was laid to carry the accumulated water to the exterior of the site.

Regular support work at Bonito consisted of repairs to foundations principally below the level of present fill, small buttressing extensions of weakened walls and concealed reinforced cores in bulged and sagging walls. Two hundred seventy-seven yards of such supporting masonry were laid to save approximately 517 yards of prehistoric work. The low percentage of masonry saved to that laid is due to the poor condition and low height of the earlier walls in the west side of the ruin. In repairs to walls damaged by the fall of Threatening Rock, such support work was a large item; 53 yards of concealed integral structural members were laid mainly in cores and buttressing extensions.

Support work was the major item at the two unexcavated sites where it was particularly necessary due to weakened foundations, rotted lintels, areas struck by falling material, and the general decay of 800 uncared-for

years. There were laid in the two sites 71 cubic yards of repair masonry, all in concealed members. This repair masonry saved in walls supported above it approximately 345 cubic yards of irreplaceable prehistoric work. Also laid in support were 23 replaced lintels and 11 concealed steel lintels reinforcing weakened original timbers.

In addition to the stabilization done by the Unit, the architect foreman attached has been employed in the preparation of Historic American Building Survey drawings of Pueblo Bonito and has prepared a ground plan of Wijiji ruin.
