

Actuncan Archaeological Project



**Report of the twelfth season
2019**

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The Actuncan Archaeological Project: Report of the 2019 Field Season

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Acknowledgements

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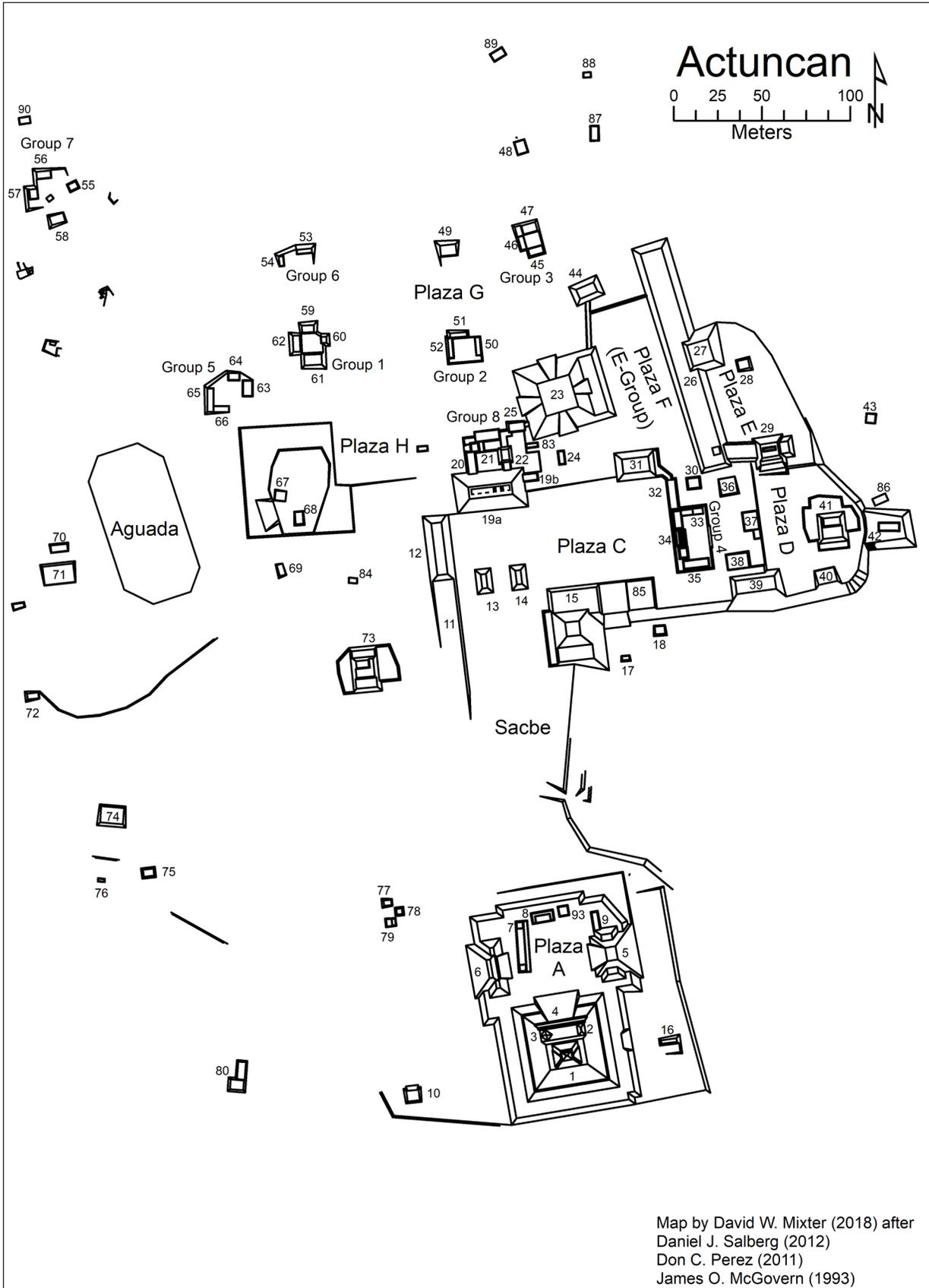
Without fail, the Galvez and Juan families permitted us to excavate on their lands, and we appreciate their patience for any inconveniences that our work might have caused them. Azucena Galvez's hospitality and excellent food sustained us through the summer, and we thank her for all her hard work and good humor. The entire Galvez family--Chena, Linda, Alfonso, Ramon, Alfonso Jr., and Gwendolyn--provided us with more than just food and shelter, but truly a home away from home. Rudy Juan was a source of valuable information as always, and we want to thank him and Dominic Juan for their continued support of our project. We were assisted in our research by many dedicated individuals from San José de Succotz. The data presented in this report was the result of local excavators whose hard work, collaboration, and enthusiasm made this field season a success. Rene Uck was our foreman again this year, and he was outstanding in this difficult job. His expert knowledge of ancient Maya architecture and his long years of experience in the field helped make excavations go very smoothly. Excavators included Elmer Cocom, Santiago Cu, Reynaldo Cunil, Gerson Uck, Alvin Uk, and Julio Yacab and ayudantes included Henry Chan, Victor Cocom, Jerson Lopez, Gerardo Magaña, Jose Manuel Mayorga, Luciano Requena, John Ruiz, Dario Shaman, and Rommel Uck. Clency Cocom, Troylin Cocom, and Julianny Neal helped in the laboratory washing and recording artifacts. Many of these men have worked on the project for years, and they are excellent people and crew. A special thanks to Luciano and Fidelia Requena for providing us with a jute feast! Our project has long talked about trying jute soup, and it was very special for you to bring us in to your home to make this happen.

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David Mixer, Binghamton and Lisa LeCount, Tuscaloosa

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Map by David W. Mixter (2018) after
 Daniel J. Salberg (2012)
 Don C. Perez (2011)
 James O. McGovern (1993)

Chapter 1: Investigations in Actuncan South

David W. Mixter and Scott Ferrara (Binghamton University)

Ongoing research at Actuncan South focuses on gaining a better understanding of Late Preclassic Maya kingship and political relationships (Mixter 2018). Actuncan South is the smaller of two primary groups of monumental architecture at Actuncan and is composed of a single triadic temple group and ancillary structures organized around a single elevated plaza (Plaza A). Actuncan South is located at the southern end of the site's primary *sacbe*, which serves to connect Actuncan South to Actuncan North. Actuncan's triadic temple group is notable because its Capitoline form (von Falkenhausen 1985) mimics the massive triadic temple groups that emerged in northern Guatemala at the very end of the Middle Preclassic period and because of the early carved stela found in Plaza A. The spread of this style of architecture, and its partial replacement of E-Groups as the primary form of monumental architecture (Doyle 2017; Estrada-Belli 2011; Hansen 1998; Saturno et al. 2018), seems to be associated with a revised political ideology that connects sites exhibiting this architectural form. Interestingly, the triadic temple group at Actuncan appears to be the most eastern example along the Belize River Valley corridor (compare location to Szymański 2014). Actuncan's carved stela, which shows stylistic similarities to the early monuments at Cival (Estrada-Belli 2011) and Nakbe and to the San Bartolo murals (Taube et al. 2010) further links Actuncan to these large sites to the northwest. Like many other triadic groups, the pyramids of Actuncan South were adorned by polychrome painted stucco deity masks (McGovern 1994) though the details of these masks have not been uncovered. Despite these similarities, uncertainty remains about the nature of Late Preclassic kingship (Martin 2016) and the processes by which this dominant ideology spread across the Maya Lowlands (see Freidel 2018 for one theory). Research at Actuncan South is built on the proposition that triadic temple groups are a critical marker of a change to Maya political ideology. By understanding the sequence of construction at Actuncan South, the relationship between this sequence and transformations to material culture and material symbol systems, and the ways Actuncan South was used as a stage for political power, we may be able to better understand the introduction of new political ideologies into the lower Mopan River valley and, by extension, the forms of power that drove this political transformation. Building on previous documentation, this report describes preliminary efforts to build a chronological baseline for the construction and renovation of Actuncan South in support of these larger research goals.

Research at Actuncan South (Figure 1.1) was initiated from 1992 to 1994 by James McGovern (1992, 1993, 1994, 2004) as part of the Xunantunich Archaeological Project. McGovern documented looters' trenches in Structures 1, 4, 5, and 6 and dug three test excavations into the center of Plaza A as part of his volumetric analysis of Actuncan's construction. Though

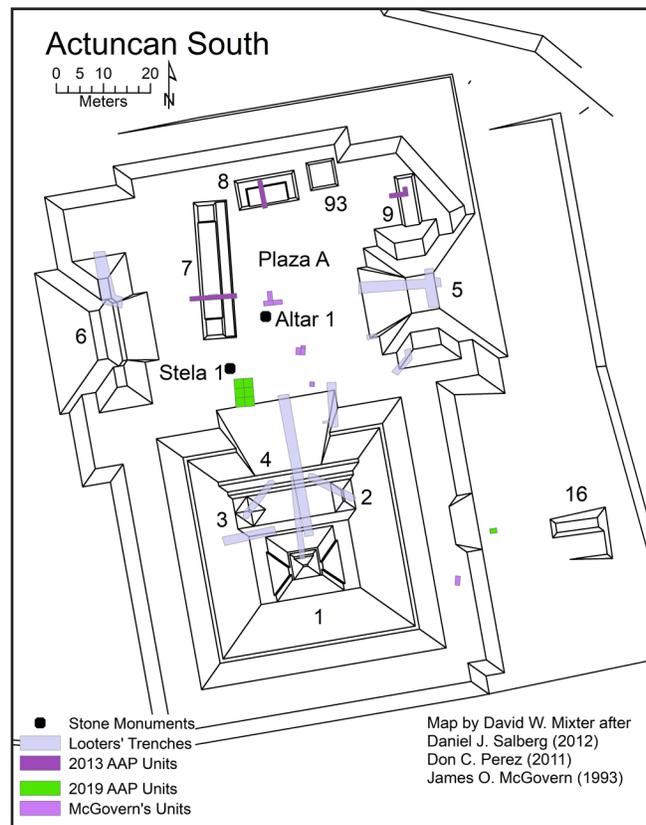


Figure 1.1. Map of Actuncan South showing 2019 and past excavations.

he identified looters' trenches in Structures 2 and 3, these were not documented. Then, during the 2013 field season, David Mixer initiated excavations into Structures 7, 8, and 9, located in Plaza A, to evaluate their association with Actuncan's Terminal Classic period occupation (Mixer and Langlie 2014; Mixer 2016:263–289). During the summer of 2015, members of the Actuncan Archaeological Project (AAP) observed new looting activity within Plaza A. This renewed looting activity included the extension of the primary looters' tunnel into Structure 4 to a length of 32 m, the excavation of two new looters' trenches into the southern wing of Structure 5, and the excavation of a pit through Structure 7 into Plaza A. All these excavations have revealed stratigraphy into the early construction sequences of these locations. During the 2018 field season, the new trenches and tunnels excavated by looters during 2015 were drawn and described by Mixer (2019). Ongoing research aims to understand the construction sequence, art programs, and activities associated with early rulership at Actuncan to better understand the legitimizing principles of these institutions, the reason for their adoption at Actuncan, and the relationship between Actuncan and other contemporaneous sites with triadic temple groups.

Research in 2019 builds on the investigations of looters' trenches initiated during the 2018 field season. During March 2019, prior to the field season, David Mixer and Thomas Jamison obtained copies of the original documentation produced by McGovern's investigations from Richard Leventhal, the director of the Xunantunich Archaeological Project. These include excavation notes, photographs, and, most importantly, unpublished profile and plan drawings from his excavations and documentation of earlier looters' trenches. These drawings are quite detailed and provide insight into stratigraphic profiles of trenches that are now backfilled or collapsing. Within Actuncan South, these documents allow AAP researchers to focus on new and undocumented looters' trenches rather than redocumenting the ones that McGovern saw. When combined with our 2018 drawings, these profiles allow for a more complete reconstruction of the construction sequence at Actuncan South.

Field research during the 2019 field season aims to gain a better understanding of the construction chronology and uses of Actuncan South (Figure 1.1). This chapter reports on three research endeavors.

Our first major objective was to understand the architectural history of Structure 4. Operation 53, a 4 m by 6 m excavation pit, was placed at the northern base of Structure 4's central staircase to the west of back dirt from Looters' Trench 2 (LT2). This excavation was intended to understand the articulation between Structure 4's staircase and plaza floors within Plaza A. Additionally, we intended to dig as deep as possible to evaluate the antiquity of the earliest construction at Actuncan South. We already know that Actuncan's E-Group was initiated prior to 1000 B.C. during the terminal Early Preclassic period (LeCount et al. 2017; Simova and Mixer 2016); so by digging to sterile in Operation 53, we hope to learn if Actuncan South was also founded in this early time period or if it was constructed *de novo* in the Late Preclassic period. Though we did not reach culturally sterile layers, these excavations did alter our understanding of Structure 4's construction sequence. One important finding is the discovery of a previously unknown, heavily disturbed terminal staircase. We were also able to connect the penultimate staircase to strata seen in the drawings of LT2 produced in 2018. A second finding is that we now recognize 12 major construction phases of Structure 4. This number is based on the 2019 data in combination with the results of our 2018 documentation of LT2. A third finding is that we were able to recognize eight plaza floors in the area directly in front of Structure 4. A fourth finding is the identification of a possible early platform (Morado Platform) that predates the earliest plaster plaza floors and was built on a substantially different orientation than the later triadic temple group architecture. Finally, we collected ceramics and large quantities of radiocarbon samples, which will be analyzed in the future to place these construction efforts in both relative and absolute chronologies.

A second major goal of the 2019 field season was to collect radiocarbon samples from LT2 to provide samples for future absolute dating of several early construction phases of Structure 4. These carbon

samples derive from *in situ* burning events on earlier staircases and likely indicate the ritual termination of these early structures immediately prior to burial. These data will later be analyzed using a Bayesian framework to provide precise dating of these earlier construction events.

Finally, a test pitting program was initiated in a lower auxiliary terrace attached to the east of Actuncan South's main platform, behind Structure 5. This space is interesting because its function may reveal more about the array of activities that took place at Actuncan South. This space likely served as some kind of limited access staging and service area for the performances that took place within Actuncan South. Possible functions include its use as a kitchen for public events, as seen attached to later Maya palaces (LeCount 2010) or perhaps as part of a residence for Preclassic rulers. Based on existing research, we have hypothesized that Preclassic Actuncan did not have a ruler's residence (LeCount 2019) so establishing that Actuncan South was not used as a residence early in its occupation remains an important goal. Furthermore, understanding when this auxiliary space was constructed and the kinds of activities that took place there will provide a cultural context for understanding how Actuncan South was used as a space to support the authority of early rulers. Due to time restraints, only a single test pit was initiated as Unit 56A. In contrast to the clear sequence of plaza floors in evidence in Operation 53, the stratigraphy in Unit 56A was difficult to untangle; however, we were able to collect both ceramics and radiocarbon samples, which will be used to date the construction of this auxiliary space.

The sections that follow describe the results of the investigations introduced above.

Building Plaza A and Structure 4: Excavations in Operation 53

Located at the southern edge of Plaza A, Structure 4 is a tall platform that forms the base of a triadic arrangement of three buildings, Structures 1, 2, and 3. The tallest of these, Structure 1, appears to have the same central axis as Structure 4. Combined, Structures 1 and 4 reach a height of 27 m above Plaza A. According to McGovern's (2004:118) measurements, Structure 4 is quite large, measuring approximately 54 m on each side. However, beyond the modern mound's measurements, the shape of Structure 4 remains uncertain and may have varied over time. Based on the rounded edges of the modern mound, Structure 4 may have had inset corners beyond the edges of the outset central staircase. Furthermore, McGovern's record of Looters' Trench 3 indicates that earlier versions of the building may have been accessed by three staircases on the front (north) side rather than a single central staircase, a pattern that is found at other sites, including Lamanai (Pendergast 1981), during the Preclassic period.

Structure 4 and its summit structures form the tallest structure at Actuncan. It looms over Plaza A, the central open space of Actuncan South. Plaza A's platform measures 82 m east to west by 120 m north to south and is 4.5 m tall. This mass likely conceals the earliest construction efforts in the area. During 2019, excavations aimed to identify the construction sequence of Plaza A and its relationship to Structure 4's final construction phase to provide a baseline for future research.

Operation 53 is a 6 m by 4 m excavation placed west of the central staircase's axis. We placed it here with the intention of locating the northern edge of Structure 4's terminal central staircase (Figure 1.2). While digging LT2, looters created a substantial pile of rubble north of Structure 4's centerline. The shape of the looters' dirt pile includes two linear extensions that run north to south on either side of the entrance to LT2. Our excavations were placed as near to the centerline as possible, but we avoided the looter's debris pile. Units were aligned to Structure 4's orientation at 4.3° north of east based on our field observations. Because the primary goal of Operation 53 was to understand the sequence of plaza floors, we placed the units at the northern edge Structure 4's collapse with the intention of catching the lowest step in the southern-most units. This placement would allow us to place the plaza excavations within the context of the standing architecture.

Operation 53 was initially a 4 m by 4 m excavation split into four 2 m by 2 m units for recording purposes, 53A through 53D. Following the identification of stairs throughout Units A and B, the excavation was extended 2 m to the north with the addition of Units 53E and 53F. Excavations in Units 53A and 53B terminated at the top of the terminal staircase, except for a 1 m by 2 m probe into the terminal stairs in Unit 53A. Excavations in Units 53C through 53F continued downward through sequential plaza floors. Due to time restrictions, these excavations were eventually narrowed to a 2 m by 4 m space in Units 53E and 53F and then narrowed again to a single 2 by 2 m excavation in Unit 53F with the aim of penetrating as deeply as possible.

All excavations followed the standard AAP methods previously described by Mixer (2012) with minor modifications. Instead of universally recording information in 1 m by 1 m units, Operation 53 was composed of 2 m by 2 m units. All excavations were recorded using cultural strata, which were then combined following the completion of excavations into analytical units that reflect cultural or natural deposits. All soils and sediments were sieved through 6.35 mm (0.25 in) screens for the collection of artifacts. Additionally, the surfaces of all plaster floors were sampled for plaster chemistry analysis. Upper floors were sampled using a 50 cm staggered lattice pattern, while lower floors were sampled on a 1 m grid. These samples will be analyzed for elemental composition when funds are available to better understand the function of these spaces. During excavation, architectural features were named rather than numbered to avoid a later need to renumber if sequences are found to be more complicated. Staircases were named after colors rendered in Spanish, and floors were named after the colloquial names of birds as reported by our local field crew.

In total, our excavations encountered two distinct versions of Structure 4's staircase and eight plaza floors. Additionally, we may have encountered a low platform and appended stair associated with the terminal construction phase; however, these were difficult to delineate due to poor preservation. Finally, two possible buried platforms were encountered, though the limited nature of our exposures limits our ability to understand these constructions. Excavations terminated about 3 m below the surface in Units E and F before we were able to reach culturally sterile levels. Further excavations are required to find evidence for the earliest construction.

Description of Findings

While our excavations did not reach culturally sterile layers, we did reach approximately 3 m below the modern surface of Plaza A (Figure 1.3). McGovern (2004:114) estimated that the platform under Plaza A was approximately 4.5 m in height, although this likely varies depending on the depth of the natural terrain that it was built on. Therefore, our excavations in the west side of Unit F likely did not excavate

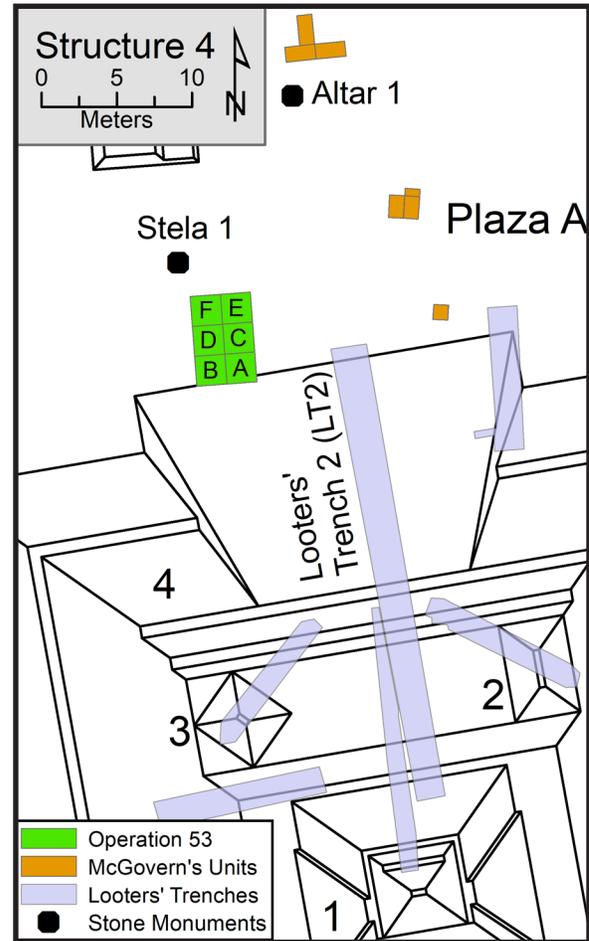
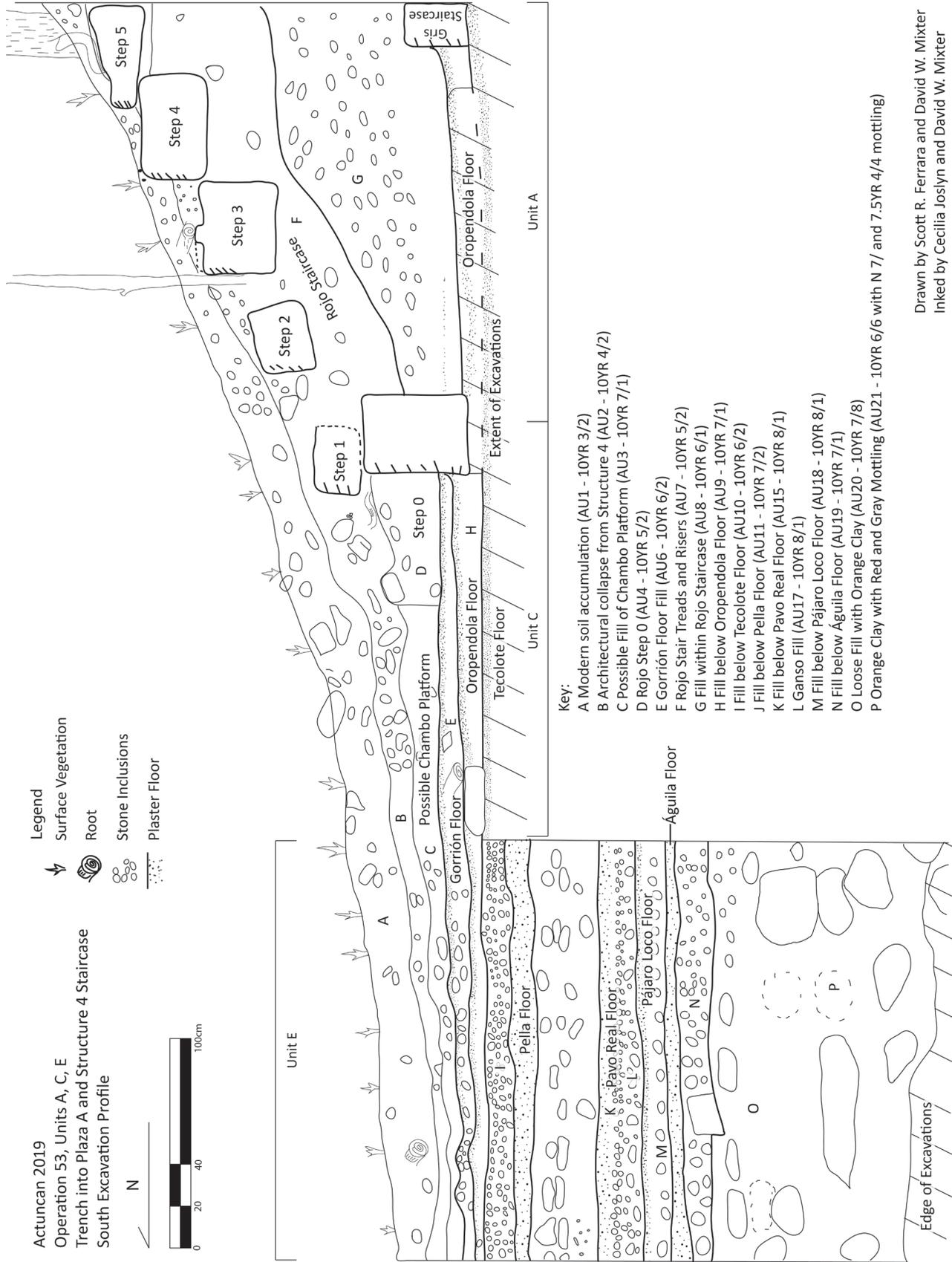
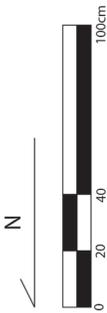


Figure 1.2. Operation 53 area of excavation.

Actuncan 2019
 Operation 53, Units A, C, E
 Trench into Plaza A and Structure 4 Staircase
 South Excavation Profile

- Legend
- Surface Vegetation
 - Root
 - Stone Inclusions
 - Plaster Floor



- Key:
- A Modern soil accumulation (AU1 - 10YR 3/2)
 - B Architectural collapse from Structure 4 (AU2 - 10YR 4/2)
 - C Possible Fill of Chambo Platform (AU3 - 10YR 7/1)
 - D Rojo Step 0 (AU4 - 10YR 5/2)
 - E Gorrión Floor Fill (AU6 - 10YR 6/2)
 - F Rojo Stair Treads and Risers (AU7 - 10YR 5/2)
 - G Fill within Rojo Staircase (AU8 - 10YR 6/1)
 - H Fill below Oropendola Floor (AU9 - 10YR 7/1)
 - I Fill below Tecolote Floor (AU10 - 10YR 6/2)
 - J Fill below Pella Floor (AU11 - 10YR 7/2)
 - K Fill below Pavo Real Floor (AU15 - 10YR 8/1)
 - L Ganso Fill (AU17 - 10YR 8/1)
 - M Fill below Pájaro Loco Floor (AU18 - 10YR 8/1)
 - N Fill below Aguila Floor (AU19 - 10YR 7/1)
 - O Loose Fill with Orange Clay (AU20 - 10YR 7/8)
 - P Orange Clay with Red and Gray Mottling (AU21 - 10YR 6/6 with N 7/ and 7.5YR 4/4 mottling)

Drawn by Scott R. Ferrara and David W. Mixter
 Inked by Cecilia Joslyn and David W. Mixter

Figure 1.3. Operation 54 east profile.

through the fill of the original monumental construction of this platform. However, we did encounter some indications of an early construction at the very bottom of these excavations. A stacked stone alignment, named Morado Wall, built out of cut stones was identified in Unit F (Figure 1.4). This wall may have been the face of an early platform because we observed that Morado Wall had a vertical face oriented east-southeast, and several flat stones were located on its surface in the northwest corner of the unit. Additionally, this alignment may have been constructed on a soil change located at the base of our excavations, which terminated at a light grey surface of either reduced clay or packed *sascab*. If Morado Wall was the face of a platform associated with a construction surface at the base of our excavations, then it was at least 80 cm tall, based on its preserved height in our excavations. Alternatively, this alignment may simply have been a differentiation in the fill, representing the process of construction.



Figure 1.4. Overhead photograph of Morado Wall.

The earliest known fills were constructed of consolidated and compact dark-red clays interspersed with *sascab* and a few, large limestone and chert cobbles. On top of this layer, we documented a stratum of dense stones, both limestone and chert, which were consolidated by a yellow clay mottled with brown, oxidized dark red, and reduced light grey sections. Near the top of this layer, the stones were increasingly abundant with gaps appearing between the stones. In total, these fill layers are 1.8 m thick and capped by the preserved Águila plaster floor. Despite the differences in the color of the clay and the densities of inclusions in different elevations of this fill, we were not able to clearly distinguish multiple construction events. Our current hypothesis is that these fills are all part of a single massive construction event.



Figure 1.5. Teeth and bone from Feature 3.

Within this fill, we encountered a secondary burial (Feature 3), just in front of and near the preserved top of Morado Wall. Feature 3 included a partial human mandible and several teeth that appear to have been burned *in situ* in association with marine shell (Figure 1.5). This mandible was inspected by project osteologist Carolyn Freiwald in the field and lifted as a block for excavation in the lab. Feature 3 may have been associated with the construction of the platform and the placement of the thick layer of clay fill, but it is more likely a termination deposit associated with the abandonment of Morado Platform given its placement outside the platform and near the top of the wall. If so, the deposit would be reminiscent of the Cunil jar rims used as termination braziers under Structures 41 and 26 (Mixer 2012; Simova and Mixer 2016). A direct radiocarbon date of the jaw may be able to provide insight into this association.

Águila Floor, the eighth plaza floor, was the earliest of a series of three hard, well-preserved plaza floors

constructed of several centimeters of plaster finished with polished surfaces. Pájaro Loco Floor, the seventh plaza floor, was constructed almost directly on top of Águila Floor. There is only a 3 to 4 cm difference in elevation between the two floors. On abandonment, Pájaro Loco Floor was covered with a 10 cm thick layer of packed *sascab* fill, which was initially mistaken for a floor during excavations. On top of this, two different fills were used as ballast for the 4 cm thick Pavo Real Floor, the sixth plaza floor. Small river-turned pebbles were identified under much of this floor; however, in the center of our excavations, the Maya used a dense accumulation of ceramic sherds and lithic debitage as ballast. This 1.8 m wide artifact concentration (which we call Feature 1) contained a high density of carbon and was either burned *in situ* or prior to deposition (Figure 1.6).

Unlike the earlier floors, Pavo Real Floor may have served as the foundation for a platform (Figure 1.7). Our excavations identified a series of walls, most of which formed parts of orthogonal construction bins used to bury Pavo Real Floor and raise the level of the plaza. These were largely built out of stacked limestone blocks that were not faced. However, one of the walls, Verde Wall, was constructed out of cut-stone blocks and retained a more compact fill compared to the rubble fill characteristic of construction fills. This wall was located in Unit E, and it crossed nearly the whole unit. It faced north and was aligned with Actuncan's site grid. Behind this wall, the surface of the fill was a compact white *sascab* that very well may have been the remains of a platform surface. This wall did not continue into Unit F, which means that the edge of the wall would have been located under the retaining wall that ran north-south roughly along the division between the two units. If Verde Wall was the face of a platform, then it was heavily damaged and perhaps truncated in the process of burying Pavo Real Floor and the platform. Additionally, the stones used to build the platform were stacked unevenly, leaving in question whether this wall was the façade of a platform or simply part of a construction bin.

When Pavo Real Floor was buried, Plaza A was raised by approximately 30 cm. As noted, a grid of stacked stone retaining walls formed construction pens that held large-rock fill. This fill was not dry-laid—we found fine sediments between the stones—but it was expedient. In the northwest corner of

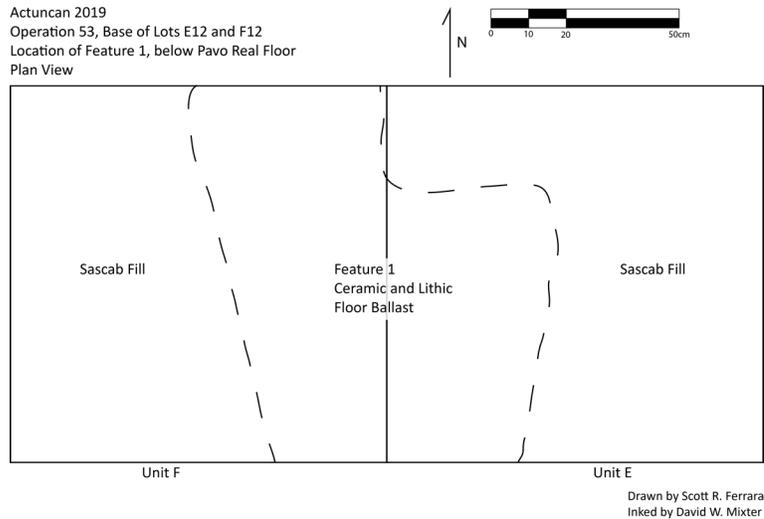


Figure 1.6. Location of Feature 1 beneath Pavo Real Floor.



Figure 1.7. Retaining walls built on Pavo Real Floor.

one of these pens just above Pavo Real Floor, we encountered a small concentration of artifacts we call Feature 2 (Figure 1.8). Feature 2 appears to be a ritual deposit of broken ceramic sherds and lithic debitage. The sherds do not appear to constitute whole vessels. They included examples from the Sierra and Polvero ceramic groups; however, the assignment of a date to these artifacts will await a full analysis.



Figure 1.8. Ceramic sherds at the top of Feature 2.

On top of this fill layer, the Actuncan Maya laid a thin plaster floor resting on a layer of small pebble ballast. This floor, Pella Floor, was poorly preserved and was the fifth in the sequence. It is most interesting because of the depth of the fill laid to build it. This fill consisted of small to medium stones within light gray to light brownish gray sediments. This construction represented a major episode of modification to Plaza A.



Figure 1.9. Gris Step and Oropendola Floor.

Pella Floor was buried in turn by Tecolote Floor as the plaza level was raised 20 cm. Tecolote Floor was well preserved in places, particularly along the northern edge of the excavation unit and under the terminal staircase of Structure 4 in Unit A. Tecolote Floor was associated with the lowest step of Gris Staircase, the penultimate staircase of Structure 4 revealed in the deepest part of our excavation in the southern extreme of Unit A (Figure 1.9). Step 1 was poorly preserved but was represented in our excavations by two cut-stone blocks lying flat and facing to the north. We observed that Tecolote Floor ran up to the base of these blocks. Because we did not dig below this step, we do not know if the floor also continues under the block to the south.

Tecolote Floor, in turn, was covered by Oropendola Floor, which was preserved in patches. Oropendola Floor, the fourth plaza floor, was the earliest floor associated with Rojo Staircase, the terminal staircase of Structure 4. Oropendola floor also ran south under Step 1 of Rojo staircase, where it sloped slightly upwards and lipped up to Gris Stair. Based on this unusual construction, Oropendola Floor appeared to have doubled as a foundation for the construction of Rojo Staircase. After Rojo Staircase was constructed, a patch was added such that Oropendola Floor lipped up onto the base of Rojo Staircase.

Rojo Staircase was constructed on Oropendola Floor and represents the latest of 12 known major construction phases of Structure 4 (Figures 1.10, 1.11). Rojo Staircase was first identified in 2019 and does not appear on the profile of LT2 drawn by Mixer (2019:74) or McGovern (2004:189). The lowest five steps (Steps 1 to 5) were identified within the space of our excavations. The fill of the stairs was laid in two layers. The lower fill consisted of a dense, lime-rich sediment that sloped up from the back of Step 1 of Rojo Staircase over Gris Stair. Above this, the fill consists of large limestone rubble placed in a dense lime-rich matrix. The stairs themselves were constructed out of large soft limestone blocks that were up to 70 cm long and 30 cm tall. These were cut to fit, though the exact size of the original blocks is difficult to ascertain because erosion and roots have broken and displaced most of these blocks to some degree. Nonetheless, our best reconstruction suggests that most of the blocks were cut to a roughly standard



Figure 1.10. Rojo Staircase during its terminal use contemporaneous with Tucán Floor.

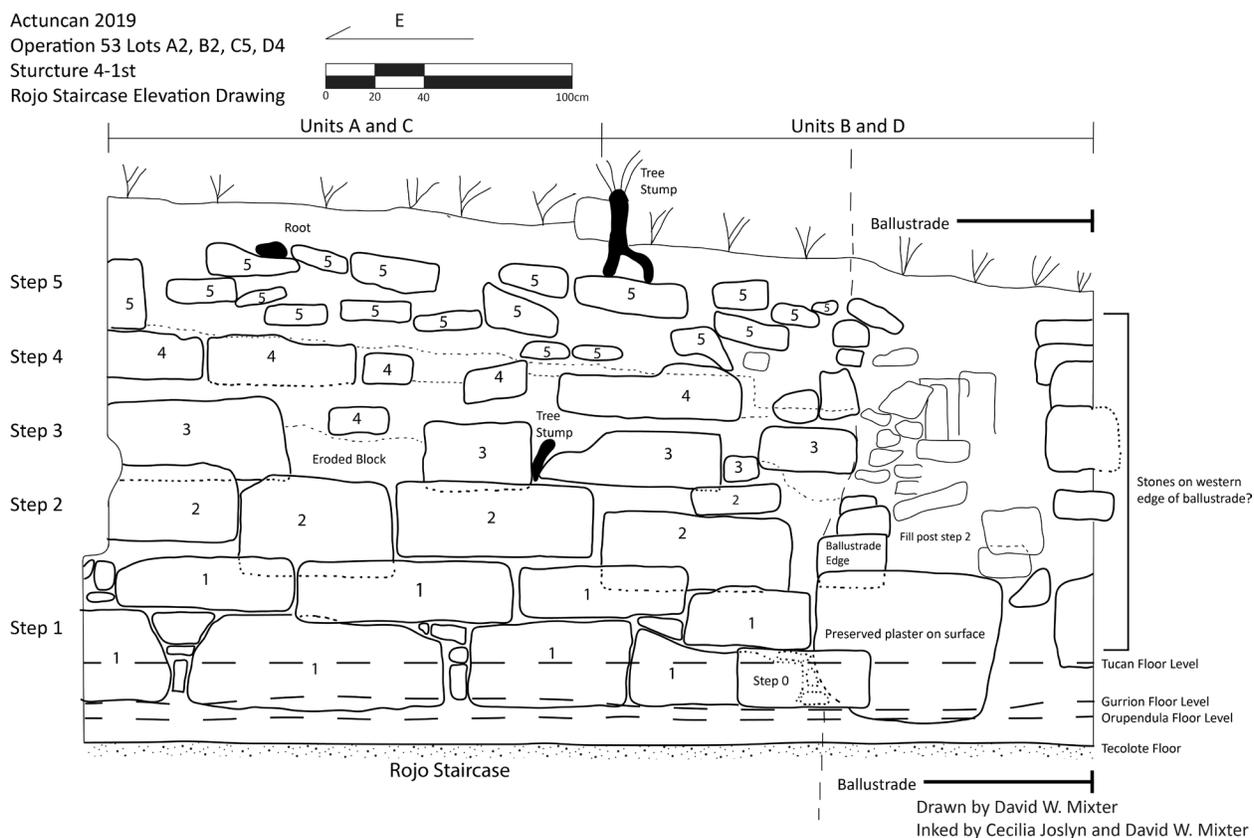


Figure 1.11. Elevation drawing of Rojo Staircase, facing south.

size. Chinking stones that were evident between blocks in the first step, which was also the most well preserved, indicate that the blocks were not cut with precision. These stones would have then been covered by a layer of plaster that likely rounded the nose of each step to some degree. The foot of each riser stone was set below the top of the riser in front, providing some interlocking structural support. The gap would have been filled by a ballast of broken limestone bits in a compact sediment layered over with plaster. Each step was approximately 30 cm tall apart from the lowest step (Step 1), which was 60

cm tall and constructed of two courses of stone blocks rather than one.

Additionally, our excavations overlapped with the remains of Rojo Staircase's western balustrade (Figure 1.11). The location of the balustrade was marked by a single tall stone in line with Step 1. The eastern edge of the stone appeared to mark the eastern edge of the balustrade. Moving south, up the staircase, we were able to identify a rough alignment of stone blocks oriented north-south that likely formed the eastern edge of the balustrade. Based on the absence of a height difference between the stairs and the balustrade, the balustrade may have been an angled surface that intersected with the stair noses, which is less common than a balustrade that is elevated above the stairs (Loten and Pendergast 1984:4). A rough line of cut stones was identified in the western profile of our excavation and may represent the western side of the balustrade collapsing outward into the corner of the inset between the stair and the lowest terrace of the Structure 4 platform. Oropendola Floor both served as the foundation for Rojo Staircase and was also patched to lip up onto the staircase, indicating that the two were utilized simultaneously for a time.

After Rojo Staircase had been in use for a time, Oropendola Floor was replaced by Gorrión Floor, which raised the plaza level by about 6 cm. Gorrión Floor initially ran all the way to Step 1 of Rojo Staircase and terminated at Step 1. Soon after, an additional step (Step 0) appears to have been appended to the face of Rojo Staircase. This step was poorly preserved and does not seem to have been as well constructed as the rest of Rojo Staircase. It extended about 25 cm further to the west than the other steps, overlapping with the front of the balustrade. This step was about 30 cm and would have functionally improved Rojo Staircase, cutting the height of the previously intimidating first step in half.

The latest construction phase within Plaza A was heavily disturbed and difficult to define. In the western part of our excavations, we identified Tucán Floor based on the presence of a level area of ballast. We estimate that Tucán Floor was approximately 20 cm above Gurrión Floor and largely covered Step 0. This floor was only evident in the western 1.7 m of our excavations. Further east, we encountered a level area of chert cobbles and broken limestone chunks around 30 cm in diameter. In the field, we initially believed that these materials represented a low platform (Chambo Platform) constructed off the face of Rojo Staircase. While this may be the case, in retrospect, this area could just be the remains of collapse off Structure 4 that destroyed Tucán Floor. If this was a platform, it was likely constructed prior to the construction of Tucán Floor, which was not evident below this area of larger stones. Further horizontal exposures are necessary to better understand these late architectural features.

Additionally, in Unit E, we identified a fallen portion of an uncarved stone monument, evident based on the harder siliceous limestone of which the block was made. It is not clear if this fragment fell *in situ* or was moved to this location in antiquity or more recent times.

Though we are unable to provide a secure construction sequence for the latest phases, we do believe that this evidence of minor modifications to the front of Rojo Staircase speaks to an extended period of use in the Terminal Classic period and perhaps beyond following the construction of Rojo Staircase. This interpretation is bolstered by artifactual evidence for late ritual activities including large quantities of censers found above the terminal architecture and within the fill of these late modifications.

Operation 53 Analytical Units

This section provides detailed descriptions of each excavated deposit and the associated architectural and cultural finds. Analytical Units are listed roughly from latest to earliest (Table 1.A.1). See the Harris Matrix (Figure 1.A.1) located in the appendix for a description of the stratigraphic relationships.

Modern Surface – AU1. Lots Excavated: 53A1, 53B1, 53C1, 53D1, 53E1, 53F1. This analytical unit consisted of the humus soils above a dense layer of structure collapse. The humus consisted of very dark grayish brown (10YR 3/2) clay loam between 5 and 17 cm thick with limestone inclusions ranging 1 to 50 cm in size. Inclusions consisted of fallen cut-limestone blocks and the tumbled remains of quarried limestone and chert cobble fill. This analytical unit included extensive root systems throughout the surface. In Units A and B, we encountered the disturbed surface of the Rojo Staircase, which extended into the southern edge of Units C and D. The staircase was evident as a rough alignment of stones running east to west across the units. These alignments were interrupted in the western edge of Unit B by a north-south alignment that we identified as the stair's balustrade. This staircase was further defined during the excavation of AU2. In Units E and F, the density of collapse diminished further away from Structure 4. The rounded top of a fragment of a very large chert cobble was identified in Unit C. Though we initially believed that this stone might have been intentionally placed, it later became clear that it was a collapsed stone that tumbled from higher up on Structure 4. Artifacts collected in this analytical unit include a limestone celt.

Structure 4 Collapse – AU2. Lots Excavated: 53A2, 53B2, 53C2, 53C3, 53D2, 53D3, 53D6, 53E2, 53F2. This analytical unit consisted of collapse material from Structure 4 below the modern surface layer. These sediments included fallen cut limestone, broken limestone, and chert cobbles in clay loam that transitions to a silty loam matrix further north in Units E and F. Soil colors varied from grayish brown (10YR 5/2) on the structure to dark grayish brown (10YR 4/2) and gray (10YR 6/1). This analytical unit was between 14 and 28 cm thick. The fill included some pieces of sculpted stucco, likely the collapse of sculptural programs from Structure 4's façade.

At the base of this lot, Rojo Staircase was delineated in Units A and B and the southern edge of Units C and D. In total, up to 6 stairs were identified, numbered 0 to 5. Steps 1 and 2 were well preserved, while Steps 3, 4, and 5 were heavily disturbed by roots, though they were clearly evident. Step 0 was likely a later appendage to the front of the staircase and was also disturbed. Step 1 was taller than the steps above, measuring about 60 cm tall in its original form. Steps 2 to 5 averaged approximately 30 cm in height. The addition of Step 0 would have made Rojo Staircase more approachable by providing evenly spaced first and second steps. All steps were one course of stones high, except for Step 1 which was 2 courses high. The blocks that made up the risers are up to 80 cm wide but were not necessarily all evenly sized. Gaps between the stones were filled with limestone chinking to create even faces to the risers. The riser stones are each between 25 and 30 cm deep. These stones would have then been covered by a stucco coating to create smooth stair treads and risers, though little stucco preserved.

The western edge of Step 1 was delineated by a large single stone, measuring approximately 80 cm across and 60 cm tall located in the south west part of Unit 53D. We determined that this was likely the eastern edge of the staircase balustrade, which ran south up the staircase near the center of Unit B. The western edge of the balustrade was not identified and was likely outside or at the very edge of our area of excavation. The surface of the balustrade was heavily disturbed and was identified based on a rough line of cut stones in Unit B that align with the eastern edge of the large single stone in Step 1. Step 0 in front of the balustrade.

In the western 170 cm of Units D and F, the remains of the terminal floor surface, Tucán Floor, were evident based on an even layer of fine, crumbled lime. This floor was heavily disturbed, but clear, and preserved to some extent by the collapse that fell on the floor. In Units C and E and the eastern 30 cm of Units D and F, we encountered a layer of large stones above the level of Tucán Floor. Cut stones were clustered around the edges of this layer, though these were not clearly in a line. These stones cut through the level of Tucán Floor suggesting that they did not sit on Tucán Floor but were instead a separate low platform that was contemporaneous with Tucán Floor. We named this platform Chambo



Figure 1.12. Likely monument fragment in context of Structure 4 staircase..



Figure 1.13. Likely monument fragments on the surface of Plaza A prior to excavation

Platform. However, we could be wrong. These stones may have been construction collapse that fell off Structure 4 from a great height and embedded into the floor at this location. A sculpted piece of siliceous limestone was encountered lying flat in Unit E (Figure 1.12). This large stone was likely a portion of a broken monument that once was erected in Plaza A. The southwest corner of Plaza A contains a plethora of uncarved monument fragments (Figure 1.13). The location of this fragment did not appear to have had any particular significance, though its presence made delineating Chambo Platform more difficult.

Possible Chambo Platform – AU3. Lots Excavated: 53C5, 53F4, 53E3. In this analytical unit, we excavated through fill we associated with Chambo Platform, a low platform appended to the northern side of Rojo Stair. If indeed it was a platform, it was the terminal construction phase event in our excavation unit. Excavated sediments were light gray (10YR 7/1), which transitions to light brownish gray (10YR 6/2) further north. The fill largely consisted of undressed and dressed limestone from 1 to 50 cm in breadth, which formed the majority of Chambo Platform’s possible fill. This analytical unit was between 3 and 10 cm thick. In addition, the large (up to 70 cm wide) siliceous limestone monument fragment was removed in this analytical unit. A piece of modern glass was found in 53C5, likely reflecting the refuse from looters who excavated into Structure 4.

At the base of this analytical unit was Gorrión Floor. Gorrión Floor was poorly preserved and only evident based on a thin layer of broken limestone. Scattered ceramic deposits were encountered on top of the floor, predominantly in Lot 53C5. Some of these remains appeared to be censer fragments.

Rojo Step 0 – AU4. Lots Excavated: 53C4, 53D4. This analytical unit was located below the Structure 4 collapse, adjacent to Chambo Platform, and above Tucán Floor. This analytical unit consisted of Step 0 of Structure 4 which we named Rojo Step. The associated soils were grayish brown (10YR 5/2) with dressed limestone inclusions. The presence of crumbly limestone suggested this analytical unit could contain degraded limestone blocks. This analytical unit was between 14 and 20 cm thick, reflecting the preserved height of Step 0. Artifacts in this analytical unit included ceramic censer fragments and a limestone block which had a “U” shape carved out of one surface (Figure 1.14). This block was likely used for securing the base of a post.

Tucán Floor and Fill – AU5. Lots Excavated: 53D5, 53F3. This analytical unit consisted of the fill below

Tucán floor. Because Chambo Platform appears to rest directly on Gorrión Floor, Tucán Floor was only identified and excavated in Units D and F. This analytical unit consisted of limestone inclusions ranging from 1 to 50 cm in size within a sandy loam matrix between 13 and 15 cm thick. There was a small patch of loose soil in the southwest corner of Lot 53D5. The base of this analytical unit, we encountered Gorrión Floor. This floor was poorly preserved and only identifiable based on a layer of eroded plaster with the exception of a small preserved patch in Unit C.



Figure 1.14. U-shaped stone.

Gorrión Floor Fill – AU6. Lots Excavated: 53C6, 53D7, 53E4, 53F5. This analytical unit was the fill below the penultimate floor which we named Gorrión Floor. It was located below Tucán Floor and Chambo Platform. This analytical unit was composed of a 10 to 25 cm thick layer of light brownish gray (10YR 6/2) sediments with light gray (10YR 7/1) sediments in lot 53C6. Inclusions included scattered chert cobbles and bits of limestone ranging from 6 to 25 cm in size. The partially preserved surface of Oropendola Floor forms the base of this analytical unit. A preserved bit of plaster from Oropendola Floor lipped up onto the base of Step 1 of Rojo Staircase. This meant that Oropendola Floor was contemporaneous with Step 1, while Rojo Step 0 was constructed later sitting on Oropendola Floor. Oropendola Floor was broken up in various locations and had deposits of censer ceramic fragments sitting on its surface.

Rojo Stair Treads and Risers – AU7. Lots Excavated: 53A3, 53A4. This analytical unit is located within a 2 m north-south by 1 m east-west test portion of Unit A. We excavated into Rojo Staircase in the eastern portion of Unit A. In these lots, we executed a finer cleaning of the surface of the stairs followed by the removal of the cut stone blocks that form Steps 1 to 5 of Rojo Stairs. This analytical unit was separated from the following AU8 to clearly differentiate fill from collapse and to provide a cleaner ceramic sample for dating. Excavated sediments were clay loam that varied from dark grayish brown (10YR 4/2) to grayish brown (10YR 5/2) in color. Most inclusions were cut-limestone blocks.

Rojo Staircase Fill – AU8. Lots Excavated: 53A5, 53A6, 53A7, 53A8, 53A9, 53A10, 53A11. This analytical unit consisted of the fill beneath Rojo Staircase and above Oropendola Floor, which ran under Rojo Staircase. Sediments in this analytical unit were gray (10YR 6/1 to 10YR 5/1), lightening in color slightly as excavations continued deeper. These soils were a silty loam containing undressed limestone and crumbly plaster fill. The AU ended at a compact lime layer that appeared to be a continuation of Oropendola Floor, ran under Step 1 Rojo Staircase, and formed a foundation for the fill of the staircase. Here, Oropendola Floor sloped up dramatically, rising 10 cm over 2 m of length from north to south. Findings to the north of Step 1, where Oropendola lips up onto the front of the step, indicate that this floor may have been resurfaced following the construction of Rojo Step. Additionally, the sloping angle of this section of Oropendola Floor was unusual and indicated that the floor was built up in this section to facilitate the construction of Rojo Staircase. It was not clear whether this sloped area would have formed a functional floor surface. Continued excavations in AU9 also revealed that this sloping floor surface covered the penultimate staircase as represented by Step 1 of Gris Staircase. The dense lime layer may have functioned in this area more as a cap protecting the underlying Tecolote Floor and Gris Staircase. Unfortunately, due to the limited area of exposure, these interpretations are only possible scenarios.

Oropendola Floor Fill – AU9. Lots Excavated: 53C7, 53D8, 53D9, 53E5, 53F6. This analytical unit was the fill beneath Oropendola Floor. The sediments in this analytical unit were a silty loam that ranged from light gray (10YR 7/1) to very dark grayish brown (10YR 3/2) from south to north. The soil inclusions consisted of limestone, chert cobbles, and plaster that were 1 to 50 cm in size. The stones that formed

Oropendola floor fill seemed to be placed in an organized manner forming patterns that resembled construction pens. For example, the fill above the next floor contained what appeared to be a line of stones in the western portion of lot 53D8. In this area of Unit D, the fill consisted of larger stones than elsewhere in the excavation area. At the base of this analytical unit, we encountered Tecolote Floor, which was well preserved in areas, especially to the south below Rojo Step 1.

In Unit A, Tecolote Floor continued nearly to the southern edge of the unit. There, the floor terminated at a pair of cut stones running east-west protruding from the southern excavation profile. These stones are called Step 1 of Gris Staircase, the penultimate construction phase of Structure 4. We hypothesize that this step is associated with Staircase 1, as defined by McGovern (2004) and Mixter (2019). We note here that the floors in Unit 53A were less clear than in the remainder of the excavation area because of the density of the fill that covered the latest floor. The interpretations presented here is our best reconstruction of the sequence of floors in this area; however, the allocation of lots to specific analytical units may be inaccurate. In particular, 53A11 included a small exploration along the face of Gris Stair that likely belongs in this analytical unit rather than AU8.

Tecolote Floor Fill – AU10. Lots Excavated: 53E6, 53F7. This analytical unit consisted of fill beneath Tecolote Floor. The soil of Tecolote Floor Fill was light brownish gray (10YR 6/2) containing undressed limestone and chert cobble inclusions in a silty loam matrix. At the base of this lot, excavations encountered a poorly preserved plaster floor named Pella Floor.

Pella Floor Fill – AU11. Lots Excavated: 53E7, 53E8, 53F8, 53F9. This analytical unit consisted of the fill beneath Pella Floor. This analytical unit consisted of chert cobble and undressed limestone inclusions, varying from 6 to 50 cm in size, within a silty loam matrix. These sediments were colored light gray (10YR 7/2), changing into light brownish gray (10YR 6/2) as we descended.

Within this fill, we encountered a series of linear alignments of stacked stone approximately 30 cm tall that rested on the underlying Pavo Real Floor (Figures 1.7, 1.15). Most of these roughly quarried limestone blocks were stacked, but they were not finely shaped or precisely placed as they should have been if they were part of a façades. However, they tended to have flattened faces. Most of these stone alignments were likely construction pens, though they were much more nicely crafted than construction pens built of chert cobbles found elsewhere at the site. In Unit F, these pens fit just within our unit, with the lines falling roughly on our unit edges. These alignments were roughly orthogonal to our excavations, indicating that the orientation of Plaza A and Structure 4 remained stable from this construction episode to their final versions. We named these walls for clarity in notetaking. Amarillo Wall ran east to west along the northern edge of Units E and F. Azul Wall ran north to south between Units E and F. Additionally, Turquesa Wall ran along the eastern edge of Unit E, facing to the west. Finally, Verde Wall appeared to be more formally constructed than the others. It

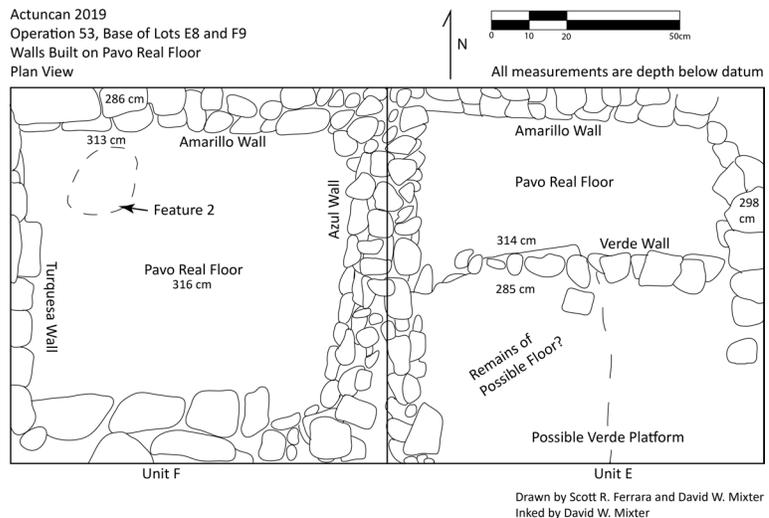


Figure 1.15. Plan drawing on stone alignments built on Pavo Real Floor.

faced north in the middle of Unit E and was located approximately 95 cm from the northern edge of our excavation. It was located between Turquesa Wall and Azul Wall. Its stones appeared more intentionally cut. Though unclear from our excavations, this may be the façade of a buried platform. The southern part of Unit E, behind Verde Wall, may have had the remains of a plaster surface, though this was poorly preserved. Additional excavation would be required to better understand this possible buried platform.

At the base of this fill, we encountered the well-preserved plaster surface of Pavo Real Floor. All of the stone alignments were constructed on this floor. The fill immediately above Pavo Real Floor was deposited in an organized manner as observed in lots 53F8 and 53F9 in which a layer of larger stones appears to have been intentionally placed to protect the well preserved Pavo Real floor. Additionally, a small concentration of ceramic sherds and lithic fragments were found on the surface of Pavo Real Floor in the northwest corner of Unit E. Recorded as Special Finds 2 and 3, these materials were part of Feature 2 (Figure 1.8). Aside from the feature, an incised 3 cm long slate pendant with drilled hole was also found in this lot. This was labelled Special Find 1 (Figure 1.16). The incising depicts what appears to be a stick figure on one side and an “X” on the other side.



Figure 1.16. Slate pendent.
Special Find 1.

Feature 2: Ceramic Concentration – AU12. Lots Excavated: 53F16. This analytical unit consisted of Special Finds 2 (the lithic fragments) and 3 (the ceramic sherds) found in Pella Floor Fill above Pavo Real Floor between two retaining walls in the northwest quadrant of Lot 53F8. Associated soils were dark grayish brown (10YR 4/2) in a silty loam matrix. This cache consisted of ceramics that do not appear to be reconstructable. Preliminary observation of these materials indicates that they belong to the Sierra and Polvero ceramic groups.

Retaining Walls in Pella Floor Fill – AU13. Lots Excavated: 53E10, 53F10. This analytical unit consisted of the retaining walls within Pella Floor Fill that were constructed on Pavo Real Floor. These retaining walls were made of rough-cut stone surrounded by a silty loam matrix.

Possible Verde Platform – AU14. Lots Excavated: 53E9. This analytical unit consisted of a possible platform fronted by Verde Wall that is below Pella Floor and above Pavo Real Floor. This possible platform surface was composed of plaster surrounded by a silty loam matrix. At the base, we determined that the platform rests on Pavo Real Floor.

Pavo Real Floor Fill – AU15. Lots Excavated: 53E11, 53F11. This analytical unit consisted of Pavo Real Floor and the fill beneath this exceptionally preserved plaster floor. Pavo Real was very dense and difficult to excavate through. In the center of the excavation area, the western part of Unit E and the eastern part of Unit F, Pavo Real Floor was constructed directly over a dense layer of ceramics, lithic debitage, and carbonized plant materials that were effectively used in place of a stone ballast (Figure 1.6). This pavement of artifacts was designated Feature 1. Each unit was divided and excavated as two separate lots so that Feature 1 could be excavated separately from the more typical fill surrounding it. AU16 describes Feature 1 in more detail. The fill beneath Pavo Real Floor and around Feature 1 was composed of a 10YR 8/1 silty loam matrix. At this base of this analytical unit, we uncovered a layer of soft lime without a finished surface. Though this may have been a floor (and was named Ganso floor in the field), we currently interpret this as a layer of packed sascab fill.

Feature 1: Artifact Concentration Beneath Pavo Real Floor – AU16. Lots Excavated: 53E12, 53F12. This analytical unit consisted of the concentration of artifacts that served as a ballast beneath a portion of

Pavo Real Floor. This concentration consisted of ceramic sherds and lithic debitage in a white (10YR 8/1) silty loam matrix. Artifacts formed the majority of the matrix. Evidence for burning was also evident on many artifacts, which were accompanied by a large quantity of carbonized plant remains. This collection of broken ceramics and lithics appeared to have been intentionally deposited beneath Pavo Real floor.

Ganso Fill – AU17. Lots Excavated: 53E13, 53F13. This analytical unit consisted of the fill beneath Pavo Real Floor Fill and Feature 1. This analytical unit consisted of tightly compacted *sascab* with roughly quarried limestone inclusions in a white (10YR 8/1) silty loam matrix.

Pájaro Loco Floor Fill – AU18. Lots Excavated: 53E14, 53F14. This analytical unit consisted of the fill beneath Pájaro Loco Floor. This floor was built of hard plaster above a white (10YR 8/1) silty loam matrix, which included relatively few limestone and chert cobble inclusions, varying from 6 and 25 cm in size. The fill included moderate densities of chert, ceramics, and carbon. At the base of the lot, we encountered another plaster floor, Águila Floor.

Águila Floor Fill – AU19. Lots Excavated: 53E15, 53F15. This analytical unit consisted of the fill beneath Águila Floor. The matrix below Águila Floor represented a departure from the fill separating the floors above. This fill was made up of chert cobbles held together by a denser matrix that varies from light gray (10YR 7/1) silty clay to white (10YR 8/2) clay. In some areas, gaps were evident between the chert cobbles, indicating these inclusions were a major part of this fill. Fire cracked rock and carbon were recovered from this layer.

Loose Fill with Orange Clay – AU20. Lots Excavated: 53E16, 53E17, 53F17, 53F18, 53F19. This analytical unit consisted of loose stone fill in a dense orange clay matrix. Inclusions included larger chert cobble and undressed limestone in an orange-yellow compacted clay matrix between 35 and 41 cm thick. Soil colors varied from yellow (10YR 7/8 and 10YR 7/6) to brownish yellow (10YR 6/8). Some areas of this sediment were more compact than others. We encountered large cavities between many sections of chert cobbles. There may have been a retaining wall roughly along the division of Lots 53E17 and 53F18. Artifacts included ceramics, lithics, and a human tooth found in 57E17. Large amounts of carbon were recovered from this layer.

Orange Clay with Red and Gray Mottling – AU21. Lots Excavated: 53E18, 53E19, 53E20, 53F20, 53F21, 53F22. This analytical unit consisted of approximately 50 to 70 cm of dense brownish yellow (10YR 6/6) clay sediment with reduced light gray (N 7/) and oxidized brown (7.5YR 4/4) striations. Soft limestone and *sascab* inclusions were large (up to 72 cm long) and became difficult to remove. Additionally, large quantities of carbon were recovered. Fewer inclusions were encountered at the base of the analytical unit. Few artifacts were recovered from this analytical unit. The texture of the soil was reminiscent of the desiccated clays found in the fill of Structure 41 (Mixer 2012).

Feature 3: Burned Mandible – AU22. Lot Excavated: 53F23. This analytical unit consisted of a partial burned mandible and several teeth found within the clay deposit (Figure 1.5). Based on the burning of the surrounding sediment, the mandible appeared as though it was burned *in situ*. The mandible was surrounded by large limestone blocks and *sascab*, which may have been the edge of a platform. The mandible was accompanied by white shell fragments, likely marine shell. The sediments around the mandible were lifted as a block for detailed excavation in our field laboratory.

Orange Clay – AU23. Lots Excavated: 53F24, 53F25. This analytical unit consisted of a dense matrix of dark red (2.5YR 3/6) clay with large undressed limestone and *sascab* inclusions. This wet laid clay was similar in texture to Late Preclassic fill encountered in Structure 41 (Mixer 2012). In Lot 53F25, excavations were limited to a 1 m by 2 m section in the western part of Unit F. Due to time constraints,

these were the last lots excavated for the field season. It is unclear how deep this matrix or other cultural deposits continue.

Excavations in Lots 53F23 and 53F24 may have delineated an early platform only evident during the mapping of the stones at the base of the lot (Figure 1.4). A line of cut limestone blocks, known as Morado Wall, and associated sascab seemed to be running at an acute angle through the southwest corner of Unit F. Feature 3, the burned mandible, may have been directly next to this platform. Excavations in Lot 53F25 cut through these blocks and combined matrix from both inside and outside this wall. However, we noted a distinct difference in the color of the matrix. Outside the blocks, excavators continued to hit a dark red (2.5YR 3/6) matrix. Within Morado Wall, excavators hit a reduced light grey (N 7/) matrix. If this is an early platform, it was built at a different orientation from the later architecture. Excavations terminated at a soil change to light grey (N 7/) at the base of the unit. This may be the surface on which this early platform was constructed.

Collecting Carbon Samples from Looters' Trench 2 (Operation 57)

During the 2018 field season, Mixer (2019) identified a series of staircases on LT2's eastern profile, several of which were burned. Recently, burned surfaces have been increasingly identified on the surfaces of abandoned platforms dating to the late Middle Preclassic period in the environs of the Belize River valley including Blackman Eddy Structure B1-4th (Garber et al. 2004:42) and El Quemado platform at Pacbitun (Powis et al. 2019). During the 2019 field season, Mixer collected carbon samples from the surfaces of Structure 4's burned staircases to date their abandonment through radiocarbon dating. The staircases that were burned are all from early construction phases and will provide insight into the earliest construction under Structure 4.

In total, 12 major construction phases of Structure 4 have been identified based on staircase construction. Rojo Staircase, identified this year for the first time, is Staircase 0 within the nomenclature

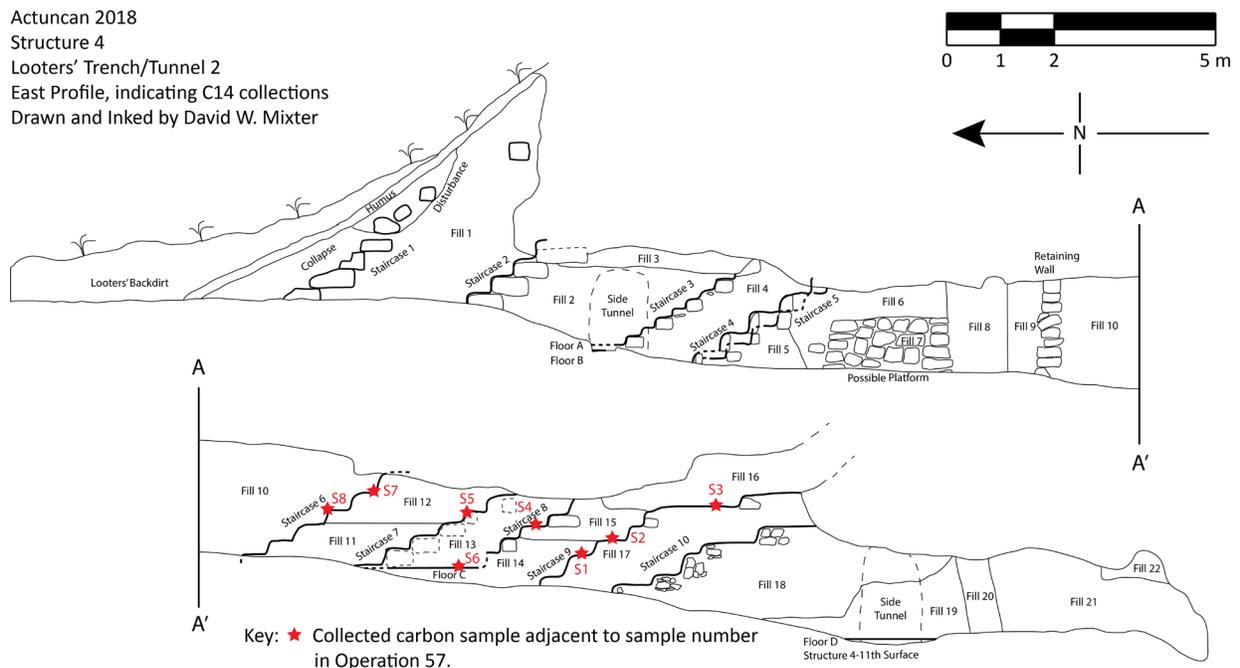


Figure 1.17. Drawing of Looters' Trench 2 profile indicating the location of carbon samples recovered in 2019.

developed in 2018. It is the latest of six staircases (Staircases 0 to 5) that are on the outer part of LT12. A 9.1 m thick layer of fill separates Staircase 5 from Staircase 6 (Mixer 2019:73). This fill represents a massive expansion of Structure 4 and may reflect major changes to the structure’s design. Appropriately, Staircase 6 is the latest staircase with substantial burning. Samples were collected from Staircases 6, 7, 8, and 9. Staircase 6 was burned in patches, while Staircases 7, 8, and 9 were completely burned along all visible surfaces (Mixer 2019:76–77). Two earlier construction phases, Staircase 10 and Floor D, were also identified in 2018. The surfaces of these constructions were not burned.

Carbon samples were collected from directly on top of burned portions of the staircases located within LT2. To limit contamination, the sediments along the wall of LT2 were removed and carbon was collected from previously unexposed contexts. In all cases, materials collected are likely fuel from the conflagration that burned the surfaces of these staircases. The location of the samples can be seen in Figure 1.17. These samples were exported to the United States of America in 2019 for future analyses.

Excavations in Operation 56

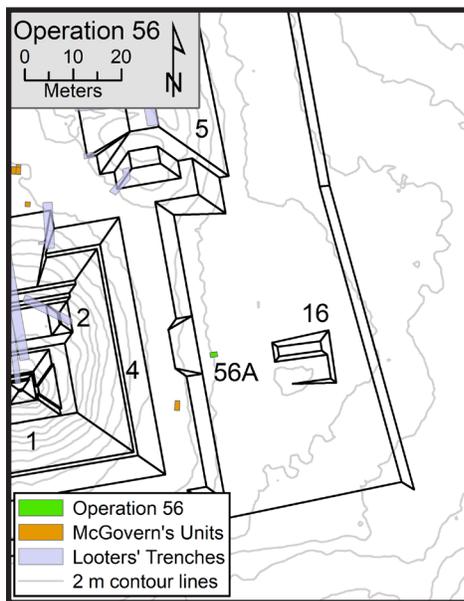


Figure 1.18. Location of Operation 56A in relationship to Actuncan South.

Operation 56 was established to investigate a large terrace attached to the eastern side of Plaza A (Figure 1.18). Based on its location below Plaza A and to the east, we hypothesize that this appended terrace was an auxiliary area for activities associated with the primary function of Plaza A. Possible functions include use as a kitchen (perhaps similar to the palace kitchen documented in LeCount 2010), a festival preparation zone, an elite residential zone, or a residential zone for members of a Preclassic “court” that maintained this triadic temple group. This disparate set of hypotheses represents how little we know about this terrace and the similarly little knowledge we have about the operation of triadic temple groups within Preclassic ritual and political life.

Because of time, only one test excavation, Unit A, was opened (Figure 1.18). Unit 56A was a 1.5 m by 1 m test excavation oriented approximately 9° N of E and placed on a flat part of the terrace directly east of a possible staircase connecting this terrace to the eastern side of the base of Structure 4. The staircase was originally mapped by McGovern (1992) and is postulated based on the presence of a gently sloped area along

the edge of the platform between the base of Structure 4 and the terrace below. This staircase would have provided a way for people to move unobserved from the lower eastern terrace, around Structure 4 and into Plaza A. The excavation unit’s location was selected for its potential to provide the maximum data about the construction history of this terrace based on the hypothesis that the area nearest Structure 4 and the ingress may be the oldest part of the platform.

Excavations were undertaken using cultural lots following typical excavation protocol as detailed above. Plenty of carbon and ceramics were recovered for the future assignment of absolute and relative dates. Because of the unit’s small size, the original purpose of some architectural features that we encountered were not clear.

At the top of the test unit, we encountered a series of three or four plaster floors in various states of disrepair (Figure 1.19). A possible terminal floor was located approximately 15 cm below the modern

surface and was only identified as a thin layer of eroded limestone speckling. Though excavations stopped at this floor, it was so ephemeral that the excavators decided not to change lots before continuing. It remains possible that this floor is simply a soil change rather than a floor. Based on the location of the excavation unit below Structure 4 and the platform that Plaza A rests on, we might expect a relatively large accumulation of colluvial sediments to have buried the terminal plaza surface. This taphonomic observation supports the possibility that this speckled layer was a product of platform collapse, not Maya construction.

The penultimate floor, Guacamayo Floor, was located approximately 60 cm below the surface. On this floor in the eastern portion of the unit, our excavations encountered a 25 cm tall sloping pile of limestones located in the eastern side of the unit. It is not clear if these limestones were the remains of a low platform, the collapse of a building located to the east of our excavations, or a differentiation within construction fill. Based on their location in the eastern portion of the unit, these stones are not likely collapse from Structure 4, though they may simply represent differential fill materials. Additionally, we encountered a hole excavated in antiquity into Guacamayo Floor. This hole was dug to cache a collection of large ceramic sherds on Paloma Floor, the next floor down.

The third floor, Paloma Floor, was encountered 10 cm below Guacamayo Floor. Paloma Floor was more well preserved than the later floors above. The plaster surfaces of some sections of the floor were found preserved in place. The fourth floor, Cuervo Floor, was encountered 10 to 15 cm below Paloma Floor. In contrast to the floors above, Cuervo Floor had a crumbly consistency and several deep impressions in its surface. This surface may have been constructed of tamped sascab rather than plaster produced from slaked lime. In preparation for the construction of Cuervo Floor, Maya engineers used large chert cobbles and small limestone blocks to level the plaza.

Below and predating Cuervo Floor and this stone fill, our excavations encountered a mass of stucco in the eastern portion of the unit. The shape of this stucco mass was difficult to track during excavations, and we currently suspect that this was a wet-laid fill episode that formed part of the effort to raise the plaza level for the construction of Cuervo Floor. The fill of the stucco mass included several large stones resting on its base which likely stabilized this construction. To the west of this stucco mass, the fill consisted of a layer of chert cobbles within a dense, yellow clay matrix. A thin layer of this yellow clay passed below the stucco mass, indicating that it predated the placement of the stucco. This chronology is supported by the fact that some of the stones at the edge of the yellow clay were embedded in the stucco. Though the stratigraphy indicates that the clay was placed first, both the clay and stucco may have been roughly contemporaneous as part of the first formal terrace construction.

Beneath the plaster mass, excavations encountered a dark brown sediment that contained substantial

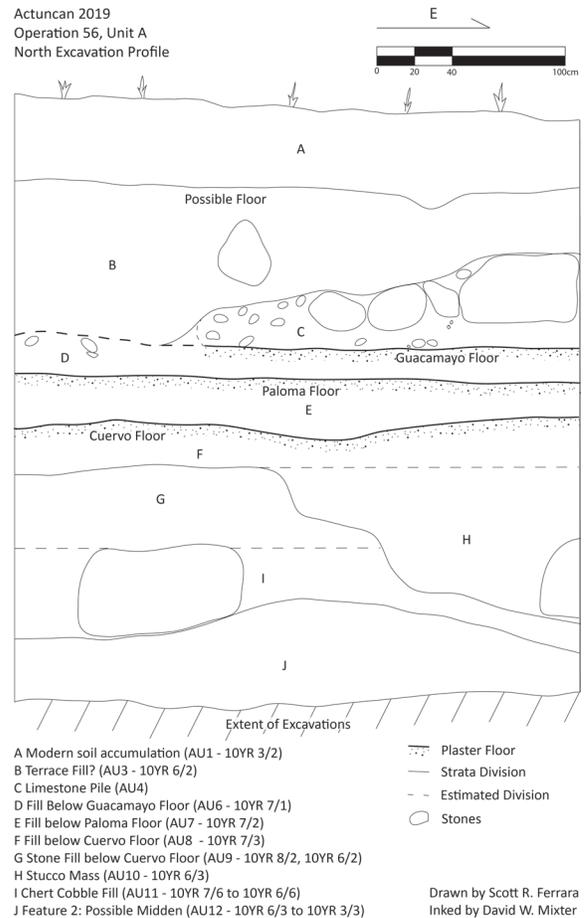


Figure 1.19. Drawing of Operation 56A north excavation profile.

quantities of carbon, ceramic sherds, lithics, and some animal bone. Though ceramic analysis will help to contextualize when this deposit was created, we hypothesize that these materials were redeposited midden or garbage tossed from Plaza A during its early occupation prior to the establishment of this platform as a formal space. Excavations terminated within this layer due to the end of the field season.

Operation 56A Analytical Units

This section provides detailed descriptions of each excavated deposit and the associated architectural and cultural finds. Analytical Units are listed roughly from latest to earliest. See the Harris Matrix (Figure 1.A.2) and table of analytical units (Table 1.A.2) located in the appendix for a description of the stratigraphic relationships.

Modern Surface – AU1. Lots Excavated: 56A1. This analytical unit consisted of a very dark grayish brown (10YR 3/2) humus layer. The humus was relatively thick (approximately 10 cm) in this area and inclusions were relatively few. Excavations halted because a few chunks of limestone up to 10 in size began to appear in the matrix.

Slope Wash and Possible Fill – AU2. Lots Excavated: 56A2. Excavations in this unit collected materials from a thick (20 to 40 cm) layer of soils and sediment that may represent a mixed context. Excavations initially continued through a 2 to 5 cm layer of very dark grayish brown (10YR 3/2) soil that appears to be a continuation of humus in AU1 above. This layer ended at a layer of small limestone flecks that Alvin Uk, one of the excavators, identified as a possible terminal floor. This possible floor was not recorded in detail. Below this layer, the matrix lightened in color and more limestone inclusions were evident. Excavations ended at a layer of limestone that slopes down from east to west in the eastern two-thirds of the unit. This pile of stones is either collapse, a difference in fill, or possibly a buried platform. Because the stones are located on the eastern edge of the unit, they are unlikely to be collapse from Structure 4, which is located to the west. More likely, these stones are some kind of intentional construction. This will be discussed further in the description of AU3.

Likely Fill – AU3. Lots Excavated: 56A3. This lot was likely the same context as excavated in the lower portion of AU2. Excavations largely continued in the western 65 cm of the excavation unit, though the stone pile in the remaining 85 cm was also cleaned and further defined. The sediment in this analytical unit was composed a light grayish brown (10YR 6/2) silty loam containing limestone measuring 6 to 25 cm in diameter. In the western portion of the unit, we encountered a layer of small limestone speckling that is likely an eroded floor. We named this Guacamayo Floor (Figure 1.20). At the conclusion of excavations, it became clear that Guacamayo Floor is level with the base of the pile of stones, indicating that these stones were piled on top of this floor surface (Figure 1.19). In the eastern meter, the limestone pile sloped from west to east, reaching a maximum height of 25 cm. It was still unclear if this pile was collapse or the remains of an intentional construction. However, it was useful to know that this pile rested on a floor, indicating that it either fell from a structure located to the east or is the remains of low platform. An area of soft soil measuring approximately 25 cm by 25 cm penetrated Guacamayo Floor in the northwest corner of the unit.

Limestone Pile on Guacamayo Floor – AU4. Lots Excavated: 56A5. This analytical unit excavated through the pile of stones identified in AU2 and AU3. Excavations were limited to the eastern 85 cm. The sediment consisted of a dense area of broken limestone that rests on the eroded remains of Guacamayo Floor. The floor was substantially more well preserved beneath this analytical unit than it was in the western portion of the excavation.

Feature 1: Possible Ceramic Cache – AU5. Lots Excavated: 56A17. In this lot, we excavated through the

section of soft sediment located in the northwestern part of 56A. Though originally not separated from Lot 56A4, the materials were collected as Special Find 1, so they were later separated and relabeled 56A17, Feature 1. The matrix of this lot consisted of a light gray (10YR 7/1) silty loam that was not tightly compacted. In this area of loose soil, an array of large broken ceramic sherds was encountered resting on the underlying Paloma Floor. These sherds appeared to be from a variety of vessels, but they are clearly intentionally deposited. One question that remains is whether these are the remains of an on-floor assemblage placed when Paloma Floor was buried or if Guacamayo was dug through to place these sherds later in time as a cache. The soft soil could be accounted for by either human or natural taphonomic processes.

Fill below Guacamayo Floor – A6. Lots Excavated: 56A4, 56A6. This analytical unit was excavated through Guacamayo Floor and a 10 cm thick layer of fill to the underlying, better-preserved Paloma Floor. The sediment in this lot consisted of a compact light gray (10YR 7/1) sediment containing a moderate density of 6 to 25 cm broken limestone bits. This analytical unit was adjacent to the possible cache described in AU5.

Fill below Paloma Floor – AU7. Lots Excavated: 56A7. This analytical unit was a 10 to 15 cm thick layer of fill between Paloma Floor and the underlying Cuervo Floor. The sediment consisted of a light gray (10YR 7/2) silty loam containing broken limestone and slate inclusions. Cuervo Floor was poorly preserved and had a crumbly consistency. Several depressions in Cuervo floor were filled in antiquity with dense sediments to create what appear to be patches.

Fill below Cuervo Floor – AU8. Lots Excavated: 56A8. This analytical unit consisted of a 10 to 15 cm thick layer of fill below Cuervo Floor. The sediment was a very pale brown (10YR 7/3) silty loam containing broken limestone inclusions measuring 6 to 25 cm in size. This fill was a loose *sascab* at the top and became denser at the base of the analytical unit. At the base of the lot, we encountered a layer of broken limestone bits covered and consolidated by plaster.

Limestone Fill below Cuervo Floor – AU9. Lots Excavated: 56A9, 56A10, 56A11. This analytical unit consisted of a layer of fill that was largely made up of flat, angular, and broken limestone chunks between 25 and 50 cm in diameter. These limestones were in a very pale brown (10YR 8/2) to light brownish gray (10YR 6/2) sediment matrix that contained many small (0 to 1 cm) limestone bits. The sediments varied in color, with browner sediment evident to the west and grayer sediments turning to white (10YR 8/1) located to the east. Underneath the gray sediments, our excavations encountered a compact and angled stucco mass that was largely located in the eastern side of the unit.

Stucco Mass – AU10. Lot Excavated: 56A16. Excavations in this analytical unit removed the 30 cm thick layer of stucco found as a mound on the eastern side of the unit. We currently interpret this as a wet-laid stucco layer because several of the large stones removed from the west side of the unit were partially imbedded in this stucco. It is likely that this stucco was placed after AU11. This sediment consisted of pale brown (10YR 6/3) plaster sediment that contained some broken limestone inclusions. In the north east corner of the unit, we encountered a large stone resting on the level of darker sediment below this analytical unit.



Figure 1.20. Limestone pile and Guacamayo Floor.

Chert Cobble Fill – AU11. Lots Excavated: 56A12, 56A13. This analytical unit consisted of a layer of dense yellow (10YR 7/6) to brownish yellow (10YR 6/6) sediment containing large chert cobbles on top of a layer of broken limestone blocks. This sediment was largely on the east side of the unit adjacent to the plaster mass described in AU10. A thin layer of plaster that seemed to be associated with AU10 was perhaps identified on top of this analytical unit. At the base of this lot, excavations identified a layer of dense pale brown sediment containing large quantities of ceramic and charcoal. This layer ran under both this analytical unit and AU10.

Feature 2: Likely Midden – AU12. Lots Excavated: 56A14, 56A15, 56A18, 56A19. This analytical unit consisted of a 35 cm thick layer of compact pale brown (10YR 6/3) to dark brown (10YR 3/3) sediment. This contained high densities of artifacts and a large amount of charcoal that were collected for possible radiocarbon dating. Some sherds that could be refit to one another were found *in situ*, including an upside-down jar rim. Additionally, we encountered a few teeth and small mammal bones, which indicated that this deposit may be primary or secondary midden. This interpretation is backed by the large quantity of artifacts that we recovered.

Conclusions

Research during the 2019 field season provided important baseline data about the stratigraphy of Actuncan's Plaza A that will direct research moving forward. Excavations in Operation 53 documented a newly-identified terminal construction phase of Structure 4's staircase and a series of plaza floors associated with periods of plaza construction and renovation. The excellent articulation between staircases and floors allows us to understand the relationship between the two latest versions of Structure 4's staircase and plaza constructions. Earlier floors will be dated through ceramic analysis and radiocarbon dating of samples recovered from these excavations and the central looters' trench.

While 2019 excavations in Operation 53 did not reach the limit of construction, our findings provide some evidence that we reached levels that predate the arrangement of Plaza A as a triadic temple group. Fill in the earliest levels is composed of large limestone boulders within a dense clay matrix. These sediments are similar to those encountered in the earliest levels elsewhere at Actuncan (Donohue 2014; Simova and Mixter 2016). Additionally, Morado Wall, the earliest wall found deep within the fill below Plaza A, was oriented at a different heading than the later architecture still visible on the surface today.

Excavations in Operation 56 also provided critical insight into the construction of the terrace located below and to the east of Plaza A. At least three and perhaps four distinct construction episodes were identified. Beneath these, we found evidence for earlier midden deposits based on the high density of recovered artifacts. Relative dates determined from ceramic analysis will provide some indication of the earliest formal construction in this area. Furthermore, few middens have been found anywhere at Actuncan. This test pit may serve as the anchor for future research into the waste associated with triadic temple group, which will likely shed light on the early uses of this space.

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Figure 1.21. Ceramic concentration within likely midden.

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Appendix X.A

Table 1.A.1. Operation 53 analytical units

AU	AU Name	Lots
1	Modern Surface	A1, B1, C1, D1, E1, F1
2	Collapse	A2, B2, C2, C3, D2, D3, D6, E2, F2
3	Possible Chambo Platform	C5, F4, E3
4	Rojo Step 0	C4, D4
5	Tucán Floor and Fill	D5, F3
6	Gorrión Floor and Fill	C6, D7, E4, F5
7	Rojo Stair Treads and Risers	A3, A4
8	Rojo Staircase Fill	A5, A6, A7, A8, A9, A10, A11
9	Oropendola Floor and Fill	C7, D8, D9, E5, F6
10	Tecolote Floor and Fill	E6, F7
11	Pella Floor and Fill	E7, E8, F8, F9
12	Feature 2 (ceramic concentration)	F16
13	Retaining Walls in Pella Floor Fill	E10, F10
14	Possible Verde Platform	E9
15	Pavo Real Floor Fill	E11, F11
16	Feature 1 (artifact concentration beneath Pavo Real Floor)	E12, F12
17	Ganso Fill	E13, F13
18	Pájaro Loco Floor and Fill	E14, F14
19	Águila Floor and Fill	E15, F15
20	Loose Fill with Orange Clay	E16, E17, F17, F18, F19
21	Orange Clay with Red and Gray Mottling	E18, E19, E20, F20, F21 F22
22	Feature 3 (burned mandible)	F23
23	Orange Clay	F24, F25

Operation 53 Harris Matrix

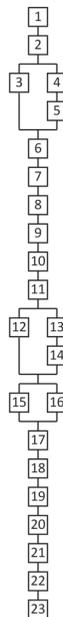


Figure 1.A.1. Operation 53 Harris Matrix.

Table 1.A.2. Operation 56A Harris Matrix.

AU	AU Name	Lots
1	Modern Surface	A1
2	Slope Wash and Possible Fill	A2
3	Likely Fill	A3
4	Limestone Pile on Guacamayo Floor	A5
5	Feature 1 (possible ceramic cache)	A17
6	Fill below Guacamayo Floor	A4, A6
7	Fill below Paloma Floor	A7
8	Fill below Cuervo Floor	A8
9	Limestone Fill below Cuervo Floor	A9, A10, A11
10	Stucco Mass	A16
11	Chert Cobble Fill	A12, A13
12	Feature 2 (likely midden)	A14, A15, A18, A19

Operation 56 Harris Matrix

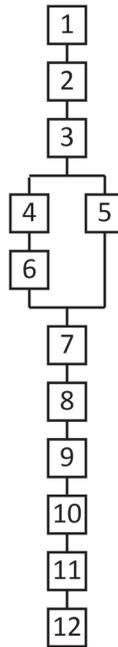


Figure 1.A.2. Operation 56A Harris Matrix.

Chapter 2: Continued Testing of Geophysical Signatures in the North Settlement Area

Jonathan Wade Tidwell (University of Alabama)

In this chapter, I report on the third season of ground-truth testing of geophysical signatures in the Northern Settlement Area of Actuncan. The goal of this research that took place during the summer of 2019 was to further test the reliability of using the 2011 magnetometer survey (Walker 2012) to locate buried remains. In 2011, nine anomaly signatures including linear dipoles, complex dipoles, rectangular patterns with weak magnetic centers, and one area of enhanced magnetism were chosen from across the entire survey area for ground-truthing (Blitz et al. 2012). Two quiet areas with low magnetic gradients served as control units. In 2015, Millar (2016) purposely targeted a second untested area of enhanced magnetism and six large rectangular patterns with weak magnetic centers to test for buried platforms and other constructions. This summer, four clusters of anomalies were selected for excavation. They were selected because their signatures most closely resembled those of known household groups, which are represented in the magnetic survey maps by zones of enhanced magnetism featuring large, dense clusters of complexly organized anomalies. Although additional statistical analyses of recovered artifacts are required to better understand the cultural contexts of materials encountered in these excavations, the project was successful in locating anthropogenic remains at all four locations.

After the excavation season ended, all artifacts were washed, sorted, counted and weighed by artifact class. These data were compiled in the master inventory list and will form the basis of a comparative analysis that will help determine the cultural context of remains found in each excavation. Diagnostic ceramics were analyzed jointly by Dr. Lisa LeCount and Wade Tidwell to assign temporal designations to each analytical unit. Some of these data are presented here.

The Archaeogeophysical Survey and Ground-truthing Program at Actuncan

At the site of Actuncan, a magnetic gradient survey was conducted by Chester Walker (2012) at multiple locations during the summer of 2011, including the Northern Settlement Area that contains many domestic groups. In this area, data were collected on 48,246 square meters (11.9 acres) of ground containing both previously excavated domestic groups visible above the surface and open spaces. This survey produced a map of subsurface magnetic gradients resulting from local variations in the Earth's magnetic field caused by natural soils and rocks and cultural disturbances such as the digging of house foundations and depositing of anthropogenic materials into the undisturbed substrate. Some of these magnetic signatures can be classified as specific anomaly types based on the consistency of the strength, shape, and type of the signatures. A sample of each anomaly type must be ground-truthed to confidently interpret these signatures as resulting from specific cultural activities. The current project is particularly interested in identifying the anomaly signature of buried domestic structures. We hypothesize that the zone of enhanced magnetism produced by visible patio-focused groups, such as Groups 5 and 7, can be used as a signature for those buried underground (LeCount et al. 2019). If this hypothesis is confirmed, it will allow us to confidently identify buried domestic groups without prospecting for them.

There are a number of different instruments for conducting magnetic surveys, but they all measure the amplitude of the Earth's magnetic field (Bevan 1998: 19). Iron-containing materials are good conductors of magnetic fields, so higher magnetic signatures will concentrate in areas with high densities of iron-containing materials while the magnetic signature of the area nearby will be reduced (Bevan 1998: 19). For this project, a Bartington 601-2 Fluxgate Gradiometer was utilized to conduct a magnetic survey (Walker 2012). Gradiometers measure the difference in the magnetic field in an area that falls between two hand-held sensors (Bevan 1998: 19). Although this type of magnetometer requires more closely spaced measurements than a total field magnetometer, it has a number of advantages. Gradiometers

will not be affected by moderately distant iron objects and they allow for automatic corrections in the strength of the Earth's magnetic field during the survey (Bevan 1998: 19). They can also differentiate between objects that are closer together than a total field magnetometer (Bevan 1998: 19). As will be discussed later in this chapter, the conditions present in the Northern Settlement Area at Actuncan were ideal for this type of survey (LeCount et al. 2019: 15).

Over the course of two previous field seasons, a total of twenty ground-truth units tested sixteen magnetic signatures and two areas with unremarkable magnetism (Blitz et al. 2012; Millar 2016; also see LeCount et al. 2019:12). While a few ground-truth tests sampled signatures in the central zone of the settlement, the most productive results came from the eastern and western sides of the survey. On the eastern side, five test units discovered significant cultural remains. Unit 14F was located within an area of enhanced magnetism about 60 m north-northwest of Group 3 to test a large set of linear and complex dipoles. The top stratum contained an unusually high amount of lithics. Lower strata revealed a large pit feature with large sherds marking the top. Because the sterile clay substrate appears to have been cut and filled with refuse, excavators suggested the stratum represented a domestic platform. Units 14H and J revealed a platform with a dense lithic scatter 6 m from Structure 88. The platform was concluded to have been a special use workspace. Unit 14G was placed 16 m southeast of Structure 49 to test linear dipole signatures. Stratum C, a yellowish brown clay fill, contained large amounts of small limestone flecks and gravel, limestone and chert cobbles, as well as Late Classic trash including ceramics, lithics, jute, obsidian, and daub. For these reasons, excavators determined it to be the remains of a domestic platform. Unit 14I placed about 15 m northwest of Structure 89 revealed the remains of a multistage perishable structure with a pit containing red pigment.

On the western side of the survey area, six units were placed to test rectangular patterns with weak magnetic centers and one control unit was placed to test an area of normal magnetism. Units 14C, K, and L were placed south of Group 7, and after more extensive excavations by Heindel described below, were found to be associated with Field System 1. Unit 14C revealed burned limestone and daub, which was interpreted as a burning event. Unit 14K revealed terraforming that created a berm along the slopes of the *aguada*. Unit 14L contained red mottling with burned limestone and fired clay interspersed throughout the unit. However, it was too light to be interpreted as a feature, and no source of the rectangular magnetic signature was uncovered. Units 14M, N, O were placed north of Group 7 to test magnetic signatures east of Structure 90 thought to be part of an agricultural field system (LeCount et al. 2019: 14). Unit 14M was located about 20 m northeast of Structure 90 to test a rectilinear magnetic signature. Excavation revealed terraforming to create a berm and trench as the likely cause of the anomaly. Unit 14N was placed south east of Structure 90 to test a linear dipole signature running between Structure 90 and a possible buried structure identified in the magnetometer data. The source of the anomaly was discovered to be a three-course high cut limestone terrace wall. Unit 14O was placed about 40 m east of Structure 90 to test a rectilinear magnetic signature. The likely cause of this signature was a burned tree stump uncovered during excavations. Unit 14E was the control unit which revealed normal amounts of artifacts for off structure locations at Actuncan but no features that would be expected to cause a magnetic anomaly.

In addition to ground-truthing tests, Theresa Heindel (2018, 2019) excavated both buried and visible stone terraces on the eastern slopes of the *aguada* drainage to better understand the agricultural field systems first identified in the magnetic gradient map. Parts of two field systems were located. The field systems were in an area between Groups 5, 6, and 7, with System 1 located near the bottom and System 2 near the top of the drainage. In both systems a series of low walls delineated different agricultural plots. The matrix of these agricultural plots consisted of domestic fill, containing high artifact densities compared to other off structure excavations. In Field System 1, most of the walls that comprised a series

of terraces and agricultural plots were built of one course of mixed chert cobbles and limestone blocks. The exception was Reed Wall, on the eastern boundary of the system, which consisted of large limestone blocks layered in three courses. A platform was also uncovered to the southeast of the system that measured about 2 m by 2 m, called Platform 1. This platform was bounded to the north and east by multiple courses of stone and the interior was lined with smaller chert cobbles. This platform was interpreted as a small field house, or *champa*, used by those working the fields to get out of the elements. A posthole was also found to the north of the field system associated with what appeared to be a prepared, white clay floor. Field System 2 also contained low terrace walls and a platform roughly 2 m by 3.5 m in size, filled with a layer of chert cobble. Two pit features encircled by a single course of cobbles were also located during excavations. The first was located within the apparent platform and the second was located to the southeast of the field system.

Excavations conducted during these field seasons were successful in identifying magnetic signatures that correlate with subsurface features. Many of the natural and cultural features were particularly conducive to magnetic testing (LeCount et al. 2019: 15). The soils were shallow and conductive, consisting of dark-colored blocky clay that is neutral or alkaline with large amounts of calcium and magnesium, and moderate amounts of other nutrients such as iron. The survey was conducted at the end of the dry season, which provided evenly dry soils, and there were no plaza surfaces in the settlement zone capping anthropogenic remains. Finally, the survey area was relatively flat and had recently been cleared, allowing for quick evenly paced gradiometer survey with high sample density and good resolution. Although successful, the researchers point out that much more work is needed in this area to confidently interpret magnetic signatures.

2019 Ground-truth Excavations

To further test the reliability of using the magnetometer survey to locate and classify buried remains, four clusters of anomalies were selected for excavation (Figure 2.1). The first, excavated as Units 54A through 54D, is located in the northeastern portion of the survey area. This anomaly consists of linear dipoles that form a corner. The anomaly was found within the densest cluster of the four anomalies that were tested and most resembles the areas of enhanced magnetism produced by known household groups. It was located 10 m to the west of Structure 48 and 6 m southeast of Unit 14F. The second anomaly, excavated as Units 54E through 54H, is located in the northwest corner of the survey area, 30 m north of Group 7. This anomaly is part of a set of rectilinear magnetic highs, some of which have centers with less magnetic strength. I placed my unit to sample the corner of two linear signatures located to the northwest of a known structure (Structure 90). In the immediate area, additional anomalies are lightly clustered and include some tested by Millar and Heindel as described above. My excavations were placed 11 m northwest of Heindel's Units 14S and V. While it is unlikely that this area was a domestic group, I sampled it because it appeared likely that the anomaly represented a buried structure. The third anomaly, excavated as Units 54I through 54J, is located in the southwestern corner of the survey area between Groups 6 and 7. This anomaly consists of a small cluster of complex dipoles with positive (high) linear signatures to the north and east. This anomaly is located to the east of a known terrace system (Agricultural Field System 2) within a moderately dense cluster of anomalies. I tested this area because the signature appeared to represent a buried structure or additional agricultural plots. The final anomaly, tested as Unit 54K, is located east of Group 3. This anomaly is a set of complex dipoles located within a dense cluster of anomalies. Given its complex signature, I hypothesize that this area might have been a plaza with possible buried structures or other constructions.

Operation 54, Units A through D. Located in the northeastern portion of the survey area, these units are located in an area where the ground surface gently slopes to the northwest (Figure 2.2). Unit A was placed to intersect the corner of the rectilinear signature hypothesized to be the corner of a stone plat-

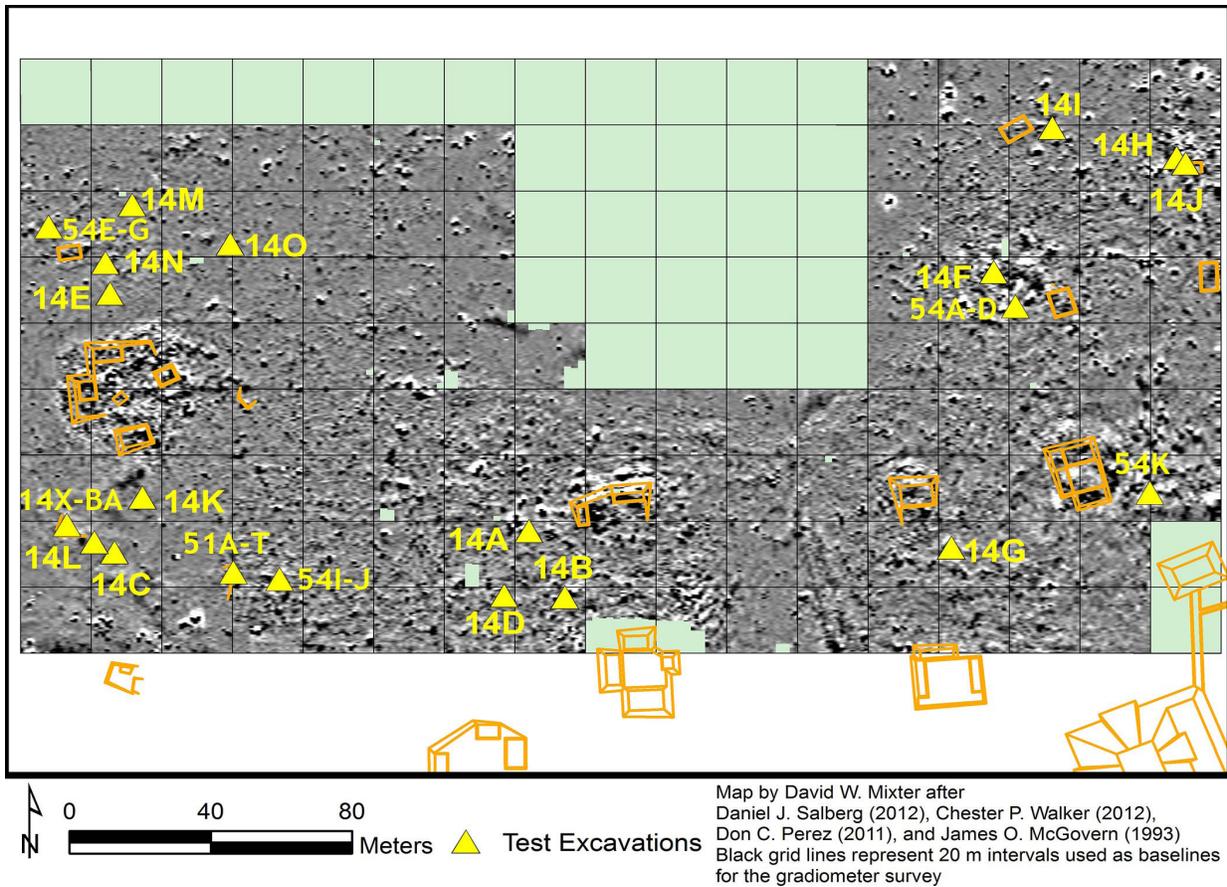


Figure 2.1. Locations of test excavations in Operations 14 and 54.

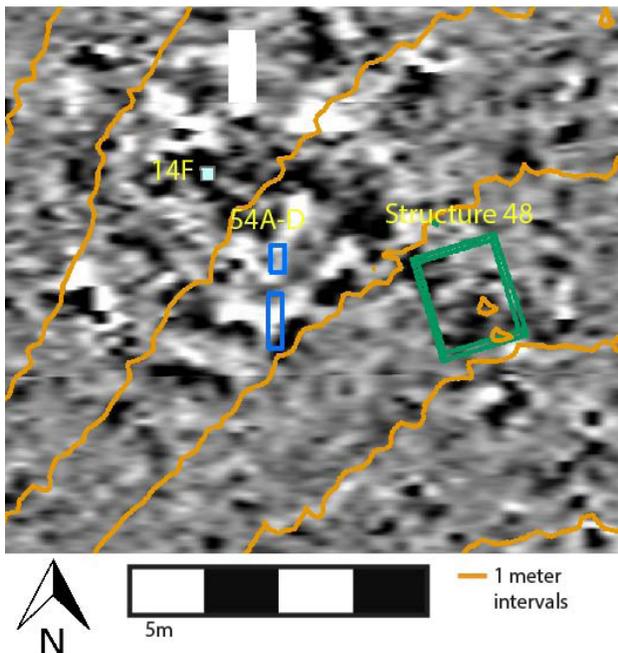


Figure 2.2. 54A-D area of excavation.

form or other construction. This unit was a 0.5 m by 2 m unit oriented to the north. Unit B was placed directly to the west of Unit A in order to investigate limestone chunks found on the western edge of Unit A and was 0.5 m by 2 m oriented to the north. Unit C was 1 m by 2 m in size and oriented to the north. It was placed directly to the north of Units A and B to extend the excavation toward additional anomalies in the gradiometer data located north of the original excavation. Unit D was 1 m by 2 m in size and oriented north. It was placed 1 m to the north of Unit C to further test the anomalies that extended north of the excavations.

All units displayed similar stratigraphy. All had a clear distinction between the dark gray (10YR 4/1) soil matrix of the humus layer in Analytical Unit (AU1) and the dark yellowish brown (10YR 4/4) matrix of AU2. As can be seen in the profile (Figure 2.3), the contact between these two soil colors was an uneven surface where small

limestone chunks were visible. In Units A and B, there were larger chunks of limestone clustered together visible just below the ground surface and extending into the soil matrix of AU2 (Figure 2.4). These chunks likely were responsible for the original signature in the magnetometer data. The transition from AU2 to AU3 is not visible in the profile and was only separated by the disappearance of limestone inclusions from the matrix. There was a moderate density of artifacts in AU1 and AU2 that became lower toward the bottom of AU2 and much less in AU3.

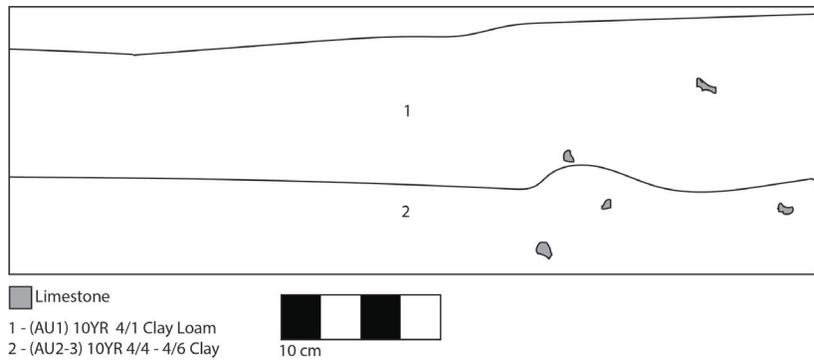


Figure 2.3. 54A east profile.

Although the overall magnetic signature of the area most closely resembled the signatures of known household groups, no platforms walls or architectural fills were identified in the excavations. However, the presence of limestone chunks that do not occur naturally in this area of the site does indicate that this may have been an activity area located to the west of Structure 48. The limestone chunks may have fallen down from the structure, which is 10 m upslope, and rolled onto a flattened surface. Or they may be materials from some other construction close by. Analysis of the recovered artifacts will help to better understand the exact use of this area.

Humus – AU1. Lots excavated: A1, A2, B1, B2, C1, C2, D1. Clay loam 10YR 4/1. This analytical unit began at the surface and ended 9 to 40 cm below surface at a dark yellowish brown (10YR 4/4) clay layer where artifacts became more abundant and small pieces of limestone were visible. Larger pieces (approximately 6 to 25cm in size) of uncut limestone were uncovered at the bottom of Unit B. Daub was recovered in all units, with the highest concentrations being in Units A and B. A high number of lithics relative to other artifacts were recovered. Two jutes were recovered. A total of 11 obsidian blades were also recovered, which is an unusually high number compared to other excavations in the area. The exception is Unit 14J near Structure 88 where Millar (2016:55) found seven blades in similar strata. Ceramic analysis dates this analytical unit to the Late Classic period.



Figure 2.4. Base of 54B2. Limestone chunks.

Unknown occupation – AU2. Lots excavated: A3, B3, C3, D2. Clay 10 YR 4/4. On the clay surface of AU2 in Unit A, excavations encountered a group of uncut limestone chunks in the western edge of the unit in close proximity to the limestone found in Unit B (Figure 2.4). However, no other limestone was uncovered during excavation. Artifacts also began to rapidly decline in frequency within in this analytical unit. I ended this analytical unit 18 to 59 cm below surface near sterile soil when limestone was no longer present. Again, daub was recovered in all units except for Unit D and was most abundant in Unit B. Lithic

numbers remained high relative to other artifacts. There was one jute and three additional obsidian blades recovered. A groundstone mano was also recovered from Unit B. Ceramic analysis dated this analytical unit to the Late Classic period.

Unknown occupation – AU3. Lots excavated: A4. Clay 10 YR 4/6. The matrix of this analytical unit was almost identical to AU2 except no limestone was encountered. Otherwise, AU2 and AU3 were indistinguishable in the excavation profile. ceramic and lithic materials continued to decline in frequency toward the bottom of the lot. This analytical unit was terminated between 48 to 65 cm below surface. Five jutes and one piece of daub were recovered from this lot. Ceramic analysis dated this analytical unit to the Middle Preclassic period.

Operation 54, Units E through H. These units were placed to test a magnetic signature located in the northwest portion of the survey area less than 1 m northwest of Structure 90 on the edge of the survey boundary. This excavation was located 11 m northwest of Units 14S and V (Figure 2.5). Unit E was placed to intersect the corner of the magnetic signature thought to be a buried structure. This unit was 1 m by 2 m in size and oriented north to south. Unit F was a 1 m by 2 m unit oriented north/south and was placed directly to the east of Unit E to follow a possible feature that was later determined to be a root. Units E and F were ended at a yellow clay directly beneath the humus layer. Unit G was a 1 m by 2 m unit oriented east to west and placed directly south of Units E and F to follow a possible floor found in the south and west portions of Unit E. Unit H was a 1 m by 2 m unit oriented north to south and was placed to join the eastern portion of the south profile of Unit G. This unit was placed to uncover more of the floor first identified in Unit E and throughout Unit G. I hoped to locate an edge or a wall to understand what type of floor—structure, patio, or plaza—it might have been. The surface in this area was sloping down very slightly to the north.

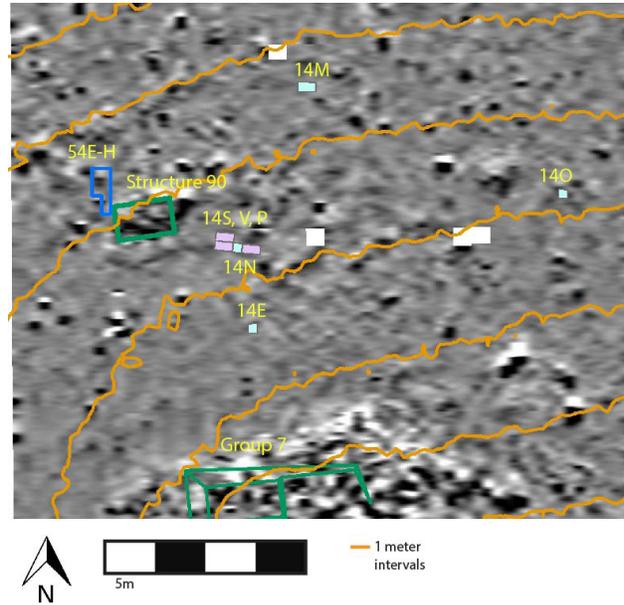


Figure 2.5. 54E-H area of excavation.

In this excavation area, a prepared surface (AU3) was located first as a thin lens in Unit E and later across the entirety of Units G and H at the base of the humus root zone (AU1). This surface, called Floor 1, can be identified in the profile (Figure 2.6) by a layer of crushed limestone approximately 6 to 9 cm thick. The thickness of the limestone ballast suggests that its surface might once have been plastered. However, Floor 1 was patchy, and its edges were vague making it difficult to determine if it was a platform, patio,

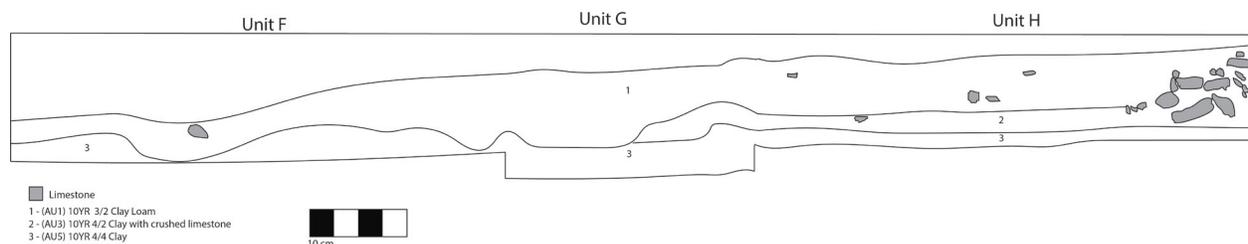


Figure 2.6. 54F-H east profile.

or plaza floor. Nonetheless, some evidence suggests that it was associated with a structure. A stack of cut limestone three courses high was found in the southeast corner of Unit H sitting on Floor 1.

A total of nine postholes were found at three different levels, but they were not stratigraphically separated by deposits that could be followed across the entire excavation area. Therefore, interpreting their temporal patterning is difficult. Regardless, their distribution across the excavation area is shown in Figure 2.7. The figure shows that the arrangement of postholes is somewhat linear from north to south, and this pattern lends evidence to suggest that a perishable construction or possibly multiple constructions were repeatedly rebuilt in the same location over a considerable time span. Three postholes (Features 1, 2, and 3) were located in Units E and F directly beneath the humus layer in sterile yellow clay outside the bounds of Floor 1. Three (Features 4, 8, and 9) were found at the base of Floor 1's ballast at the top of fill (AU5), and the remaining three postholes (Features 5, 6, and 7) were identified when the excavations reached a mostly sterile yellow clay underneath AU5. None of these postholes overlap indicating that each represents a separate post. A moderate quantity of artifacts were recovered throughout these excavations with the greatest density recovered from Floor 1. Two incensario sherds recovered from these excavations indicate that this structure might have been used for ceremonial purposes.

Humus layer – AU1. Lots excavated: E1, F1, G1, H1. Clay loam 10 YR 3/2. This analytical unit began at the ground surface and ended 17 to 35 cm below the surface. In Unit E, the lot ended at the appearance of a patch of yellowish brown (10YR 5/6) clay in the north east corner and dark grayish brown (10YR 4/2) clay in the rest of the unit. On the southeastern edge of the unit, a posthole (Feature 1) was found at the transition between the two soil colors. In Unit F, the lot ended at the yellow clay also found in Unit E. Two more postholes were located in Unit F as well. However, in Units G and H, the first lots ended on a prepared surface called Floor 1 of dark grayish brown (10YR 4/2) clay with dense limestone inclusions. An increased number of artifacts, especially ceramic sherds, were visible as well. There were undressed limestone fragments throughout all the units, and in the southeastern corner of Unit H there was a three courses high stack of larger (approximately 6 to 25 cm diameter) cut limestone blocks sitting on Floor 1 (Figure 2.8). Daub was found in all units with the largest concentration encountered in Unit G. Nine pieces of obsidian were recovered. The only unit to contain jutes was Unit H, where six were found. Two sherds from incensarios were identified during ceramic analysis, possibly indicating ritual activity in this area. Ceramic analysis dated this analytical unit to the Terminal Classic period.

Postholes – AU2. Lots excavated: Lot E2, Feature 1 is filled with mottled very dark grayish brown (10YR 3/2) and yellowish brown (10YR 5/6) silty clay; Lot F2 is Feature 2; Lot F3 is Feature 3 and they are filled

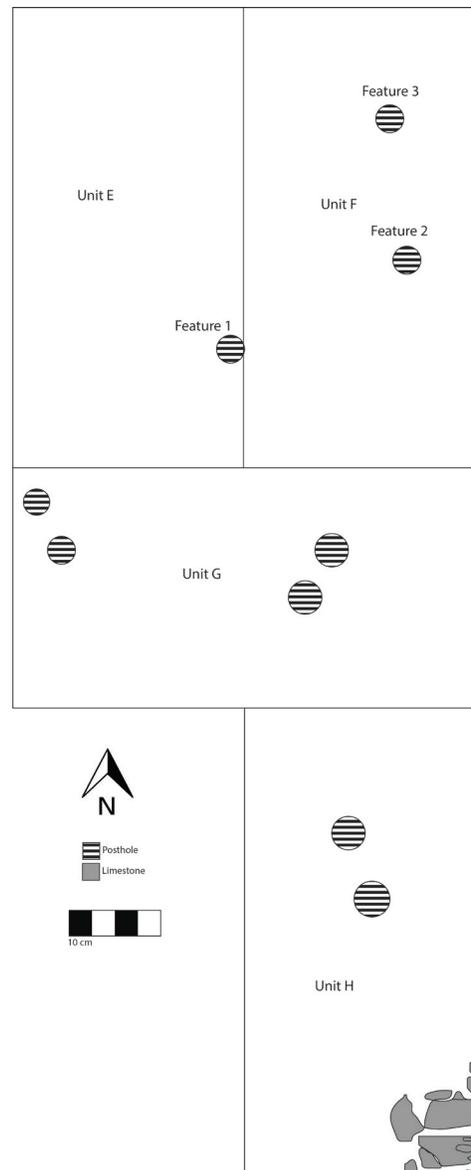


Figure 2.7. 54E-H posthole locations.



Figure 2.8. 54H1 base of lot photograph.

with very dark grayish brown (10YR 3/2) silty clay. These postholes were uncovered at the base of AU1. Feature 1 was 10 cm wide and 11.5 cm deep. It contained small flecks of charcoal and a small amount of daub or ceramic residue. Feature 2 was 10 cm wide and 30 cm deep. It contained ceramic and lithic, as well as charred wood. Feature 3 was 11 cm wide and 20 cm deep. It contained ceramic and lithics.

Prepared surface – AU3. Lots excavated: G2, H2. Clay 10YR 4/2 and limestone ballast. The prepared surface and its ballast, named Floor 1, were made of clay and crushed limestone approximately 6 to 9 centimeters thick. A three course high stack of cut limestone blocks uncovered in the southeast corner of Unit H in the humus root zone extended slightly into the prepared surface, but no other limestone was uncovered. This analytical unit was ended at 26 to 38 cm below surface where crushed limestone inclusions were no longer present. Three postholes were uncovered at the base of AU3. The first, Feature 4, was in the northwest corner of Unit G. The other two, Features 8 and 9, were located in Unit H roughly centered east to west with the first one beginning about 40 cm from the northern edge of the unit and

the second beginning about 10 cm south of the first. This analytical unit contained a high concentration of artifacts, with Unit G containing the most. Daub was recovered from both units. A mano fashioned from petrified palm wood was recovered from the northeastern corner of Unit G. Two jutes were recovered, one from each unit. Three obsidian blades were recovered from Unit G. Two pieces of slate were also recovered from Unit G. Ceramic analysis dated this analytical unit to the Late Classic II period.

Postholes – AU4. Lots excavated: Lot G4 is Feature 4; Lot H3 is Feature 8; Lot H4 is Feature 9. Clay 10YR 3/2. These postholes were identified at the base of AU3. Feature 4 was 8 cm wide and 11 cm deep with no artifacts recovered. Feature 8 was 14 cm wide and 3 cm deep. It contained two pieces of limestone, ceramics, and lithics. Feature 9 was 19 cm wide and 10 cm deep. It contained ceramic and lithic artifacts.

Fill – AU5. Lots excavated: G3. Clay 10YR 4/4. This analytical unit contained pieces of medium-sized chert cobbles and limestone that were consisted of a thicker layer in the eastern portion of the unit. This analytical unit was concluded at 34 to 47 cm below surface when we came to a yellow (10YR 5/6) clay with almost no artifacts. Three more postholes were revealed at this level and are described below as AU6. This lot contained ceramics, lithics, one piece of daub, and one jute. Ceramic analysis dated this analytical unit to the Late Classic period.

Postholes – AU6. Lots excavated: Lot G5 is Feature 5; Lot G6 is Feature 6; Lot G7 is Feature 7. Clay 10YR 3/2. These postholes were uncovered at the base of AU5. Feature 5 was 11 cm wide and 10 cm deep. No artifacts were recovered. Feature 6 was 18 cm wide and 22 cm deep and contained ceramic and lithics. Feature 7 was 16 cm wide and 23 cm deep and contained ceramic and lithics.

Operation 54, Units I and J. These units were placed to test the rectilinear signature in the southwestern portion of the survey area. Unit I was a 1 m by 2 m unit oriented north to south placed to intersect with the corner of the magnetic signature. Unit J was a 1 m by 2 m unit oriented north to south and placed

directly east of Unit I to follow a prepared occupation surface located in Unit I. This anomaly is located to the east of Agricultural Field System 2 within a moderately dense cluster of anomalies. We hypothesized that these excavations might uncover additional agricultural plots or possibly a field house. The modern surface of these units sloped down gently to the west (Figure 2.9).

In this excavation area, we encountered two prepared occupation surfaces that consisted of packed clay and limestone flecks. The first prepared surface, known as Floor 1 (AU5), consisted of dark yellowish brown (10YR 4/6) clay with crushed limestone inclusions. This accumulated occupation surface was less dense to the north and east and eventually unidentifiable at the northern and eastern edges of the excavations. A second prepared surface, known as Floor 2 (AU8), was located beneath this one, separated by about 12 cm of fill (AU6), and consisted of a yellowish brown (10YR 5/6) clay matrix with crushed limestone inclusions. It was also less visible in the same direction as Floor 1. The breaks between the material resting on Floor 1 (AU4) and Floor 1 itself (AU5), as well as between fill above Floor 2 (AU6) and Floor 2 itself (AU8) were difficult to distinguish in the profile (Figure 2.10) as the soil matrices were the same except for the crushed limestone flecks that were visible in AU5 and AU8.

Five postholes were located in the eastern portion of the excavation units at two different levels (Figures 2.11 and 2.12). The first set of postholes were found at the same level as the material accumulated on Floor 1 (AU4). They were located at the preserved edges of the eastern edge of Floor 1. The second set of postholes was located at the same level as Floor 2. They were located either on the preserved edges of Floor 2 or just outside.

This arrangement of floors and postholes provide evidence that they are part of perishable structures built during two different periods of time at this location. There was a moderate quantity of artifacts throughout most of the lots, but artifacts became much less dense toward the bottom of the units. The material (AU4) that sat on the second prepared surface had by far the highest artifact density in this excavation area. The edge of the prepared surfaces to the north and east of the excavations seems to correspond to the magnetic signature identified in the magnetometer data.

Given the close proximity of these excavations to Field System 2 and the ephemeral nature of the two constructions, it is likely they represent field houses or *champas* associated with the agricultural plots.

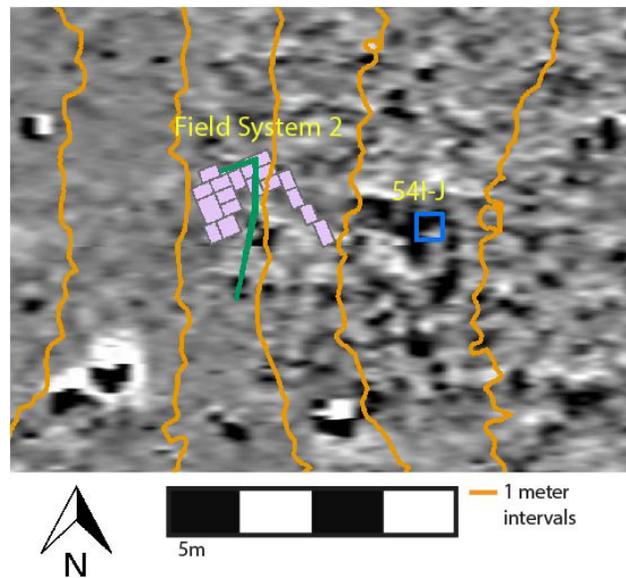


Figure 2.9. 54I-J area of excavation.

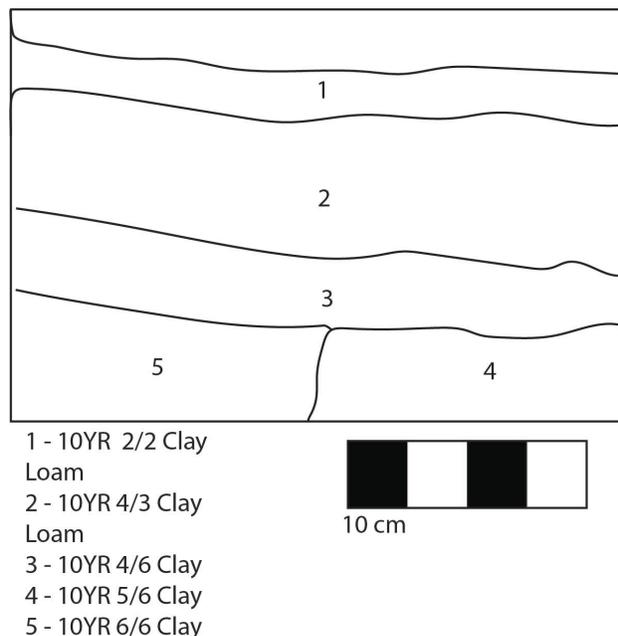


Figure 2.10. 54J south profile.

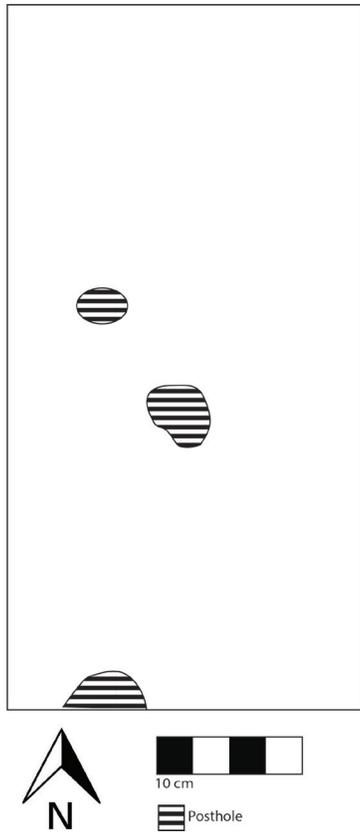


Figure 2.11. 54J4 posthole locations.

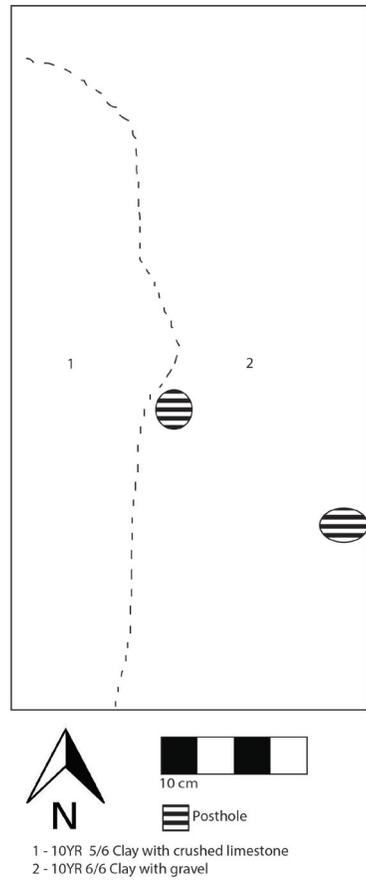


Figure 2.12. 54J10 posthole locations.



Figure 2.13. 54J4 base of lot.



Figure 2.14. 54J10 base of lot.

Heindel (2018) uncovered the presence of three other possible structures associated with the agricultural field systems. Two of these structures, one at each field system, were identified by stone platforms. The third, located at Field System 1, was identified by a single posthole in association with a prepared surface. The two different types of informal field structures indicate that multiple kinds of outbuildings were constructed in the fields, some more durable than others.

Humus layer – AU1. Lots excavated: I1, J1, J2. Clay loam 10YR 2/2. The humus layer was uniform except for a burnt area of darkened soil and charcoal that was evident mostly in the northern half of Unit J. It was first identified at the base of J1 and continued through J2. There was a small amount of daub found in Unit J. There were also two obsidian blades and one piece of slate recovered. This analytical unit ended 3 to 12 cm below surface at a brown (10YR 4/3) clay loam. Ceramic analysis dated this analytical unit to the Late Classic II period.

Accumulated surface – AU2. Lots excavated: I2, I3, J3, J4. Clay loam 10YR 4/3. This analytical unit contained an increased number of artifacts, as well as a small amount of burned limestone and charcoal, mostly in the northern part of Unit J. The burned area first seen in the humus level continued downward into the accumulated surface and was almost gone at the base of this analytical unit. Only a small area of burnt matrix remained at the junction between Units I and J. At the base of this analytical unit, three postholes were uncovered. The first posthole (Feature 12) was filled with brownish yellow (10YR 6/6) silty clay and degraded burned limestone at the top; it was located near the middle of Unit J. Another posthole (Feature 11) was filled with a black (10YR 2/1) matrix and was located about 20 cm northwest of Feature 12. A third posthole (Feature 10) was identified in the southwest corner of the excavation area with the same black (10YR 2/1) fill (Figure 2.13). Daub was present in both units but more prevalent in Unit J. Five obsidian blades, one groundstone fragment and three pieces of slate were also recovered. Ceramic analysis dated this analytical unit to the Late Classic II period.

Postholes – AU3. Lots excavated: J5, J6, Clay loam 10YR 2/1; Lot J7, Silty clay 10YR 6/6. Lot J5 is Feature 10 and it was 13cm wide and 11cm deep. It contained lithics, ceramics, and daub. Lot J6 is Feature 11 and it was 15cm wide and 42cm deep. It contained lithics, ceramics, and daub. It also had small limestone inclusions with some burned limestone. Lot J7 is Feature 12 and it was 15cm wide and 11cm deep. It contained ceramic, lithics, and charcoal.

Material on prepared structure surface – AU4. Lots excavated: I4, J8. Clay 10YR 4/6. This 10 cm thick stratum contained a higher density of artifacts than the previous strata. Burned limestone, as well as small amounts of charcoal were found throughout this level. Daub was present in both units, and two obsidian blades were recovered. The analytical was ended at 26 to 38 cm below surface where a prepared surface was identified. At the base of this level there was no change in the color of the soil, but there was a relatively flat surface with crushed limestone that become less dense to the north and east of the units. Ceramic analysis dated this analytical unit to the Late Classic II period.

Prepared surface – AU5. Lots excavated: J9. Clay 10YR 4/6. This level consisted of dark yellowish brown clay (10YR 4/6) with crushed limestone. The limestone flecks became lighter toward the eastern edge of Unit J where the soil transitioned to a lighter brownish yellow clay (10YR 6/6). It contained fewer artifacts than the previous level. Daub and one jute was recovered from this lot. It ended 40 to 46 cm below surface where the soil became a brownish yellow (10YR 6/6) clay with only a few flecks of crushed limestone still present. Ceramic analysis dated this analytical unit to the Classic period.

Fill – AU6. Lot excavated: J10. Clay 10YR 6/6 and 10YR 5/6. This brownish yellow clay was dense with small gravel inclusions. In the western portion, extending to about 15 cm from the northern edge, was a darker yellowish brown clay (10YR 5/6). The limestone flecks that were seen at the surface of this clay

disappeared as we dug down into this fill. We encountered limestone flecks again at the bottom of this level in the darker clay in the western portion of the unit. Only ceramics, lithics, and daub were recovered from this level. This level ended at 46 to 58 cm below surface at brownish yellow (10YR 6/6) clay in the middle and eastern portion of the unit. At the base of this lot two postholes (Feature 13 and 14) were uncovered in the yellow clay (Figure 2.14). This lot was ended because of the reappearance of limestone flecks in conjunction with new postholes. Ceramic analysis dated this analytical unit to the Classic period.

Postholes – AU7. Lots excavated: J11 is Feature 13; J12 is Feature 14. Clay 10YR 3/1. Feature 13 was 12 cm wide and 20 cm deep slanting slightly down to the southwest. It contained one obsidian blade and no other artifacts. Feature 14 was 15 cm wide and 6 cm deep with no artifacts.

Prepared surface – AU8. Lots excavated: J13. Clay 10YR 6/6 and 10YR 5/6. The prepared surface in the western edge of the unit consisted of a darker yellowish brown (10YR 5/6) clay with crushed limestone and was approximately 5 to 10 cm thick. Only 16 sherds, 4 lithics, and a piece of daub were recovered from this level. No diagnostic sherds were recovered from this unit so a date could not be established for this context. This lot was concluded at 56 to 65 cm below surface where the limestone inclusions ended and the brownish yellow clay (10YR 6/6) covered the entire unit.

Operation 54, Unit K. This unit was placed to test a set of dipoles identified in the southeastern portion of the survey area which may represent a cut and fill or burning event. This unit was 1 m by 2 m in size and oriented north to south on an area of flat ground to the east of Group 3 (Figure 2.15). The “checkerboard” patterning of magnetic signatures surrounding the dipoles is consistent with plaza fill elsewhere at the site, a hypothesis confirmed by our excavations.

In this deep (125 cm below surface) unit, we encountered two prepared surfaces and four plaza fill layers. The first prepared surface was beneath the humus layer and was made up of a very dark gray (10YR 3/1) clay with crushed limestone flecks. This analytical unit had the highest artifact density within this unit. The next four strata were plaza fills made up of medium to large river cobbles and limestone, which became larger toward the bottom of each fill layer. In the profile (Figure 2.16),

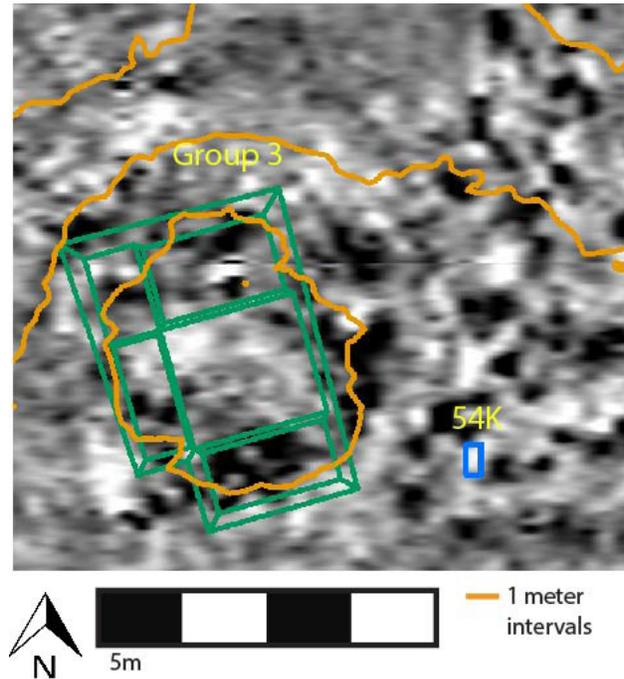


Figure 2.15. 54K area of excavation.

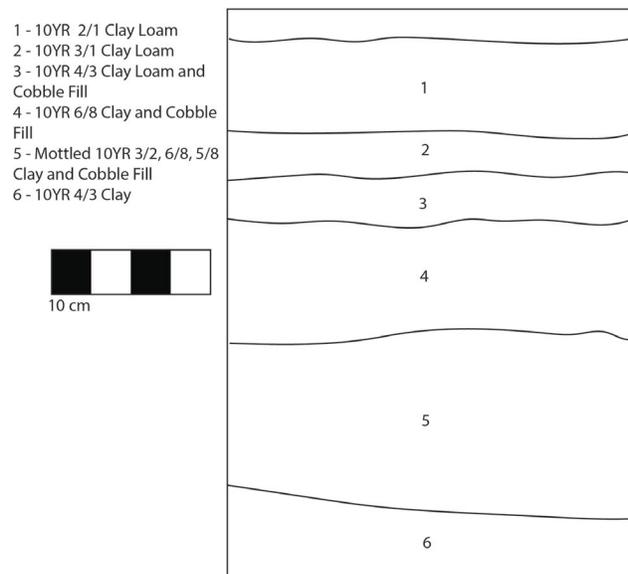


Figure 2.16. 54K south profile

there were three distinct fill layers differentiated by changes in the color of the soil matrix. The second fill layer (AU4) and the third fill layer (AU6) were indistinguishable in the profile and were only separated due to the appearance of a posthole (AU5) and a change in the color of the soil in the northern portion of the unit. After the second fill layer (AU4), the size of the unit was reduced to a 1 m by 1 m square, in the southern half of the unit. The total depth of all plaza fill levels combined was approximately 80 cm. At the base of the last fill layer (AU7) was the second prepared surface consisting of a brown (10YR 4/3) clay with crushed limestone flecks, accompanied by a marked increase in artifact density. Although the artifact density distinctly increased compared to the plaza fill (AU7) above, it was still much less than the artifact density associated with the first prepared surface (AU2). We ended the excavations at this point because of the end of the field season, not because we encountered sterile soil. The lone feature identified was a posthole (AU5), which may have been responsible for the dipole identified in the magnetic survey; however, it is more likely that the river cobbles and limestone chunks found throughout the fill layers account for the checkerboard nature of the magnetic signature.

Humus layer – AU1. Lot excavated: K1. Clay loam 10YR 2/1. Artifacts were visibly abundant in the humus root zone. Four jutes, one obsidian blade and one piece of daub were recovered. This lot was ended at 10 to 18 cm below surface, where smaller (approximately 1 to 6 cm) river cobbles and undressed limestone fragments began to appear with crushed limestone flecks throughout the unit. Ceramic analysis dated this analytical unit to the Terminal Classic period.

Prepared surface – AU2. Lot excavated: K2. Clay loam 10YR 3/1. Crushed limestone was visible throughout this level. Artifacts were also dense in this level and 19 jutes, two obsidian blades, and one piece of slate were recovered. This lot was ended at 19 to 27 cm below s, where small to medium sized (approximately 6 to 25 cm) river cobble and undressed limestone covered the base of the unit. Ceramic analysis dated this analytical unit to the Late Classic I period.

Plaza fill- AU2. Lot excavated: K3. Clay loam 10YR 4/3. The first layer of plaza fill consisted of brown clay loam with small to medium sized (approximately 6 to 25 cm) river cobble and limestone fragments. The base of this level contained river cobbles and undressed limestone across most of the unit. Ceramic and lithics were less abundant but larger ceramic sherds were recovered than in the previous levels. Eighteen jutes and two obsidian blades were also recovered. This lot was ended at 28 to 33 cm below surface where the soil changed to a brownish yellow (10YR 6/8) clay. Ceramic analysis dated this analytical unit to the Late Preclassic period.

Plaza fill – AU4. Lot excavated: K4. Clay loam 10YR 6/8. The second fill layer was differentiated from the first only by a change in the color of the soil. River cobbles and undressed limestone fragments (approximately 6 to 25 cm) continued to be abundant throughout the matrix. Artifacts decreased greatly, and we recovered only nine sherds and 18 lithics. Six jutes and one piece of daub were also recovered. This lot was ended at 34 to 41 cm below surface, where a posthole was located near the southeastern corner and the northern portion of the unit changed to a brown (10YR 5/3) clay. Ceramic analysis dated this analytical unit to the Late Preclassic period.

Posthole – AU5. Clay 10YR 3/2. Lot excavated: K5. This posthole (Feature 15) was 12 cm wide. It was excavated down to a level that contained a matrix with the same soil texture and color as the fill of the posthole, so the depth could not be determined, but it was at least 20 cm deep. No artifacts were recovered. Ceramic analysis dated this analytical unit to the Late Preclassic period.

Plaza fill – AU6. Lot excavated: K6. Clay 10YR 6/8. The third fill layer consisted of brownish yellow clay with the same cobble fill as above. This lot was separated due to the presence of a posthole and a change to a brown (10YR 5/3) soil in the northern portion of the unit. To excavate as deep as possible

before the conclusion of the field season, this unit was reduced to a 1 by 1 m unit in the southern half of the original unit. At the base of the lot there was line of medium to large limestone (approximately 6 to 25 cm), starting about 20 cm north on the eastern profile and ending in the northern profile at about 40 cm west, with no cobbles to the southwest of this line (Figure 2.17). Again, artifact density was very low, and only lithics and ceramics were recovered. This unit was ended at 52 to 64 cm below surface where the soil changed to a very dark grayish brown clay (10YR 3/2) clay. Ceramic analysis dated this analytical unit to the Late Preclassic period.



Figure 2.17. 54K6 base of lot.

Plaza fill – AU7. Lot excavated: K7. Clay mottled 10YR 3/2, 10YR 5/8, 10YR 6/8. The fourth fill layer was a mix of different soil colors and contained several large (approximately 25 to 50 cm) undressed limestone fragments and a few larger river cobbles. It was ended at 102 to 107 cm below surface where the rocks ended, and the soil was a brown (10YR 4/3) clay with flecks of crushed limestone throughout the unit. Up until this level, artifacts had been very light, but here several ceramic sherds could be seen throughout the level. Daub and two pieces of shell (possibly river clam) were recovered from this lot. Ceramic analysis dated this analytical unit to the Late Preclassic period.

AU8 – Prepared surface. Clay 10YR 4/3. Lot excavated: K8. The second prepared surface was identified based on a dense scatter of artifacts and crushed limestone. These artifacts were more abundant at the surface and became fewer toward the bottom of the lot. This lot did not contain any of the larger cobbles and limestone found in the previous levels. A few pieces of smaller (approximately 1 to 6 cm) limestone pieces were found. The lot was ended at 115 to 125 cm below surface without a soil change due to the conclusion of the field season. Two pieces of shell and two shell beads were recovered from this lot. Six pieces of daub, 74 jutes, and seven bone fragments were also recovered. Ceramic analysis dated this analytical unit to the Cunil phase of the Terminal Early Preclassic or Early Middle Preclassic period.

Discussion

The goal of the research was to identify the magnetic signature of domestic platforms or patio-focused groups. LeCount has suggested that zones of enhanced magnetism produced by the magnetometer survey of visible patio-focused groups can be used as a signature for locating buried ones (LeCount et al. 2019). I excavated one such signature (54A to 54D) and three other complex signatures. The most likely patio-focused group signature (54A to 54D), did not produce any evidence of a structure. There, a group of undressed limestone fragments was located, which are not found naturally in this portion of the site. This group of limestone fragments is roughly located where the corner of the linear magnetic signature was shown on the magnetic survey. Interestingly, this excavation recovered an unusually high number of lithics compared to ceramics. This was also the case for the previously excavated Unit 14F within this zone of enhanced magnetism. It was placed 6 m to the northwest of 54A to 54D in 2011 by John Blitz and Dan Salberg (Blitz et al. 2012: 180). They interpreted Strata A as a possible lithic production locus. These excavations are located in close proximity to Structure 48 and the activity surface exposed by our excavations may be associated with this structure.

The signature (54E to 54H) tested in the northwestern portion of the survey area was rectilinear in form with a center of less magnetic strength. Excavations located multiple postholes, a stacked limestone wall, and a prepared surface. The identification of two incensario sherds points to this area being a

possible area of ritual activity where perishable buildings were rebuilt multiple times. The limestone wall may have acted as a façade to a platform or a wall associated with a perishable construction, but more excavations are needed to determine their use. Previous excavations (14M to 14N) conducted by Millar (2016) located a possible water channeling system associated with a sloped terrace wall to the east of nearby Structure 90. Heindel (2017) returned to this area and excavated a broader exposure of this feature. She found additional walls, floors, and features including a child burial and a bead cache. In conjunction with the previous findings, she interpreted the remains as an elaborate drainage system with ritual features located on the toe of the ridge overlooking Requena Creek. Due to the close proximity of the channel features to the perishable structures found this summer, it is likely that all these remains are representative of a single field complex.

The signature (54I to 54J) tested in the southwestern portion of the survey area consists of a small cluster of complex dipoles with linear signatures to the north and east. Excavations located a number of postholes associated with two superimposed prepared clay surfaces and evidence of burning. The cluster of dipoles in the center of this anomaly is likely a result of the burning event encountered in the humus layer of the excavations, which extended into the level below. The edges of the prepared surfaces, which end to the north and east of the burned area, likely caused the linear signatures being tested. This structure is located near known agricultural terraces (Agricultural Plot System 2) excavated by Heindel (2018, 2019) and could represent informal perishable structures used in connection with agricultural work. Three other possible structures associated with the agricultural Field Systems 1 and 2 have previously been excavated. Two of these structures, one at each field system, were identified by stone platforms. The third, located at Field System 1, was identified by a single posthole in association with a prepared surface. These constructions represent at least two different kinds of outbuildings associated with agricultural fields: 1) durable platforms lined and filled with rock and 2) perishable huts consisting of wattle-and-daub walls supported by poles and underlain with a clay floor.

The final signature (54K) tested in the southeastern portion of the survey area east of Group 3 is a set of complex dipoles located within a dense cluster of anomalies. Excavations found a prepared surface overlaying four thick layers of plaza fill, one of which contained a single posthole, and another prepared surface at the base of the excavations near sterile. The posthole in this excavation could have contributed to the dipole signatures seen in the magnetometry survey. However, it is more likely that uneven cobble fill may have been a factor. The checkerboard pattern of anomalies in which the dipoles are located are similar to the signatures seen in other areas of the site with large cobble plaza fill (Chambers-Koenig 2013).

Conclusions

To further test the efficiency of locating anthropogenic remains using the magnetometer survey conducted at Actuncan, Belize, four magnetic signatures were selected for ground truthing excavations. All four selected locations yielded anthropogenic remains that corresponded with the magnetic signatures. Statistical analysis of artifacts will need to be performed to gain a better understanding of the function of these excavations, but the location of anthropomorphic features at all excavations added to the evidence of previous excavations further proves the validity of the remote sensing techniques in this area.

Acknowledgements: First, I would like to thank Dr. John Morris and the Belize Institute of Archaeology for permitting the excavations for this field season. I would like to thank Dr. Lisa LeCount for her invaluable guidance throughout my research. Additionally, I would like to thank everyone on the Actuncan Archaeological Project, especially Dr. David Mixter and Bobbie Simova, for their mentorship and guidance during my excavations. I would also like to recognize the crew members (foreman Rene Uck, excavator Gerson Uck, screeners Henry Chan and Jerry Magaña) who worked with me in the field to complete these excavations, as well as the lab crew (Eudie Cocom, Clancy Cocom, and Juliany Neal) who worked to

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Appendix X.A.

Table 2.A.1. Operation 54A-D analytical units

AU	Analytical Unit Name	Excavated Lots	<i>Terminus Post Quem</i>
1	Humus Layer	A1, A2, B1, B2, C1, C2, D1	Late Classic
2	Unknown Occupation	A3, B3, C3, D2	Late Classic
3	Unknown Occupation	A4	Middle Preclassic

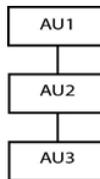


Figure 2.A.1 Operation 54A-D Harris Matrix

Table 2.A.2. Operation 54E-H analytical units

AU	Analytical Unit Name	Excavated Lots	<i>Terminus Post Quem</i>
1	Humus Layer	E1, F1, G1, H1	Terminal Classic
2	Postholes	E2, F2, F3	Terminal Classic
3	Prepared Surface	G2, H2	Late Classic II
4	Postholes	G4, H3, H4	Late Classic II
5	Fill	G3	Late Classic
6	Postholes	G5, G6, G7	Late Classic

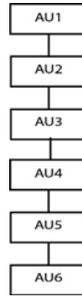


Figure 2.A.2. Operation 54E-H Harris Matrix

Table 2.A.3. Operation 54I-J analytical units

AU	Analytical Unit Name	Excavated Lots	<i>Terminus Post Quem</i>
1	Humus Layer	I1, J1, J2	Late Classic II
2	Accumulated surface	I2, I3, J3, J4	Late Classic II
3	Postholes	J5, J6, J7	Late Classic II
4	Material on prepared structure surface.	I4, J8.	Late Classic II
5	Prepared Surface	J9	Classic
6	Fill	J10	Classic
7	Postholes	J11, J12	Classic
8	Prepared Surface	J13	Unknown

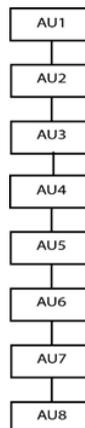


Figure 2.A.3. Operation 54I-J Harris Matrix

Table 2.A.4. 54K analytical units

AU	Analytical Unit Name	Excavated Lots	<i>Terminus Post Quem</i>
1	Humus Layer	K1	Terminal Classic
2	Prepared Surface	K2	Late Classic I
3	Plaza Fill	K3	Late Preclassic
4	Plaza Fill	K4	Late Preclassic
5	Posthole	K5	Late Preclassic
6	Plaza Fill	K6	Late Preclassic
7	Plaza Fill	K7	Middle Preclassic
8	Occupation Surface	K8	Cunil

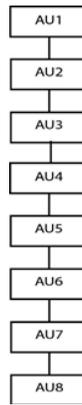


Figure 2.A.4. Operation 54K Harris Matrix

Chapter 3: Examining the E-Group: Continued Excavations on Structure 23

Borislava Simova (Tulane University)

My dissertation research seeks to define the construction chronology of Actuncan's E-Group complex and ascertain the activities that took place on its defining structures and large plaza over time. Following two seasons of excavations in Plaza F, two seasons of excavations in the eastern platform (Structures 26 and 27) and one season of excavation in the western pyramid (Structure 23), the 2019 season was the final season of excavation toward these goals (Heindel 2016; Simova 2018, 2019; Donohue 2014; Simova and Mixer 2016). During the 2019 summer field season, excavations resumed on the eastern staircase of Structure 23, the western pyramid of Actuncan's E-Group, and test excavations targeted the construction history of the plaza. This chapter focuses on the excavations on Structure 23, while the plaza testing program is described in a separate chapter in this volume.

In its terminal form, Structure 23 was a steep-sided pyramid, measuring approximately 11 m in height. Its Plaza F-facing façade was augmented with a wide terrace that connected the eastern staircase to the plaza. Extensive collapse of the final phase made it difficult to identify the corners of the structure, but the orientation of the terrace indicates the structure orientation was consistent with that of Structures 26 and 27 located across Plaza F to the east (Mixer 2014). Together with Structures 26 and 27, Structure 23 formed a Late Preclassic E-Group complex (Laporte and Fialko 1995; Chase and Chase 1995). Within this architectural grouping, the western structure is often a radial pyramid. However, the destruction of Actuncan's Structure 23 summit architecture and the extensive collapse debris have obscured the appearance of outset staircases on all four sides of this building, giving it the appearance of a rounded mound instead (Mixer 2014).

In 2015, Heindel (2016) led initial excavations of Structure 23. She established Operation 49, which included four units (Units A, B, D, and E) located on the centerline of Structure 23's eastern staircase (Figure 3.1). Heindel identified three construction phases of the staircase and terminated excavations just above a fourth phase. She identified a central stair block on the penultimate staircase, confirming the placement of excavations on the structure centerline. Heindel also supervised excavations of Unit C on the northern façade of the structure, where she attempted to locate evidence of a northern staircase which would provide evidence for a radial staircase arrangement. The extensive deterioration of the terminal construction phase and large trees interfered with proper sighting of the unit, which missed the probable location of the staircase.

During the 2019 excavation season, I resumed excavations within the eastern face of Structure 23 in order to probe into earlier construction phases and

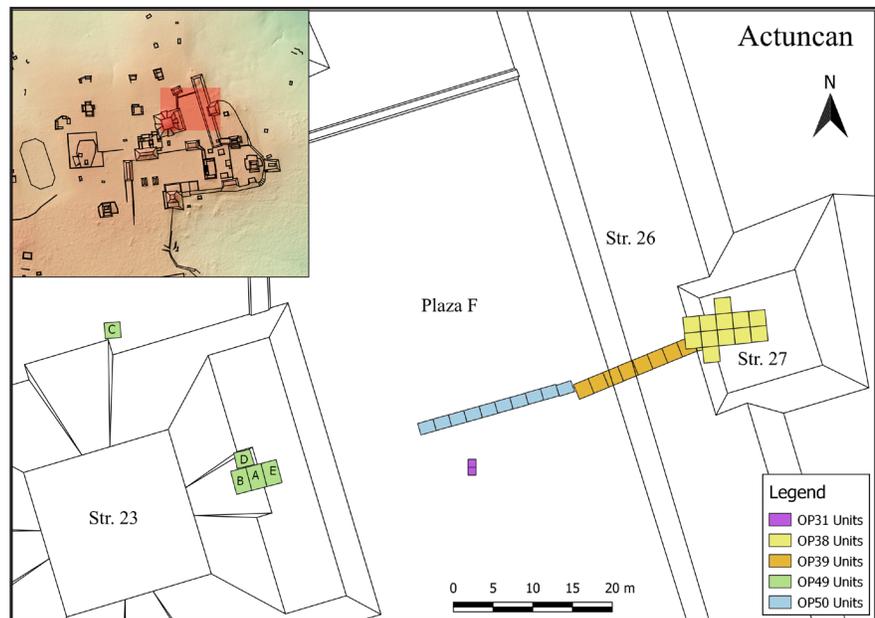


Figure 3.1. Map of excavations completed within the Plaza F complex.

collect samples of prehistoric activities associated with the base of the structure staircase. By extending the chronology of the western structure and relating construction phases across the plaza and defining structures of the Late Preclassic E-Group, I will be able to study the development of the Plaza F complex over time. Further, I will be able to anchor evidence of prehistoric activities in the complex to discrete phases and study how they change over time.

I extended Heindel’s easternmost unit, Unit E, from a 1 m by 3 m to 2 m by 3 m unit. The unit was positioned on the large basal terrace that extended from the eastern façade of Structure 23 during the terminal construction phase. This terrace covered and replaced earlier terraces appended to the base of previous staircase constructions and the lowest steps from the penultimate staircase. Excavations through this terrace have the greatest potential to expose early construction phases of Structure 23’s staircase and their articulation with plaza construction phases. As a broad surface overlooking the plaza, the terrace also provides an opportunity to investigate activity spaces within the Plaza F complex. Therefore, Unit E was enlarged not only to facilitate deeper excavations, but also the collection of geochemical samples from terrace and plaza surfaces that will be used to identify prehistoric activities. Excavators also continued work in a 2 m by 2 m subsection of Unit A to expose earlier phases of the structure.

In total, excavations by Heindel (2016) and myself into Structure 23 identified six construction phases (Figure 3.2). Below the collapsed terminal structure and appended wide terrace (Structure 23-1st), Heindel (2016) identified two earlier masonry staircases (Structures 23-2nd and 23-3rd) on the eastern façade. She also exposed two steps at the base of Structure 23-4th (Figure 3.3: 20, 21). In 2019, we exposed low terraces appended to the lower steps of Structure 23-2nd and -3rd (Figure 3.2: 4, 5, 11, 13) and the plaza floor at the base of Structure 23-4th. Upon excavating into Structure 23-4th, we exposed a wall from an earlier phase of construction, Structure 23-5th's Kib Wall and the earliest plastered plaza floor, Kawak Floor, in this area of the plaza. The floors exposed at the base of Structure 23-4th and -5th, Muluk and Kawak Floors (Figure 3.2: 22, 24), were the only plaster plaza floors encountered at the base of the structure. The remaining six plaster plaza floors documented

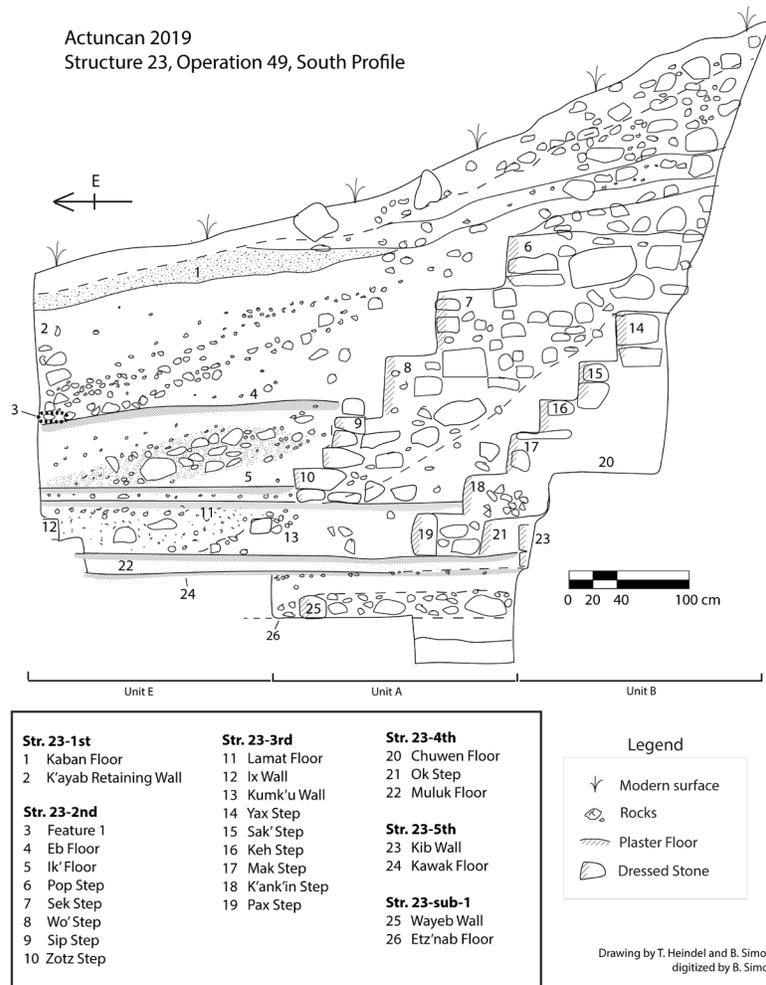


Figure 3.2. South profile of the Operation 49 excavations in Units A, B, and E.

in the Plaza F excavations (Simova 2018, 2019) likely articulated with the later terrace façades located further to the east of our excavations. Since we did not expose the façades of the terraces, the relationship between the floors and construction phases will be determined using ceramic seriation and radiocarbon dating. While there are six remaining plaza surfaces associated with Structure 23, there are only four exposed terrace phases to which they can articulate. This indicates that the plaza surfaces were constructed and modified more frequently than Structure 23's staircases and terraces.

Below the five phases of masonry and plaster architecture, excavators encountered an earlier low cobble platform (Structure 23-sub-1) associated with a tamped, brown clay surface (Figure 3.2: 25). This phase of construction was distinct in material and orientation from the later phases of Structure 23 and may predate the modification of the Plaza F complex into a formal E-Group.

Importantly, this season's research determined that the construction history and uses of Structure 23 differ from those of the eastern platform (Structure 26) across Plaza F. The eastern platform had two antecedent constructions, one platform consisting of mounded clay (Structure 26-sub-2) and one platform with clay and cobble terraces (Structure 26-sub-1). Its later masonry construction phases (Structure 26-6th through 1st) included six staircases and nine plastered summit floors. The staircases were often reworked, with some steps reused in later versions rather than completely covered by subsequent constructions as is the case in Structure 23. In contrast to current evidence from Structure 23, both the summit and base of Structure 26 featured a series of ritual deposits, including a burial and cached jadeite and shell beads. It is clear that the two spaces developed along different trajectories, were modified at different rates, and held different ritual significance within the complex; however, only further analysis of artifacts and radiocarbon dates can clarify if these structures were in use contemporaneously or represented shifting foci of activity within the complex.

Methods

This season began with a week of clearing vegetation, fencing of the excavation area, and removing the backfill in the contiguous Units A, B, and E of Operation 49 (Figure 3.1). Although we did not resume excavations in Unit B, excavators removed some of its backfill to better stabilize the remaining sediment with sheet metal.

In removing the backfill, we exposed a preserved section of staircase from Structure 23-2nd that remained in the northern meter of Unit A. Heindel excavated through the construction phase in the southern 2 m by 2 m portion of the unit, leaving a one-meter wide section of the staircase intact. This section was cleared and left in place as we resumed work in the 2 m by 2 m section on the southern end of the unit.

Unit E was initially laid out by Heindel as a 1 m by 3 m extension to the east of Unit A and was not extensively excavated. We expanded it by a meter to the east using the existing trench alignment as a guide to increase exposure of the terrace and plaza surfaces at the base of the staircase. The resulting Unit E was 3 m by 2 m in size. We collected geochemistry samples from each prepared terrace and plaza surface following procedures outlined by Wells (Wells 2004, 2010) and previously implemented in the eastern structures and Plaza F (Simova et al. 2018; Simova 2018). In the last weeks of the season, excavations halted in the northern meter of Unit E. We limited excavations to the southern 2 m by 2 m section of the unit to speed progress and ensure the identification of early construction phases.

Excavators removed and recorded deposits according to natural layers, paying attention to architectural boundaries and shifts in soil colors and textures. They removed soil in 5-gallon buckets which were then counted and screened through a ¼ inch screen. Cultural artifacts were collected from the screen and

placed in bags labeled with the provenience of the deposit. Unique or special items identified *in situ* were piece-plotted in relation to the unit walls and a temporary datum placed to the south of the units. Work followed standard Actuncan Archaeological Project (AAP) procedures and recording practices (see LeCount and Blitz 2012).

Construction Phases of Structure 23

Structure 23-sub-1

The natural substrate of the hill below the Plaza F complex consisted of a brown to red mottled clay. It was likely leveled to prepare a flat earthen surface for the initial constructed structures. Within Operation 49, this surface, Etz'nab Floor, consisted of an approximately 20 cm deep deposit of dark brown clay with few small cobble inclusions (Figure 3.2). Etz'nab Floor supported a low cobble platform named Wayeb Platform (Figure 3.3). We exposed the platform's eastern face below the staircase of Structure 23. Importantly, the orientation of the platform face skewed further west of north than the subsequent masonry phases of Structure 23. The platform face consisted of two courses of undressed cobbles. The platform fill was dark brown with large, densely packed cobbles.



Figure 3.3. Structure 23-sub-1 platform, view of Wayeb Wall's eastern face.

In areas not covered by Structure 23-sub-1, the early floor was covered by a cobble fill, consisting largely of limestone. A subsequent deposit of brown clay with cobbles covered over the platform and provided a flat surface for the construction of the first plastered plaza floor, Kawak Floor.

Structure 23-5th

Structure 23-5th is the earliest known masonry phase of Structure 23, and it established the orientation of the structure for all subsequent phases. This building phase is only known from the partial exposure of a single step or low platform edge in the western edge of Unit A. The exposed wall, named Kib Wall, consisted of two courses of dressed limestone that create a 40 cm high step. Kib Wall was constructed on the earliest plastered plaza surface, Kawak Floor, in this immediate area. Kawak Floor had soft, friable plaster and showed evidence of extensive burning. Without excavating through Kib Wall, I could not determine if the floor extended much beyond the wall under the platform, which would indicate that an earlier structure could have been present below Structure 23-5th and above Structure 23-sub-1.

The next plaza floor, Muluk Floor, raised the level of the plaza up to the base of the second course of Kib Wall. Structure 23-5th likely remained in use after the plaza surface was raised, before Structure 23-4th was built on Muluk Floor.

Structure 23-4th

This building phase is known from two low steps leading to a platform or terrace surface, named Chuwen Floor, built approximately 75 cm above the plaza surface. The structure was constructed on top of the Muluk Floor, which was likely an early plaza floor. The lower step of Structure 23-4th had a rise of 30 cm and a 35 cm wide tread and was named Ok Step. This step consisted of dressed limestone blocks set

directly against the base of Structure 23-5th and was covered with a thick plaster that obscured individual courses of stone during excavation. The second step and surface were exposed by Heindel in 2015 but were not excavated in the 2019 season because of their proximity to the unstable excavation wall. The second step rose 30 cm up to the Chuwen Floor. Heindel exposed approximately 90 cm of this surface in Unit B, which indicates that Chuwen Floor represents a terrace landing or platform summit rather than simply a stair tread.

Structure 23-3rd

The exposed portion of Structure 23-3rd consists of six steps built on top of Muluk Floor. Heindel (2016) named the steps associated with this construction phase as Pax, K'ank'in, Mak, Keh, Sak', and Yax Steps in order from the lowest step to the highest. I was able to expose more of the Pax Step in the 2019 season and better associate it with the Structure 23-3rd staircase. The steps were covered in a thick plaster and were consistent in form, with a rise of approximately 35 cm and thread width of approximately 25 cm (See Heindel 2016: Figure 3.7 and 3.9). The wider width of the of sixth step, Yax Step, may indicate that this was the final step to either a medial terrace or the top of the Structure 23-3rd platform.

Two additional architectural features were constructed on Muluk Floor that may represent renovations which expanded the construction to the east. The first was a low terrace defined by the Kumk'u Wall to the east. The wall consisted of a row of limestone cobbles and the fill contained a dense layer of limestone cobbles and a couple of dressed stones (Figure 3.4). We did not identify a distinct, preserved surface associated with the terrace during excavations. The terrace covered over the first step of Structure 23-3rd and extended approximately a meter to the east, however, I suspect that a dressed stone façade may have extended it further in antiquity. We identified a circular deposit of charcoal (Feature 2) within the fill of the terrace, perhaps associated with its dismantling during subsequent renovations.

The second architectural feature constructed on Muluk Floor was a wall exposed along the eastern edge of the excavation unit, named Ix Wall (Figure 3.5). The first course of the wall was constructed out of a combination of large cobble to the south and small dressed stone to the north. We exposed a portion of a second course consisting of two long dressed limestone blocks. The inconsistency of materials may indicate that this was the back face of a terrace wall associated with Lamat Floor. Excavations farther to the east are required to test this hypothesis. Regardless of its association with Ix Wall, Lamat Floor, which



Figure 3.4. Remnants of the Kumk'u Terrace with Feature 2 charcoal concentration outlined.



Figure 3.5. Cut stone of Ix Wall visible in the east profile of Unit E.

covered over Kumk'u Terrace, was most likely the floor of a low terrace rather than a plaza floor based on its elevation above the earlier Muluk Floor. Lamat Terrace replaced the lowest step of Structure 23-3rd and was in use with the next five steps prior to the construction of Structure 23-2nd.

Structure 23-2nd

The Structure 23-2nd staircase was built over Lamat Floor. Unlike the earlier two staircases, which were built directly on top the earlier stairs, the Structure 23-2nd staircase was a larger project, because the cobble fill expanded the footprint of the staircase to the east and well above Structure 23-3rd (Figure 3.6). Heindel's (2016) excavations exposed four steps, Sip, Wo', Sek, Pop, listed from the lowest step to the highest, as well as a circular stair block constructed on top of Sek Step (see Heindel 2016:Figure 3.5). Each step rose 50 cm and had a 40 cm wide tread. The stair block was 120 cm long from north to south and 80 cm wide east to west. These steps led to a medial terrace separating the lower section of the staircase from an upper section that would have provided access to the building's summit. Heindel's excavations exposed a 180 cm length of the terrace but no preserved floor surface or evidence of the upper steps was encountered. These upper steps, if preserved, are likely further to the west within the modern mound.

At the base of the steps, Lamat Floor was replastered at least once while Structure 23-2nd was in use. It was thicker and better preserved to the east of the staircase than where it was covered by the fill of the staircase. Lamat Floor was later covered by Ik' Floor, raising the surface associated with the bottom of the staircase by 10 cm. Given that Ik' Floor was at a slightly higher elevation than the modern surface in the center of the plaza and was buried by two later terrace constructions, it was likely also part of a terrace.

Ik' Floor and the lower staircase step were then covered by another terrace construction defined by the Eb Floor, a tamped surface. Because we did not encounter the retaining wall or façade that formed the face of this terrace, it is unclear how far it extends beyond the 2 m exposed in our excavations. We identified a chipped stone feature (Feature 1) on Eb Floor along the eastern edge of the excavation. The feature contained cores and flakes distributed in a roughly oval arrangement oriented north-to-south (Figure 3.7). The placement of the feature indicates that the terrace likely

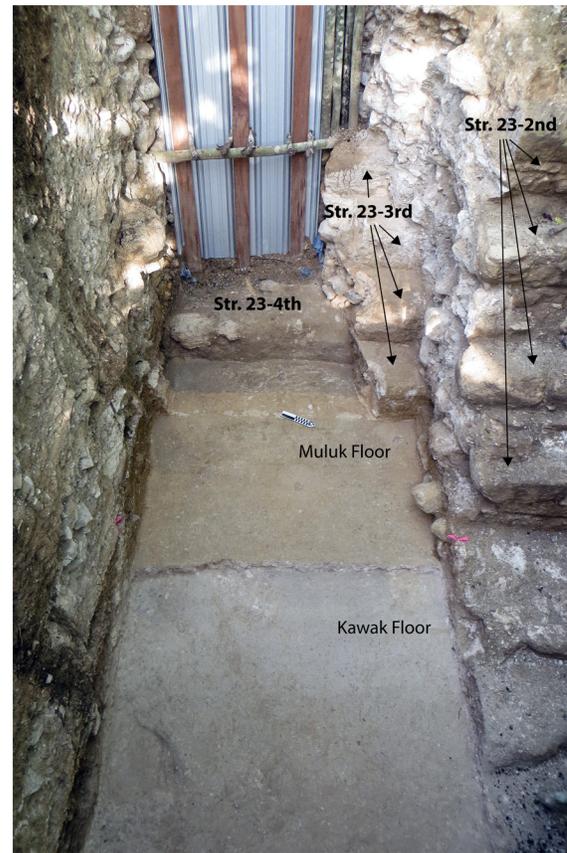


Figure 3.6. Exposed steps of Structure 23-2nd, -3rd, and -4th.



Figure 3.7. Feature 1 Lithic cache.

extended further to the east. Additionally, chipped stone collections like this are often placed above ritual deposits (Kunen et al. 2002; Moholy-Nagy 1997). Given the proximity of this collection to the edge of our excavation, I hypothesize that other deposits of interest may be further to the east just outside our excavation area.

Structure 23-1st

The terminal phase of Structure 23, previously described by Heindel (2016), was associated with a substantial terrace augmentation, but its staircase was poorly represented within our area of excavation. Heindel's observations of few dressed stones in the collapse, combined with the steepness of the terminal mound, lead her to suggest that the façade and staircase were striped of material for use in later construction projects at the site.

The terrace floor, named, Kaban Floor was constructed out of tamped clay with pebbles and raised the surface of the terrace by a meter, effectively doubling the height of the preceding terrace and fully concealing the lower five steps of Structure 23-2nd. The excavations did not identify the façade of the terminal terrace, which was likely east of this year's excavations. The back of a retaining wall, named K'ayab Wall, constructed of large cobbles was identified along the eastern edge of Unit E and indicated that our excavations were not far from the terrace face.

It is likely that Structure 23-1st had a distinct staircase that connected the terrace to the building's summit. However, it is also possible that Structures 23-1st and 23-2nd shared an upper staircase, in which case Structure 23-1st is largely represented by the expanded terrace.

Analytical Units

This section provides updates to Operation 49 analytical units previously defined by Heindel (2016) and defines twelve new analytical units from the terrace excavations and excavations below Structure 23-4th. Lots from the Unit C excavations on the north façade of the structure have not been updated and are therefore not included here (AU9). Lots excavated during the 2015 season are demarcated in italics.

Modern Surface – AU1. Lots excavated: *A1, B1, D1, E1.* See Heindel 2015.

Collapse above Structure 23-1st Fill – AU2. Lots excavated: *A2, B2, D2, E2.* See Heindel 2015.

Possible Structure 23-1st Fill – AU3. Lots excavated: *A3, B3, B4, D3, D4, D5.* See Heindel 2015.

Structure 23-1st Fill – AU4. Lots excavated: *A5, A6, A7.* See Heindel 2015.

Ambiguous Cut-limestone Fill – AU5. Lots excavated: *B5.* See Heindel 2015.

Structure 23-2nd Fill – AU6. Lots excavated: *A8, A9, A12, B6, B7.* This fill consisted of a pale brown (10YR 6/3) sandy loam matrix with small to large (larger than 50 cm diameter) dressed and undressed limestone inclusions and some chert cobbles. In the 2015 excavation, portions of the Pop, Sek, and Wo' Steps of Structure 23-2nd were removed as part of this analytical unit. A figurine fragment (Special Find 1) was recovered in lot A9. We removed a 2 m section of the basal step, Zotz Step, during this season's excavations. Underneath the staircase, Lamat Floor was very deteriorated. We also cleared more of the structure fill to expose a 2 m by 2 m section of Unit A more fully. Following the previous excavators, we maintained 1 m of the structure's staircase unexcavated along the north edge of the unit.

Structure 23-3rd Fill – AU7. Lots excavated: A11, A15, B8. The staircase fill was similar to Structure 23-2nd. It consisted of pale brown (10YR 6/3) sandy loam with chert and limestone inclusions ranging in size from 1 to 50 cm in diameter. In the 2015 excavations, a 2 m section of the staircase was excavated, removing all but the lowest Pax Step. This season, we exposed Pax Step and determined that it was part of the Structure 23-3rd staircase rather than associated with the earlier Structure 23-4th construction. The step was constructed out of a single course of large, dressed limestone. In addition to the Pax Step risers, we excavated through the remaining fill of K'iank'in, Mak, and Keh Steps to clear the full 2 m by 2 m area of excavation.

Kumk'u Terrace (Previously called Fill Between Lamat and Muluk Floors) – AU8. Lots excavated: A10, A14. This analytical unit contained clay loam sediment with a more saturated color (brownish yellow, 10YR 6/6) than the structure fill and some smaller chert cobble and limestone inclusions (1 to 25 cm in diameter) at the top of the context. We encountered some loose plaster mixed in with the fill soil. Feature 2, a charcoal concentration (AU20), was encountered within this analytical unit embedded in the fill. This context was distinct from the above Lamat Floor Fill (AU19) because it contained more large cobbles, many of which were dressed limestone. Kumk'u Wall, fronting the low terrace, was not well preserved but did have a clear alignment of undressed limestone located in the central portion of Unit E. Muluk Floor below the step had subsided, creating a clear, deep crack along the edge of the wall base. Muluk Floor was well preserved to the west of the crack, below the fill of Kumk'u Terrace, and more deteriorated to the east. This difference in preservation could indicate the terrace was constructed shortly after the renovation of the plaza floor following the construction of Structure 23-3rd.

Mixed contexts – AU10. Lots excavated: D6. See Heindel 2015.

Mixed terrace context – AU11. Lots excavated: E3. This analytical unit was a mixed context of backfill, collapse, and some terrace fill. The distinction between *in situ* and backfilled material from the 2015 excavations was not as clear as we had anticipated. The majority of matrix consisted of a very dark grayish brown (10YR 3/2) clay loam with small (1 to 6 cm diameter) rock inclusions. Some ceramic and lithic artifacts as well as jute were recovered from this lot.

Kaban Terrace Floor – AU12. Lots excavated: E4. Kaban Floor was identified at the base of AU11 based on its pebbly surface, which indicated that it was a floor ballast. It had a brown (10YR 4/3) clay loam, similar to the surface level. The terrace surface sloped down to the east by 50 cm over the 2 m length of the excavation unit. This slope is likely the product of the terrace slumping outward to the east since abandonment. Some larger (25 to 50 cm diameter) limestone and chert cobbles from structure collapse were scattered on the floor. A few sunk several centimeters into the pebbly surface, which indicates that they fell from a height and that the pebbly surface was in fact a terrace surface that stones could land on. The fill below was placed into a separate analytical unit based on its lighter soil color.

Kaban Terrace Fill – AU13. Lots excavated: E5, E6, E7, E8, E9, E10. This terrace fill was approximately 1 m deep and consisted of layered fill with small and medium (1 to 30 cm diameter) chert cobbles and limestone inclusions, deposited on a nearly 45° incline against the stairs of Structure 23-2nd. The fill was contained to the east by K'ayab Terrace Retaining Wall (see AU14). The upper portion of the fill consisted mainly of yellowish brown (10YR 5/4) clay loam with mostly small (5 to 15 cm in diameter) inclusions. Some larger stones from collapse sinking into the terrace or brought in from a tree disturbance were concentrated in the northeast corner of the unit. We recovered several carbon samples from this context, avoiding a burned root disturbance in the north edge of the unit. The lower portions of the analytical unit consisted of larger cobble inclusions in a brown (10YR 5/3) clay loam matrix. At the base of the analytical unit, we encountered a dense matrix, likely from a wet-laid fill, with similar color to Eb Terrace Floor on which the terrace was constructed. Below this matrix, we also encountered a lithic scatter

(Feature 1 – AU15).

K'ayab Retaining Wall – AU14. Lots excavated: E11. K'ayab Terrace Retaining Wall was located along the eastern edge of Unit E. This retaining wall was likely contemporaneous to the adjacent AU13 and used during construction to hold the deposited sediments. The location of this retaining wall near the modern-day edge of the terrace indicates that it likely served as the backing to a formal terrace façade located to the east of our excavation units. The chert and limestone cobbles of the wall varied in size, though most were between 10 and 25 cm with some around 40 cm in diameter. One large limestone had a fossil leaf imprint. The matrix of the retaining wall was the same as that of the terrace fill, a yellowish-brown (10YR 5/4) clay loam. The Feature 1 lithic scatter (AU15) and Eb Terrace Floor on which it was placed were encountered directly below the base of the wall.

Feature 1: Lithic Scatter – AU15. Lots excavated: E12, E13. This analytical unit consisted of a deposit that was primarily collected as Lot E13. Lot E12 contained material related to the lithic scatter that was collected above Eb Terrace Floor as the last remnants of K'ayab Retaining Wall were cleared; however, Lot E12 should be treated as a mixed context. We recovered 5283 g of lithics from this analytical unit, representing 1135 individual flakes, several cores, and other small debitage fragments (Figure 3.7). Many larger items were piece-plotted. I was able to refit several pieces while processing the material, indicating that the deposit was either worked *in situ* or was intentionally collected and redeposited to preserve all debitage material. Given the oblong form of the deposit and its north-south orientation, consistent with the size and placement of burials in the Belize Valley region (Freiwald 2015), the deposit may mark the location of a burial just beyond the eastern edge of the unit. Furthermore, large deposits of lithic debitage often accompany burials and caches, blurring the distinction between signatures of productive and ritual activity (Kunen et al. 2002 ; Moholy-Nagy 1997). However, further excavations are required to confirm this.

Eb Terrace Floor – AU16. Lots excavated: E14. This surface was yellowish brown (10YR 5/4) and similar in color and texture to the above platform fill. It would have been difficult to distinguish from the fill above; however, K'ayab Retaining Wall and Feature 1 (AU15) lithics both rested on the level of this floor. The placement of the lithics and construction of the retaining wall preserved a portion of the smooth tamped surface in the eastern portion of the unit. Throughout the rest of the unit, the floor was distinguished by a more compact matrix than in AU13, though no smooth surface was apparent. Inclusions were mostly small (1 to 6 cm, some up to 15 cm in diameter) limestones. At the base of the lot, we encountered larger cobbles that composed the terrace fill.

Eb Terrace Fill – AU17. Lots excavated: E15, E16, E17, E18. This fill was primarily made up of a mix of limestone and chert cobbles up to 50 cm in size. The matrix was clay loam in a range of colors (pale brown 10YR 6/3, brown 10YR 5/3, and yellowish brown 10YR 5/4). We recovered a large metate fragment and small jute from this context. At the base of the context, the fill became more compacted and contained more lime, possibly from a wet-laid layer of fill. The harder texture made it more difficult to cleanly excavate the Ik' Floor directly below the terrace fill.

Ik' Floor Fill – AU18. Lots excavated: E19. This floor extended from the Zotz Step of the Structure 23-2nd staircase to the edge of the excavation area. It had a well-preserved 5 cm thick, polished plaster surface with a ballast and underlying fill consisting of small limestone and chert rocks in a pale brown (10YR 6/3) loamy, lime matrix. The construction of this floor raised the level of the previous Lamat Terrace by 10 cm to just above the first course of the Zotz step.

Lamat Floor and Fill – AU19. Lots excavated: A12, A13, E20, E21, E23. Lamat Floor extended from K'ank'in Step of the Structure 23-3rd staircase to the edge of the excavations. It covered over the Kumk'u

Terrace (AU8), which was previously added to the base of the Structure 23-3rd staircase. The Structure 23-2nd staircase was constructed on Lamat Floor. Interestingly, the floor was more deteriorated under the stair construction than in the exposed sections, perhaps due to later maintenance outside the staircase or damage from the weight of the large fill of the staircase. The fill of the floor consisted of a yellowish brown (10YR 5/4) clay loam with frequent, small chert and limestone inclusions. As we excavated through this context, we exposed the deteriorated front face of Kumk'u Terrace and two uneven courses of cobbles and dressed stone along the eastern edge of Unit E, named Ix Wall. It is unclear if the exposed face of Ix Wall formed the face of a platform located to the east of the staircase or the back of a façade of a terrace formed by Lamat Floor. However, I suspect the latter to be the case, with the larger stones of the upper course forming part of the façade while the smaller stones of the lower course acted as backing stones.

Feature 2: Charcoal Concentration – AU20. Lots excavated: E22. This feature consisted of a 25 cm by 15 cm concentration of charcoal and charred lime, likely representing a small-scale burning event (Figure 3.4). It was located along the western edge of Unit E, in the fill of Kumk'u Terrace (AU8). Because the terrace lacked a preserved façade and floor, the feature's placement within the fill may be associated with the dismantling of Kumk'u Terrace prior to the construction of the subsequent Lamat Floor. Alternatively, it may have been placed in the fill at the time of construction.

Structure 23-4th – AU21. Lots excavated: A19. This platform was defined by Ok and Chuwen Steps, named after their corresponding surfaces. Ok Step is a basal step with a 30 cm rise and 35 cm deep tread constructed on top of Muluk Floor. Chuwen Step is the second step, with a 30 cm rise leading up to the broader Chuwen Floor. Heindel exposed approximately 90 cm of this floor, which indicates that it either served as a medial terrace or a platform summit. The dressed stones of both steps were covered in a thick plaster, which made it difficult to distinguish individual courses and stone size. Ok Step was built directly on top of Structure 23-5th's Kib Wall, extending the base of the Structure 23-4th platform only 30 cm to the east of the earlier platform. We did not excavate into the exposed edge of the buried Structure 23-5th but I was able to determine that Kib Wall consisted of two courses of dressed limestone, with a total rise of about 40 cm. It was associated with both Muluk Floor, which lipped up to its second course, and the earliest plastered plaza surface, Kawak Floor, although the preservation of Kawak at the base of the wall was poor and I could not determine if the floor was plastered prior to or after the construction of the wall.

Muluk Floor and Fill – AU22. Lots excavated: A16, E26, E27, E28. Muluk Floor was constructed of a soft plaster or sascab. It lipped up to the second course of stones of the Structure 23-5th platform and extended under Ix Wall, visible in the eastern profile of the excavations. The floor surface was better preserved to the west of Kumk'u Wall indicating that Kumk'u Terrace and Structure 23-3rd staircase were constructed soon after Muluk Floor. The floor preservation to the east of Kumk'u Wall was very degraded and sections of the plaster surface had sunk into the fill below, creating an uneven surface. The fill of Muluk Floor was shallow, approximately 15 cm, and contained sparse, small rock inclusions.

Kawak Floor – AU23. Lots excavated: A17, A18, E29, E30. Kawak Floor extended from the base of the Structure 23-5th platform edge to the east edge of the excavation. The floor was not well preserved at the base of Structure 23-5th, making it difficult to ascertain the relationship between the two. Preserved portions of plaster were very soft and appeared to have been extensively burned. As we began excavating through the floor, the upper burned portion separated easily from a whiter plaster below it. This separation may have been due to burning or may represent a distinct replastering of the surface. We collected geochemistry samples from both portions of the floor, but because there was not much separation between the two layers, the lower samples were likely contaminated and are not good candidates for further processing. We excavated through this context in the 2 m by 2 m section of

Unit A and in a 1 m by 2 m section in Unit E. Kawak Floor appeared to have been constructed directly on the yellowish brown (10YR 5/4) fill beneath, with few rocks to form a ballast. This floor was more reminiscent of Felix Floor construction at the base of Structure 26 than the early plaster floor in the plaza excavations.

Kawak Floor Fill – AU24. Lots excavated: A20, A21, E31, E32, E33. This fill consisted mainly of a yellowish brown (10YR 5/4) loam with small (1 to 6 cm diameter) inclusions. It covers Wayeb Platform and Etz'nab Floor. Within Unit E, the fill contained more small (5 to 10 cm) limestone cobbles, some seemingly piled up, which prompted us to excavate the section in more lots so as not to miss possible features. The matrix around the cobbles contained more lime than the rest of the fill, contributing to a very pale brown (10YR 7/4) loamy appearance. In the end, there was no clear arrangement to the cobbles. Their presence, however, likely contributed to the more uneven appearance of Etz'nab Floor in Unit E. We recovered a possible Ardagh Orange-brown type tecomate rim (Figure 3.8) and a large daub fragment (Figure 3.9) just above Etz'nab Floor below.

Wayeb Platform – AU25. Lots excavated: A22. Wayeb Platform was a low platform fronted by an alignment by the same name. The Wayeb Wall consisted of chert cobbles stacked roughly in two courses (Figure 3.3). The wall alignment skewed further west of north than the subsequent masonry constructions of Structure 23, suggesting that the currently visible alignment of the E-Group began with Structure 23-5th. The platform fill consisted of densely packed small to large cobbles (6 to 50 cm) in a yellowish brown (10YR 5/4) loam. It was constructed on the packed clay surface of Etz'nab Floor and was later covered by Kawak Floor.

Etz'nab Floor Fill/Brown Clay Fill – AU26. Lots excavated: A23, A25. This context consisted of the Etz'nab Floor surface that extended from the base of the Wayeb cobble platform. We exposed this floor to the east of Wayeb platform along the eastern edge of Unit A and across a 1 m by 2 m section of Unit E. Below lot A21, east of Wayeb platform, Etz'nab Floor appeared more gray and uneven, possibly due to the concentration of cobbles in Kawak Floor Fill discussed above. We only excavated into the floor in Unit A. The matrix consisted of a dark brown (10YR 3/3) clay loam with few small (1 to 6 cm in diameter) pebble inclusions. This analytical unit was approximately 20 cm deep and contained some lithic and ceramic artifacts, most notably a possible Cunil diagnostic, a Cocoyol Cream type everted rim (Figure 3.10). The fill is deposited on top of a sterile clay.



Figure 3.8. Likely Ardagh Orange-brown type tecomate rim. (exterior left, interior right) (49E33).



Figure 3.9. Large daub fragment with pole impression (49E33).



Figure 13.10. Likely Cocoyol Cream type everted rim (49A23).

Culturally Sterile Clay – AU27. Lots excavated: A24. This was a small lot excavated in a 1 m by 2 m section on the western end of Unit A at the end of the excavation season. The natural clay in this part of the complex had a red hue, not quite captured by the selection of Munsell soil colors available to me in the field, but similar in value and chroma to 10YR 4/6. The clay was very dense and blocky. The excavators noted a dark patch in the northwest corner of the 1 by 2 m section Unit A. It started a few centimeters below the brown clay and was 10 cm deep and 20 cm wide. It may have been a post, burned tree root, or percolated organic material leached from the darker sediments above. Its outline was not very distinct. No artifacts were recovered from this context or the dark patch.

Conclusion

While ceramic and radiocarbon analysis remain to be done, the excavations completed this season have established the succession of construction phases within and below Structure 23. Unlike Structure 26, the western pyramid was elaborated in discrete phases with each staircase, floor, and platform completely concealing the previous iteration. Only one terrace shows evidence of dismantling prior to the subsequent terrace construction. Four of the six distinct construction phases were built of well-preserved dressed limestone and plaster architecture. The final phase of construction, though not well preserved, was also likely composed of dressed stone and plaster. Below the fifth phase and early plaster plaza floor, an earlier earthen surface with a low cobble platform formed the sixth construction phase of Structure 23. The Structure 23-sub-1 cobble platform had a distinct orientation from the later structures, indicating a change in the arrangement of the Plaza F complex, one which may have marked the adoption of a standardized E-Group layout.

From completed excavations, it appears the western pyramid had fewer distinct construction phases and destructive modifications than did Structure 26 and Plaza F. The three constructed spaces of the complex were evidently modified at different rates, with more frequent restructuring and maintenance focused on Structure 26's broad platform and plaza than Structure 23's tall pyramid.

Furthermore, recovery of few features and special objects in Structure 23 indicate that the base of the staircase and terraces of the western pyramid did not serve as a location for the same kinds of ritual performances as Structure 26. Rather, the majority of features with ritual significance, including large postholes, burials, and ceramic caches, were centered on the eastern structures of the complex and a low platform at its base. I collected geochemical samples from Structure 23's terrace surfaces and associated plaza surfaces for comparison with samples recovered from Structure 26 and Plaza F. Analysis of these samples will be used to further compare the uses of the three spaces within the Plaza F complex, elucidating if the types of activity and intensity of use within these spaces differed. These data will further analysis of the development of this public space over time and its significance to the Actuncan community.

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Appendix 3.A

Table 3.A.1. Operation 49 analytical units, updated with 2019 excavations

AU	Analytical Unit Name	Excavated Lots	TPQ
1	Modern Surface	A1, B1, C1, D1, E1	
2	Collapse above Structure 23 Fill	A2, B2, C2, D2, E2	TLP
3	Possible Fill above Structure 23-2nd	A3, A4, B3, B4, D3, D4, D5	TLP
4	Fill above Structure 23-2nd	A5, A6, A7	TLP
5	Cut limestone between Fill above Structure 23-2nd and Fill above 23-3rd	B5	TLP
6	Structure 23-2nd Fill	A8, A9, A12, B6, B7	TLP
7	Structure 23-3rd Fill	A11, A15, B8	LP/TLP
8	Kumk'u Terrace (Fill between Lamat and Muluk Floors)	A10, A14	
9	Structure Fill on North Side of Structure 23	C3, C4, C5, C6, C7, C8, C9	
10	Mixed contexts	D6	
11	Mixed Terrace context	E3	
12	Kaban Terrace Floor	E4	
13	Kaban Terrace Fill	E5, E6, E7, E8, E9, E10	
14	K'ayab Retaining Wall	E11	
15	Feature 1 Lithic Scatter	E12, E13	
16	Eb Terrace Floor	E14	
17	Eb Terrace Fill	E15, E16, E17, E18	
18	Ik' Floor Fill	E19	
19	Lamat Floor and Fill	A12, A13, E20, E21, E23	TLP?
20	Feature 2 Charcoal concentration	E22	
21	Structure 23-4th	A19	
22	Muluk Floor and Fill	A16, E26, E27, E28	LP
23	Kawak Floor	A17, A18, E29, E30	LP
24	Kawak Floor Fill	A20, A21, E31, E32, E33	MP
25	Wayeb Platform Fill	A22	Cunil
26	Etz'nab Floor Fill/Brown Clay Fill	A23, A25	MP?
27	Culturally Sterile Clay	A24	

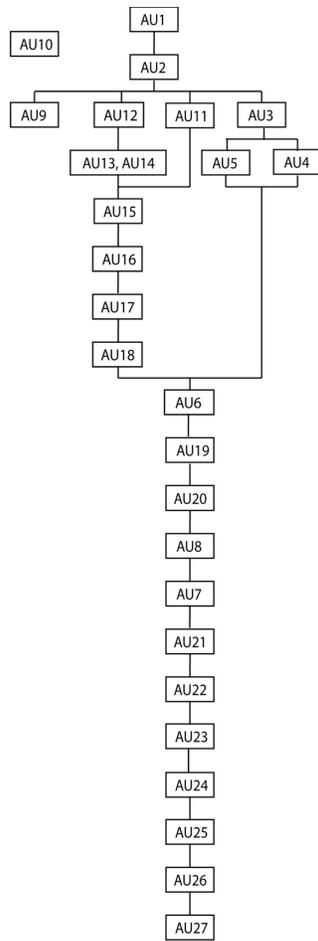


Figure 3.A.1. Operation 49 Harris Matrix.

Chapter 4: Actuncan's Plaza F Testing Program: Characterizing the Floor Construction Sequence and Recovering Soil Samples for Geochemical Characterization of Preclassic Activity

Borislava Simova (Tulane University)

This chapter provides an overview of Operation 55, the testing program in Plaza F initiated as part of my dissertation work on the uses and meanings of the plaza and its surrounding structures, which collectively comprise the E-Group complex at the site of Actuncan, Belize (Figure 4.1). E-Group architectural complexes are distinguished by their flanking structures: an elongated eastern platform, often with one to three superstructures and a western radial pyramid (Chase and Chase 1995). However, work by a number of scholars has also demonstrated that the plaza space defined by these structures served as a focal point of ritual activity (Estrada-Belli 2011; Inomata et al. 2013; Brown 2017).

The Actuncan Plaza F complex offers an excellent opportunity to study the long-term development of a monumental space in the Maya Lowlands. Research at the site has revealed evidence of occupation over two millennia, starting around 1000 BCE. A radiocarbon date from a cache beneath the eastern structure of the complex dates to between 1125 and 1015 cal. BC, indicating that the constructed space was a feature of the site from a very early date. This date is coeval with other early dates from E-Groups reported at the sites of Cival and Ceibal (Estrada-Belli 2011; Inomata et al. 2013).

To address the significance of this early architecture, my research focused on the sequence of construction and spatial distribution of activities within the complex over time. The history of investigation within the complex is summarized in Chapter 3 in this report. Here, I focus on the plaza investigations more specifically.

Investigating the Plaza

As Setha Low and other anthropologists demonstrate, the plaza is fundamentally a public space where social relations and social practice are spatialized and embodied. Despite the use of architecture to promote sociopolitical agendas and its ability to structure social practice by imposing constraints on movement, the functions and meanings of built spaces are to a great extent “socially constructed through contested patterns of use and attributed meanings” (Low 2010:866).

Studying the use and meaning

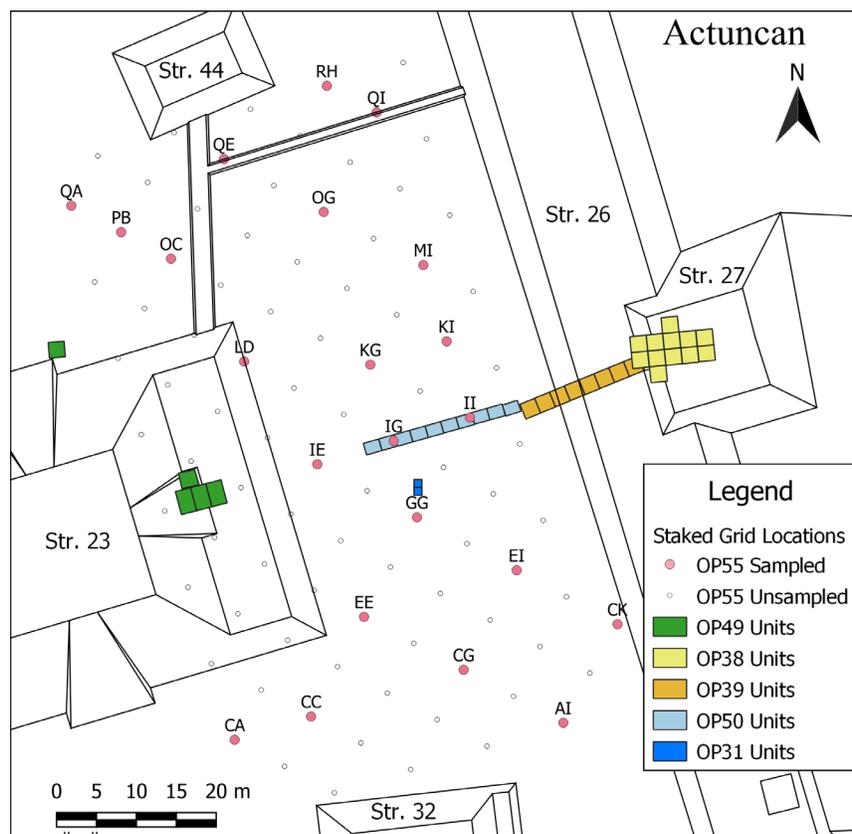


Figure 4.1. Map of plaza test 10 m staggered grid showing sampled locations.

of prehistoric plazas is difficult and was for a long time overlooked. In contrast to the associated flanking structures, these open spaces present relatively little permanent architectural elaboration. Furthermore, they were also often swept clean, leaving few artifactual residues of activity.

Yet, through an explicit shift in focus towards open spaces, archaeologists have advanced theories and presented evidence for the role plazas play in creating a physical experience of political integration through performance and interaction (e.g., Tsukamoto and Inomata 2014). Drawing on these ideas, the size and distribution of open spaces within sites has become an important indicator of population size and shifts in practices of inclusion and exclusion over time.

Advances in geochemical research and attention to microartifacts embedded in surfaces have also vastly improved our ability to access activities that occurred within open spaces. Diverse patterns in chemical signatures and microartifacts distinguish differences between plazas with seemingly similar architectural layouts (e.g. Canuto et al. 2010; Wells 2004). Further, when used in conjunction with other lines of evidence, residues can point to a range of activities, including economic uses of the space as seen in marketplace research (Cap 2012, 2015).

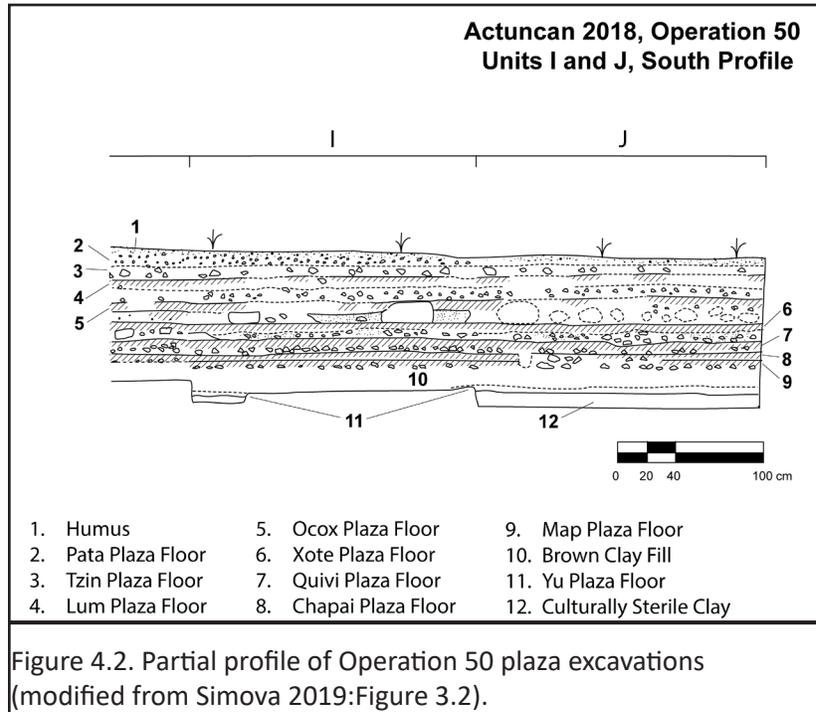
By implementing geochemical sampling in my research, I aim to delineate activities occurring on floors and buried constructions within the Plaza F complex and investigate how they shift over time in relation to the architectural development of the complex. This approach has worked well in excavations on the flanking structures, demonstrating patterns in use and subtle shifts in spatial focus of activity on the eastern platform (Simova et al. 2018). However, results from this preliminary study represent activities within a constrained area on a structure centerline where samples were collected in the course of normal excavations. Applying this strategy to the plaza, particularly to buried early floors that extend across a large and internally boundless area, required an alternative approach. The introduction of hand augering and a broad sampling strategy served to build on previous research within the complex and provide an improved understanding of key phases in its construction.

Previous Investigations of Plaza F

Various parts of the E-Group complex have been investigated over six seasons. The plaza was tested in 2012 by Krystal Craiker as part of Angela Keller's comparative work on terminal plaza use at the site (Mixer and Craiker 2013). This research involved the placement of two contiguous 1 by 1 m units to determine the floor sequence and a posthole sampling design to collect microartifacts and soil from the terminal plaza floor for rapid phosphate testing. The next phase of research focused on the flanking structures of the Plaza F complex. Small sections of plaza at the base of Structures 23 and 26 were exposed in the process (Donohue 2014; Heindel 2016; Simova and Mixer 2016). For my dissertation work, I expanded the centerline excavation 20 meters further into the plaza from the edge of the Structure 26 excavations, reorienting the trench slightly based on centerline deposits encountered during structure excavations (Simova 2018, 2019). This more extensive exposure revealed a much more complex history of construction within the plaza than initially suggested by Craiker's test pit. For one, it uncovered buried low platforms that complicated identification of contiguous occupation surfaces across the excavations. Further, it provided evidence of partial resurfacings and variable floor preservation across the space. Nevertheless, this work provided a baseline for floor identification and expectations about depth and preservation of floors constructed out of different quality plaster (Figure 4.2, Table 4.1).

The later plaster floors (Pata, Tzin, and Lum Floors) extended from the eastern structure (Structure 26) through the plaza center. The terminal Pata Floor was greatly eroded and indistinguishable from the humus layer except under structure collapse. The penultimate floor, Tzin, was extensively eroded toward the center of the plaza, distinguished only by the dense cobble fill that underlies it. Lum Floor was well

preserved across this excavation and displayed a polished surface in several units. A low platform (Structure F-sub-1) was built on Lum Floor near the base of Structure 26 and was later covered by Tzin Floor. The fourth floor in the sequence, Ocox, was similar in appearance to the later floors, but rather than extending across open space from Structure 23 to Structure 26, it terminated at another low platform constructed in the eastern portion of the plaza (Structure F-sub-2). All four of these floors were distinguished by a harder plaster, where preserved, and relatively deep, rocky fills. Of the four, however, Lum Floor was the most consistently well preserved in all excavations and was used to help anchor and correlate the remaining floors across excavated units.



The next floors in the sequence (Xote, Quivi, Chapai, and Map Floors) were constructed of soft, friable plaster and tended to have shallower fills with high percentages of marl in the matrix. These floors showed evidence of replastering and were so closely superimposed in some units that they were difficult to differentiate from each other. Map Floor was constructed directly on top of a clay fill layer, named Brown Clay Fill, which had few chert cobble inclusions.

Table 4.1. Summary of plaza floor features, as observed in Operation 50 excavation trench.

Floor Name	Floor Composition	Surface Quality	Floor Preservation	Floor Thickness	Ballast	Fill Inclusions	Fill Matrix	Fill Thickness
Pata	no preserved surface	-	very poor	-	pebble (1-3 cm)	pebble ballast	10YR 4/2 clay loam	5-15 cm
Tzin	plaster	polished	good to poor	up to 4 cm	pebble (1-3 cm)	chert and limestone cobbles (3-20cm)	10YR 4/2 clay loam	5-15 cm
Lum	plaster	polished	very good to fair	up to 5 cm	pebble (1-3 cm)	chert and limestone cobbles (3-10cm)	10YR 6/2 clay loam	5-20 cm
Ocox	plaster	eroded	fair to poor	up to 6 cm	pebble (1-3 cm)	chert and limestone cobble (5-40 cm)	10YR 5/3 clay loam	1-20 cm
Xote	plaster	eroded	good to poor	up to 5 cm	pebble (1-3 cm)	chert and limestone cobbles (1-20 cm)	10YR 6/3 clay loam	4-10 cm
Quivi	soft plaster	polished	very good to poor	up to 10 cm	pebble (1-3 cm)	chert and limestone pebbles (1-5 cm)	10YR 8/3 silty clay	2-8 cm
Chapai	soft plaster	eroded	poor	up to 5 cm	pebble (1-3 cm)	chert and limestone pebbles (5-20 cm)	10YR 7/6 silty clay	1-5 cm
Map	soft plaster	eroded	poor	up to 4 cm	cobble (4-10cm)	chert and limestone cobbles (1-5 cm)	10YR 4/3 clay loam	5-20 cm
Yu	clay	tamped clay	-	-	none	limestone cobbles (1-3 cm)	10YR 4/3 clay loam	4-15 cm

One final prepared surface, Yu Floor, was present below Map. It was constructed out of brown clay and was similar in appearance to the fill below Map Floor. Yu Floor was distinguished from fill based on a concentration of small cobbles deposited on it. Its fill was slightly lighter in color and had a lower density of inclusions than the brown fill above. Yu Floor was constructed above a culturally sterile mottled clay, which likely forms the natural clay substrate of the site. This natural clay ranges in hue from yellow-red to red. I suspect that the clay may have been leveled and used as a surface prior to the construction of Yu Floor.

Methods

Work continued this season with 50 cm test units placed throughout Plaza F with the goal of characterizing the floor construction sequence across Plaza F and collecting geochemical samples from four phases of occupation plus the surface of the natural clay. Charting floor construction sequences across Plaza F will allow me to understand the spatial extent of each plaza stage and calculate labor estimates for their construction. The geochemical sampling program will assist with reconstructing prehistoric activity occurring in the plaza through the identification of chemical residues absorbed in its surfaces.

Potential test locations were mapped in QGIS 3.6.0 in a 10 m staggered interval grid, aligned to the structure orientation (Figure 4.1). Grid locations received a two-letter designation, the first letter represents location along the long axis (southwest to northwest), and the second along the short axis (southwest to northeast). I treated the layout as a full grid, rather than staggered, in assigning designations to leave room for placement of additional points in the future. David Mixer, the project field director, was then able to stake out the candidate test locations with at least 10 cm precision using an Emlid Reach RS+ RTK GNSS unit. Only one test location (55CK) was triangulated and measured out with reel tape from adjacent staked locations. While the grid allowed us to stakeout 80 locations, we were only able to test 20 locations during the 2019 season due to time limitations. Two additional plotted locations (55IJ and 55II) overlap excavated units from which I have previously collected geochemical samples. These provide comparative datapoints for floor identification and future geochemical analysis.

Within each test location, we placed a 50 by 50 cm test pit, aligned to magnetic north. Most pits were located to the northwest of the staked location with the stake thus forming the southeast corner. In three instances, the pits were placed to the southwest (55OG) and northeast (55QE and 55CK) of the stake to avoid trees or other disturbances.

Excavators employed a combination of shovel, trowel, prybar, and hand auger to remove soil and rock from the tests and retrieve material for sampling (Figure 4.3). Excavators largely



Figure 4.3. Test excavations in the northern (left) and southern (right) edges of Plaza F.

used a trowel and prybar to excavate through the upper floors and rocky fill. From the base of the test pit, we used a 7 cm Edelman combination auger for clay and sandy soils to penetrate through and collect samples from some of the earlier floors and probe into the natural clay. In a couple of locations, we also used a 50 cm gauge auger to probe deeper below the cultural deposits in search of bedrock. While I intended to use hand augering as much as possible to expedite retrieval of samples, the presence of cobbles in construction fills and features impeded the penetration of the instrument. While our reliance on test pit excavations slowed down sample collection, it did allow for closer examination of floor constructions.

When excavating, we stopped at each plaster floor to take floor elevation relative to the modern surface and collect soil samples for geochemical analysis in Whirl-Pak bags using a cleaned trowel (see Simova 2019). When possible, I collected samples from the center of the test unit, although often the best-preserved sections of a floor were found closer to the edges of the exposed areas. Excavators did not screen the excavated soils because very few artifacts were encountered. If they encountered a large or potentially diagnostic artifact, I collected and labeled it with the depth below surface at the test location. When using the augers, excavators followed standard procedures to clean them between each extraction in order to retrieve unmixed soil samples. Once the auger penetrated a new floor, I collected a sample from the extracted soils with a clean trowel and measured the depth of penetration from the surface.

Because of the limited exposures provided by 50 by 50 cm test units and augers, I focused on collecting samples from better preserved and distinctive floors. Five surfaces, described below, were chosen because they were more readily identifiable stratigraphically. They either represented transitions in construction techniques or well-preserved surfaces. Besides offering greater confidence in association, the targeted surfaces provide an excellent sample of the complex's occupation history, starting from its earliest construction through visible shifts in construction methods.

Poor preservation of the terminal Pata and penultimate Tzin floors toward the center of the plaza indicated that we were unlikely to encounter them in most test locations. Lum Floor was the most consistently preserved of the three late floors we encountered in previous excavations (Figure 4.2). My expectation was that this pattern would hold across the tests and that Lum Floor would be the first well-preserved floor encountered from which we could take samples.

The early plaster floors, Xote, Quivi, Chapai, and Map floors, while well preserved, were generally closely stacked and difficult to differentiate in excavations. However, because they were constructed of a softer plaster, they were also easier to probe with an auger to expedite sample collection. Nonetheless, we often switched back to hand-and-trowel excavation when large stones impeded the auger. Neither the auger nor the limited exposure of the excavated tests allowed for sufficient differentiation between Xote, Quivi, Chapai, and Map floors. So, once we reached the top of the thick layer of undifferentiated soft plaster, we collected one sample at the top, likely representing Xote Floor, and one at the base, likely representing Map Floor (see Figure 4.2).

Once we penetrated through the earliest plaster floor (Map) and reached Brown Clay Fill (Figure 4.2), excavators were able to use the auger more reliably. With each probe, I looked for subtle changes in clay color and diminishing pebble inclusions to identify Yu Floor. At this point, I collected two soil samples: one from the transition between Brown Clay Fill and Yu Floor and one between Yu Floor and the culturally sterile clay on which it was built (Figure 4.4). The latter will be used to test the possibility that the natural clay substrate was leveled and used as an occupation surface prior to the construction of Yu Floor.

Due to time limitations, I selected 20 test locations from an original 10 m staggered interval grid



Figure 4.4. Soil samples from Operation 55 KI, demonstrating difference between Brown Clay Fill (upper left), Yu Plaza Floor (upper right), and sterile clay substrate (in auger).

containing 80 points. These locations were selected to provide the broadest possible coverage of the plaza. The plaza corners were of special interest because these tests might help define the extent of plaza construction and because plaza edges are often locations where activity refuse might have accumulated or peripheral activities might have taken place. To the extent possible, I avoided areas with extensive visible disturbance or structure collapse. My goal is to analyze samples across the five sampled surfaces to look for patterns in geochemical residues that reflect spatial and temporal differences in activities occurring within the plaza over time.

Test Locations

Test locations were selected to provide broad coverage of the plaza and investigate activity occurring in plaza corners (Figure 4.1). As described above, I planned

to take five samples from each test excavation, one each from Lum, Xote, Map, and Yu Floors and the surface of the sterile clay. I focused on these contexts because they are representative of major transitions in construction and because their preservation and appearance were sufficiently distinct to identify within the limited exposure of 50 cm wide test units.

The following section describes test placement and the stratigraphy encountered in each location, focusing on the presence of the four floor contexts. For schematic profiles, see Figure 4.A.1. Samples from the natural clay were reliably collected from each location, and therefore not always indicated. While I was able to note some additional transitions in color, soil texture, or inclusions in the encountered stratigraphy, the limited exposure does not allow me to interpret them fully. In some cases, unusual fills with distinct soil color and texture may represent platforms constructed within the plaza. In other cases, slight variations in inclusions and color may be normal variations within floor fills. Inconsistent preservation of some floors also meant that multiple floor fills could appear undifferentiated within the limited test exposure. I describe such deviations from expected stratigraphy below and provide my best interpretations based on available information.

Test Pit Descriptions

55A/: This test excavation was located near the southeast corner of the plaza. The humus layer was deeper than expected, approximately 20 cm thick, given the test's location away from structures. We did not encounter plaster from Pata Floor, although a transition in strata below the humus indicated the terminal plaza floor was prepared in some manner in this location. In contrast Tzin, Lum and Ocox Floors were well preserved. The presence of a cobble fill below Xote Floor in this location was unusual and seemed to indicate the absence of two intermediate floors above Map. I am uncertain if this was a platform construction, covered over by Xote Floor, or if the absence of two intermediate floors in this location required more fill to level the plaza surface above Map. We collected a sample of Map Floor at the base of this fill. There did not appear to be much Brown Clay Fill below Map Floor, indicating its ballast was built directly on top of Yu Floor. Yu Floor had a 50 cm deep clay fill in this location, which proved to be common within the tests. After I collected the sample from the sterile clay, we used a gauge auger to probe deeper, seeking to locate bedrock or further transitions in the natural clay. At 250 cm below the modern surface of the plaza, the clay remained unchanged and the test was terminated.

55CA: This test unit was located in the southwest corner of the plaza, near a grove of small trees and a large ant hill. The humus layer was well developed and there did not appear to be much collapse from nearby Structures 23 and 32. Below the humus, we encountered 30 cm of fill with large limestone rocks, lacking a preserved surface. It is unclear if this was a low platform or a more substantial leveling of the occupation surface. A plaster floor directly below this fill appeared well preserved and was quite durable. I believe this surface corresponds to Lum Floor, based on its polished appearance and preservation. One additional plaster floor was evident 20 cm below Lum Floor. It was constructed on top of a brown clay fill and likely represents Map Floor. We had difficulty augering and excavating below this floor due to the depth and narrowness of the unit and presence of cobbles in the fills. A transition to a darker clay, consistent with Yu Floor occurred at approximately 120 cm below the modern surface, although many of the auger probes appeared to retrieve mixed fills.

55CC: This unit was one of the first locations tested. It was located near the southwest corner of the plaza. I identified remnants of Pata Floor's ballast and some plaster from Tzin Floor. The dense cobble fill below Tzin Floor was consistent with that observed during trench excavations. Lum Floor was well preserved with a polished surface. I identified a deteriorated plaster surface below Lum, likely representing Ocox Floor. Below Ocox, the surface of Xote was more deteriorated. After some trial and error, we were able to use the auger to probe through Xote, Quivi, Chapai, and Map Floors. Unfortunately, I neglected to collect a sample from Map Floor in this location. I did not note a distinct layer consistent with Brown Clay Fill in the auger. Either it was very shallow, or Map Floor's ballast was constructed directly on top of Yu Floor. Yu Floor and its fill were approximately 20 cm deep. We used both the Edelman and gouge augers to probe below it into a yellow mottled clay and determine if this underlying stratum was natural or anthropogenically deposited. Although there was some change in the appearance of the clay mottles at about 185 cm below the surface (probe ended at 205 cm below the surface), it appeared that the yellow mottled clay was natural.

55CG: This test was located in the southeast section of the plaza. The majority of the plaza floors were evident in the test excavation, although Pata Floor was only represented by a pebbly ballast and Chapai and Map Floors were not easily differentiated within the plaster deposit below Quivi Floor. Also of note were the presence of large cobbles in the fill of Ocox Floor, with some stones almost as large as the extent of the test unit. Additionally, there were some daub-like inclusions within Yu Floor. The inclusions were identified in the auger after initial penetration of the floor, so I am unable to conclusively determine if they were embedded in the surface or if they were fill inclusions. Based on the presence of daub, this may be a good location to look for early perishable structures in future years.

55CK: This test location was triangulated from staked locations to extend the sample grid closer to Structure 26 into a relatively clear patch between some trees growing on the structure. I would have preferred to add a stake in Row A of the Operation 55 grid to sample closer to the southeast plaza corner, but that location was too overgrown. The test unit was laid out to the northeast of the stake to avoid a tree stump. It was located on structure collapse, which created some difficulties for excavation and sampling. The humus layer was well developed, and we encountered many tree roots. Below the humus, we encountered cut-limestone and limestone and river cobble collapse from Structure 26. It rested on a transition in soil color that likely corresponds to the deteriorated Pata Floor. Next, we encountered a well-preserved plaster surface that likely represents Tzin Floor. The polished surface of Lum Floor was not as well preserved, but it was nonetheless easy to differentiate from other floors. The fill below Lum Floor contained very large stones, likely from a low platform. Excavators encountered one piece of limestone over 50 cm in length. It filled our test unit and challenged our ability to progress further. Three more plaster surfaces were evident below this platform fill. The appearance of the stratigraphy and floor preservation were so different in this location that it was difficult to relate these

floors to known contexts. Unfortunately, with further reflection, I believe I missed Xote and Map Floor when collecting geochemistry samples from this location. We were able to auger down through Yu Floor and into sterile clay, but not without some difficulty. There were more cobbles in Brown Clay Fill and Yu Floor and Fill than expected and excavators had trouble extracting intact samples. Since we were at a considerable depth below the modern surface by this point, we could not reach down into the narrow test unit to excavate by hand to gain a better, unmixed sample of these contexts.

55EE: This test was located in the southern half of the plaza, near the southeast corner of Structure 23's basal terrace. We did not encounter much collapse or a well-developed humus layer. More of the floors were clearly represented in the test compared to tests placed closer to the edges of the plaza, with somewhat better preservation as well. While no plaster from Pata Floor was preserved, its cobble fill was easy to differentiate from the thin humus layer above it. Remnants of plaster from Tzin Floor helped differentiate its fill from that of Pata Floor. The subsequent Lum Floor was well preserved. Ocox Floor was not evident here and we encountered some larger cobbles in the fill below Lum Floor that may indicate a low platform construction. This unusual large-rock fill was deposited above Xote Floor. We collected samples from Map and Yu Floors, as well as the top of the sterile clay in this location as planned. The clay fill under Yu Floor was thicker in this location, approximately 50 cm in depth. The sterile clay has a reddish hue, consistent with other sampled and excavated areas on the northwest edges of the plaza.

55EI: This test was located in the southern half of the plaza near its east edge. Here, we seem to have overlapped with a post-hole from previous investigations of the uses of the terminal plaza floor (Mixer and Craiker 2013). Below about 20 cm of humus and collapse, we identified preserved plaster from Pata Floor. Tzin, Lum, and Ocox Floors were also well preserved. We encountered cobbles in the undifferentiated fills of Xote, Quivi, Chapai, and Map floors, so we were unable to use the augers for sample collection. We used the Edelman auger only after exposing and sampling Yu Floor to sample the transition to sterile clay below.

55GG: This test was located south of the plaza center, near the Operation 31 test units. The stratigraphy here matched that observed in previous excavations, and I was able to identify all of the plaster floors except for Pata, which was difficult to distinguish from the humus, as expected. Lum Floor had a post-hole in it; however, I assume it was from Keller's testing program, given its proximity to Craiker's previous excavation in the plaza. Yu Floor was also a little more challenging to distinguish here, as the change in clay appearance was not as pronounced. I collected a soil sample at approximately 90 cm below the modern surface, where I first noted a change in the auger probe. However, as we continued to auger through the context, we encountered small pieces of daub at 113 cm below the modern surface. Since Yu Floor is a clay surface, on-floor deposits could have shifted down into its fill. This location may be a good place to look for early perishable structures in future excavations.

55IE: This test was located to the west of the plaza's center and the Operation 50 trench. While I did not identify remnants of the terminal Pata Floor, some plaster from Tzin Floor was evident. Lum, Quivi, and Ocox Floors were well preserved in this location. We used the Edelman auger to collect samples from Map floor, Yu Floor and the sterile clay. As one of the early tested locations, we collected larger artifacts, although these were found in the test pit backdirt and lacked elevations. The natural clay in this location was redder in color than in most test locations across the plaza, similar to the sterile clay at the base of the Operation 49 excavations.

55KG: This test was located northeast of the plaza center. The stratigraphy in this location deviated from that observed in the nearby Operation 50 plaza excavations (Simova 2018, 2019). This aberration was surprising given the unit's close proximity to those excavations. Also, some larger cobbles were present near the surface, which were unlikely to represent structure collapse given the central location of the

unit. A color transition below the cobbles indicated a deteriorated prepared surface, perhaps Tzin Floor. Lum Floor was represented by only a few fragments of plaster and I was not able to find evidence of Ocox Floor in the fill deposit below it. The surface of Xote Floor was well preserved, but I was not able to differentiate the surfaces of Quivi, Chapai, and Map Floors in the homogenous plaster/marl layer beneath it. Yu Floor and Fill were approximately 40 cm deep in this location.

55KI: This test was located along the eastern edge of the plaza in its northern half. Because we were close to the edge of Structure 26, we encountered 35 cm of hummus and collapse material at the surface. Pata, Tzin, and Lum Floors were evident in this location, but deteriorated. I could not find Ocox Floor in the fill below Lum Floor, but suspect it was present and deteriorated. Surprisingly, Xote Floor had a well-preserved, hard plaster, but I could not differentiate the remaining floors below it because they were a homogenous mass of plaster and marl fill. Therefore, I collected a sample at the base of the plaster layer to represent Map Floor. The Brown Clay fill below the homogenous mass contained some chert cobbles above the transition to Yu Floor, as encountered in the trench excavations.

55LD: This test was located near the northeast corner of Structure 23's basal terrace. The modern surface showed evidence of tree root and other recent bioturbations. No plaster from the Pata, Tzin, or Lum floors was evident. Some large cobbles below the humus may be from a low platform or from a deeper portion of Tzin Floor. We recovered two bifaces in fill approximately 33 cm below the ground surface, in what is likely the fill of Lum Floor. A pebbly transition in the fill below Lum Floor likely represented Ocox Floor. Xote Floor had better preserved plaster than those above it, and although we could not distinguish Quivi or Chapai Floors within the subsequent homogenous plaster layer, Map Floor had a discernable preserved surface. The Brown Clay Fill of Map Floor was virtually nonexistent in this location, transitioning quickly into Yu Floor and Fill. The natural clay at the base of the test was reddish in color similar to the clay at the base of the Operation 49 excavations (Simova, this volume).

55MI: This test excavation was located on the eastern edge of the northern section of the plaza. The humus layer was thin and contained small pebbles, likely from the deteriorated Pata Floor. A transition in color and inclusions below the humus layer indicated the location of the deteriorated Tzin Floor. Unfortunately, the transition to Lum Floor was also marked by a change in soil color and inclusion. Despite some small plaster flecks, there was not enough preserved plaster in this location to collect a sample from Lum Floor. I was also not able to see any differences in the cobble fill below Lum Floor that could indicate the presence of Ocox Floor. Rather, a low platform may have been present under Lum Floor. Xote Floor was the only distinct, well-preserved plaster floor in this location. It had a downward slant toward the west, although at a less pronounced incline than the sloped floor in test location 55OG. I was able to collect a sample from the plaster fill below Xote Floor, which corresponds to the position of Map Floor. Notably, we encountered a dense concentration of small cobbles in the Brown Clay Fill of Map Floor, just above the transition to Yu Floor.

55OC: This test was located near the northwest corner of the plaza, to the west of a low enclosure wall between Structure 23 and 44. The stratigraphy in this location did not match expectations developed during center-line excavations. Below the shallow humus, two strata with small rocks indicated that while prehistoric surfaces were present, they were not elaborated with plaster. Below these two strata, we encountered 20 cm of a dense cobble fill. It may have been from a low platform or from a construction fill aimed to level the subsequent occupation surface. We did not encounter evidence of plaster on top of the fill in this location, but findings in the adjacent Unit 55PB, indicate it was likely present. This platform or floor was constructed on a deteriorated plaster floor. I believe the floor in question represents Xote Floor based on its softer texture and the presence of more plaster, possibly from other early floors, in the fill below it. The second preserve plaster floor in this location was identified just above a cobbly brown clay fill, consistent with Map Floor's Brown Clay Fill. We collected a

sample from Yu Floor and Fill and the natural clay in this location as well.

55OG: This test pit was located in the northeast quadrant of Plaza F. We repositioned the test to the northeast of the staked location instead of the northwest, because of its proximity to a fencepost. A pebbly ballast for Pata Floor was not distinguished in this location but was likely present. Instead, a shallow layer of cobbles below the humus layer likely represented Tzin Floor. Although the cobbles sat above a transition in the soil at a similar depth to Lum Floor, there was no preserved plaster in this location. Therefore, I was unable to collect a geochemistry sample. Two plaster floors were evident in this test, although they are difficult to correlate with the expected stratigraphy. I collected samples from both in case they can be related to the target floors with further analysis. The lower of the two plaster floors was unusual in that it had a pronounced downward slope to the east. This may represent a drainage feature in the plaza construction. Currently, I believe it is part of Xote Floor. I collected a sample at the base of the plaster layer, likely to represent Map Floor, a sample at the transition to Yu Floor's darker clay fill, and one at the transition to natural clay.

55PB: This test was located near the northwest corner of the plaza, between test units 55QA and 55OC. I chose to test this location to delineate the northern edge of the plastered plaza surfaces with more precision. Although the full sequence did not appear to be represented, there were remnants of plaster from two floors and transitions in strata suggesting two additional occupation surfaces. Below the humus, two transitions in soil color indicated prehistoric occupation surfaces. Below them, we encountered a cobble fill similar to that encountered in 55OC but less dense. Some small remnants of plaster on top of the fill indicate it had a prepared surface, but it is not clear if it was part of the plaza floor or a low structure. The second plaster surface in this location was directly below this dense cobble fill and likely represents Xote Floor. However, there was not as much plaster below Xote, suggesting the plastered surfaces from earlier floors did not extend out to this location. Instead, Xote was followed by a yellowish-brown silty clay fill. This silty fill was followed by a brown clay fill. I was able to note a distinction in the brown clay fill consistent with Yu Floor and Fill and collected the remaining samples as planned.

55QA: This test was located in the northwest corner of the plaza. None of the plaster floors were identified in this location. There were some transitions in the strata which may have served as occupations surfaces contemporaneously with the plaza plaster floors. At the base of the humus layer, an increase in pebbles could correspond to Pata and Tzin Floors. This is followed by a layer with lighter brown soil and some rock inclusions. Next in the sequence, we encountered a dense deposit of larger (20-30 cm) limestone fragments, reminiscent of a pavement or large ballast for a deteriorated floor. This 10 cm deep layer is at the approximate depth of Xote Floor but is very distinct from it in appearance. Under this pavement, we found a yellowish-brown deposit of silty clay with some small limestone fragments at its base. The same deposit was encountered in Units 55QE and 55RH. However, in this location, I found no remnants of deteriorated plaster beneath the silty fill. Additionally, while a 20 cm deep deposit of brown clay was present beneath these strata, I was not able to distinguish the soil change we associated with Yu Floor. I suspect that the brown clay was part of Yu Floor or its occupation and the missing transition was due to the lack of a prepared Map Floor in this location.

55QE: This test unit was located to the south of Structure 44, near the low wall enclosure on the north edge of the plaza. We placed the test to the southwest of the staked location to avoid some of the structure collapse. The stratigraphy here deviated from the expected sequence established in the centerline trench and other test locations. We excavated through two layers of cobbles, differentiated by a slight change in matrix color, which were likely part of the wall construction. They rested on a plaster surface. I assume the surface is part of Lum Floor, however the cobble fill below it was unusually deep (35 cm). This fill was placed on top of a bright yellowish-brown silty clay with yellow mottles. The

deposit was 28 cm deep and had some small limestone fragments toward the base similar to the silty clay deposits encountered in Units 55RH and 55QA. This silty fill is reminiscent of the orange-yellow fills of the Owl platform of Structure 26 (Simova and Mixer 2016:27–28). Based on its distinct appearance, I suspected the deposit formed an early platform near the later footprint of Structure 44. The platform was built on top of a thin plaster surface, possibly Map Floor, with a very shallow Brown Clay Fill under it. The darker brown clay of Yu Floor and Fill was almost directly below the plaster floor.

55QI: This test unit was located in the northeast corner of the plaza on the edge of a low wall between Structures 26 and 44. This unit was oriented 20 degrees west of magnetic north, due to temporary misplacement of a compass. We excavated through 70 cm of cobble fill, likely all associated with the wall construction. Below this fill, we found the only remnant of plaster floor in this test location. Two transitions in soil color with remnants of a pebbly ballast indicate the presence of two additional deteriorated surfaces. I believe the plaster floor was likely Xote Floor, because of the largely undifferentiated plaster and cobble layer below it. The pebbly ballast may mark Map Floor. However, more analysis of absolute depth of the floors is necessary to assure they do not represent the late floors. Regardless, the stratigraphy indicates that the wall construction was a very late addition to the plaza. The Brown Clay Fill below the plaster surfaces was approximately 40 cm deep here. The transition that marked the Yu Floor was not very clear, but I believe I was able to approximate it well enough from the auger. We were able to use a gauge auger in addition to the Edelman auger to penetrate to 220 cm below the ground surface but found no indication of bedrock.

55RH: This test unit was located in the northeast corner of the plaza, north of the low wall connecting Structure 26 and Structure 44. This was the northernmost test location, but still within the span of Structure 26. However, there were no plaster floors present in this location. I noted a change in soil color below the humus with some pebbles, likely representing an occupation surface. Below this layer, we encountered a yellowish-brown silty clay fill layer with large stones. It was 30 cm deep and may represent a low structure or antecedent to the low wall to the south. Below the large fill, we encountered 30 cm of yellowish-brown silty clay without large stones. It was similar to the silty fill seen in 55QA, 55QE, and 55RH, but lacked the cobble concentration at its base. We encountered a thin, gray, silty surface below this fill which could have been deteriorated plaster from Map Floor. The clay fill below the surface was dark brown and consistent with the Brown Clay Fill found below Map Floor. We also encountered a change in the clay consistent with Yu Floor and Fill.

Preliminary Conclusions

The combination of small test excavations and augering into the clay deposits at the base of the plaza allowed me to gain a broader understanding of the plaza construction despite the fact that I was not able to take full advantage of the auger in the plaza testing program. Near the center of Plaza F, I was able to document a sequence of eight floors above a buried prepared clay surface. The harder plaster surfaces and deeper cobble fills of the top four floors made them easier to differentiate from each other. However, lack of preserved plaster and more homogeneous cobble fills along the eastern edge of the plaza indicate fewer of the top four floors were present at the foot of Structure 26. This may indicate that buried platforms identified in Operation 50 excavations extend further to the north and east. A homogeneous layer of plaster and/or marl indicated the lower four floors were also present throughout most of the tested area, although individual floors were more difficult to distinguish away from the plaza center. The further away from the center we tested, the less reliable my understanding of the sequence of floors became. Here, the preservation of floors was very uneven and the relative position of the floors became obscured by erosion processes and buried features, likely low platforms, along the plaza edges. Along the northern edge of the plaza, especially, distinct cobble fills indicated intervening features which circumscribe the extent of multiple late and early floors. Map Floor's association with a brown clay fill, as

opposed to a more cobbly fill with marl assisted with its identification, even in locations where fewer soft plaster floor constructions were represented.

Other surprises encountered in our test pits include the identification a drastically sloped floor in test unit 55OG, which perhaps indicates a drainage feature. The presence of small daub remnants in the earliest clay deposit in test units 55GG and 55CG point to ephemeral construction, possibly dating to the earliest phases of the Middle Preclassic period. If the presence of daub is indicative of perishable structures associated with Yu Floor, the central locations where it was recovered would likely indicate that the initial Plaza F complex had a spatial arrangement distinct from the later E-Group form. Finally, I believe I found the spatial extent of Plaza F's prepared plaster surfaces along its northern and western edges (Figure 4.A.2). The limited extent of plaster floors in the north is especially surprising given the length of the Structure 26 platform in this area. Wade Tidwell's (Chapter 2) test unit 54K to the north of Plaza F confirmed that the sequence of construction there was distinct from the formal plaza. Neither the early nor later plaster floors were encountered, although he encountered prepared surfaces and activity residues, which indicate that area was a distinct activity space.

Besides analyzing collected geochemical samples from the select surfaces, I also plan to model the topography of the plaza over time. The elevations of the staked locations for test excavations were derived from a lidar digital elevation model of the site (see Table 4.A.1). Using depths below modern surface from staked corners of test units, I will build an elevation model of the plaza and demonstrate how the physical space changed over time. While I am not yet able to speak to the activity occurring within the constructed space over time without having completed the geochemical analysis, I have collected sufficient data through excavation and testing to demonstrate the extent of plaza modification defining the early ritual complex at Actuncan.

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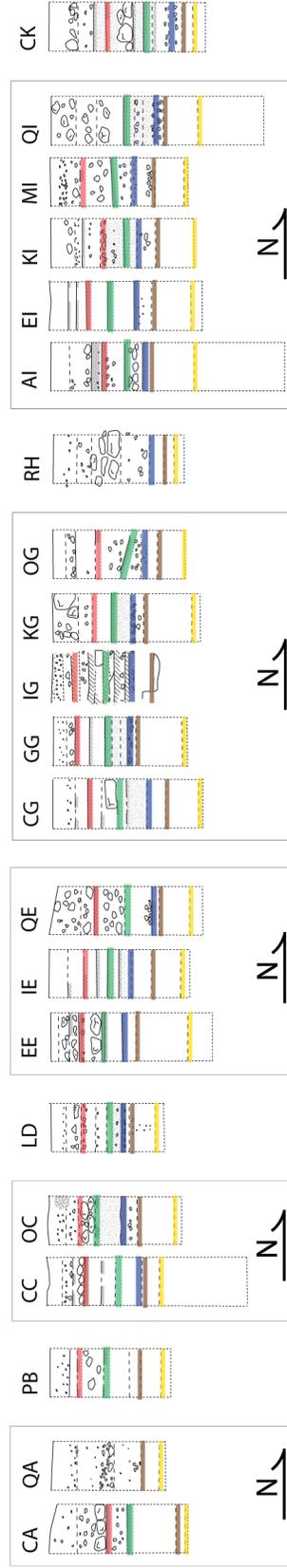
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Appendix 4.A

Table 4.A.1. Elevations of floor samples, as measured from elevation of modern surface at staked corner of test unit. Units IG and II are derived from Operation 50 trench excavation. Floor identifications are based on current interpretations.

Test Unit	Staked Corner	Elevation at Stake	Lum Floor Elev.	Xote Floor Elev.	Map Floor Elev.	Yu Floor Elev.
CA	SE	10542.4	10492.4	10470.4	NA	10420.4
QA	SE	10485.8	NA	NA	NA	10395.8
PB	SE	10497.6	10472.6	10442.6	NA	10404.6
CC	SE	10525.8	10487.8	10470.8	10455.8	10410.8
OC	SE	10512.7	10480.7	10462.7	10438.7	10420.7
LD	SE	10550.8	10520.8	10492.8	10477.8	10470.8
EE	SE	10519.3	10489.3	10467.3	10446.3	10431.3
IE	SE	10509.1	10474.1	10449.1	10424.1	10404.1
QE	NE	10502.4	10456.4	10424.4	10396.4	10386.4
CG	SE	10525.1	10490.1	10459.1	10429.1	10409.1
GG	SE	10521.2	10499.2	10468.2	10445.2	10436.2
IG	SE	NA	10490.2	10476.2	10444.2	10437.2
KG	SE	10538.8	10498.8	10478.8	10458.8	10444.8
OG	SW	10515.4	10471.4	10440.4	10423.4	10407.4
RH	SE	10511.5	NA	NA	10411.5	10397.5
AI	SE	10525.5	10473.5	10450.5	10431.5	10425.5
EI	SE	10541.8	10503.8	10481.8	10453.8	10435.8
II	SE	10531.4	10489.4	10461.4	10435.4	10425.4
KI	SE	10556.2	10506.2	10481.2	10468.2	10449.2
MI	SE	10522.7	10492.7	10460.7	10439.7	10414.7
QI	SE	10543.2	NA	10468.2	10437.2?	10427.2
CK	NE	10580.5	10520.5	10484.5	NA	10444.5



Operation 55 Test Units

- Lum Floor
- Xote Floor
- Map Floor
- Yu Floor
- Culturally Sterile Clay

Figure 4.A.1. Preliminary floor identifications within tested locations. Profile IG was extracted from Operation 50 plaza excavation profile. Within individual sections, test locations are ordered from south to north. Sections are ordered from west to east.

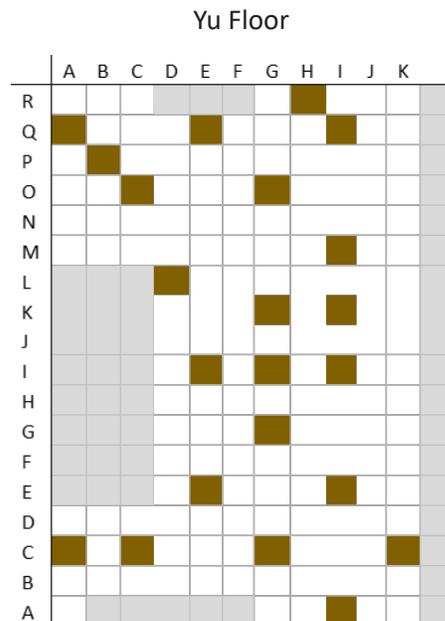
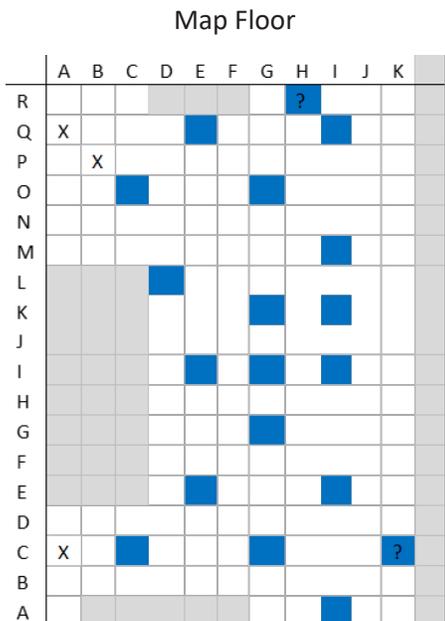
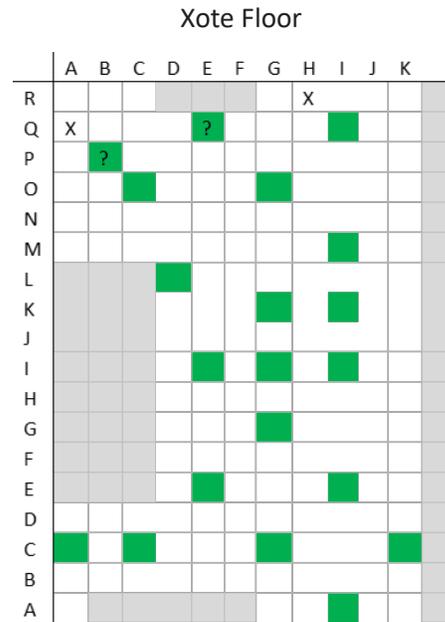
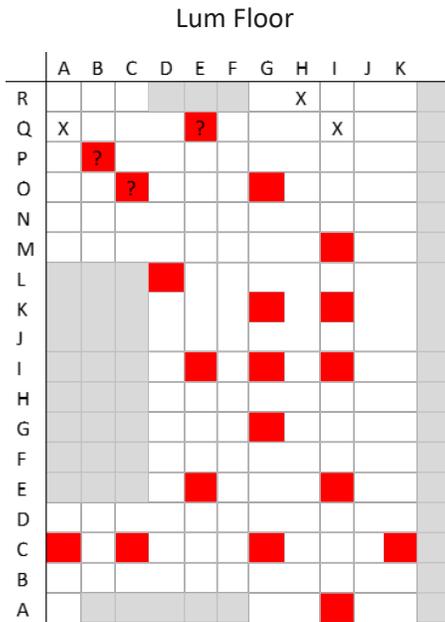


Figure 4.A.2. Schematic representation of test locations and structures (gray). Presence of Lum, Xote, Map, and Yu Floors are marked with colored squares (red, green, blue, and brown), likely presence with color and "?", and absence with "X".