REPORT ON ARCHAEOLOGICAL RESEARCH AT CHAU SAY TEVODA TEMPLE, ANGKOR

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Preface

Upon instruction from the Chinese government, the Chinese Cultural Relics Research Institute joined the "Angkor Restoration Plan" representing the People's Republic of China under the coordination, organization, and direction of UNESCO. The team is particularly responsible for the restoration and maintenance of Chau Say Tevoda temple. The Chinese project has received tremendous support and cooperation from the Cambodian Cultural Heritage Supervisory Organ – APSARA, relevant local organizations, and local people who have participated throughout.

In accordance with international restoration standards, after several studies and completion of basic measurements and drawings, the relevant department proposed to conduct the necessary archaeological investigations and excavations before implementation of any restoration. The purpose of archaeological work was to establish a more comprehensive understanding of the temple, and then to draft a restoration plan based on scientific findings. The archaeological team organized for the second preparatory mission to Chau Say (Dec. 1998 - Jan. 1999) included Mr. Qiao Liang from the Chinese Cultural Relics Research Institute, and Mr. Li Yu-Qun from the Chinese Social Science Academy. APSARA, the Cambodian counterpart, assigned Mr. So Chheng to join in the restoration mission.

The team first conducted a comprehensive ground survey of the main part of the site. They also collected and examined artefacts in view of gaining an understanding of the conditions of the remains of the site and its topography.

I. General Situation of the Site

1. Geographic Environment and Location

Chau Say Tevoda temple is located north of Siem Reap city, the provincial capital of Siem Reap province in northwestern Cambodia. The site is one element of the famous Angkor Group. It is located about 500 m east of Angkor Thom's Victory Gate (the northernmost of the two gates giving entrance to the city of Angkor Thom on its eastern side). Chau Say is set to the south of the road leading east out of Angkor Thom. Thommanon Temple faces Chau Say to the north of this road.

The Siem Reap river runs from north to south, about 200 m east of Chau Say Tevoda. The stone-lined eastern entrance path of the temple extends to the west bank of the Siem Reap river. On the east bank of the river, and along the same axis, stands a "hospital" chapel, also dated to the Angkorian period.

Chau Say Tevoda is on a generally flat terrace. The landform appears to be lower in the southeast and gradually rises higher in the northwest. The relative height difference is about 2 to 3 meters. With the exception of the temple's northern side, which is bordered by Angkor Thom's eastern entry road, all surrounding areas are forested. There are also tall trees growing inside the temple structures.

2. Historical Background

Chau Say Tevoda is a relatively small temple in the Angkor complex. Since there remain no written historical records on or in Chau Say Tevoda, all hypotheses regarding the date and the builder of the temple result from modern research.

French scholars have long determined that the architectural style of Chau Say Tevoda is basically the same as Angkor Vat, Thommanon and Banteay Samre. The latter were all built or at least begun during the period of King Suryavarman II from 1113 to 1145. Therefore, Chau Say Tevoda was also probably built during this period. Some researchers have further stated that Chau Say Tevoda was built in the early part of King Suryavarman II's reign; this dating is based on analysis of the architectural form and style of the temple's elevated causeway and the border stones lining the eastern entrance path, structures which are similar to others at the Baphuon, a temple attributed to the reign of King Udayadityavarman (1050 - 1066). These structures may however be posterior to the original construction of both sites.

3. Discovery and Past Efforts

The French began clearing Chau Say Tevoda in 1917, removing accumulated soil covering the structures, cutting trees that threatened structural stability, and arranging fallen stone material. The work was carried out intermittently into the 1950s. During this time, the four entrance towers, the Central Sanctuary (CS), and other structures were cleared. Many exquisite stone sculptures were uncovered. Structures in danger of collapse were also shored up, reinforced and restored. The West Entrance Tower (WET) was also completely restored.

However, as little was done in terms of archaeological excavation of the site, our knowledge of the periphery of the temple is limited.

II. Archaeological Survey

1. The Present State of the Site

After years of clearing, and restoration conducted by the French, the main body of Chau Say Tevoda and the border stones along the entrance path are completely exposed above-ground. Initial surveys have shown the surrounding enclosure of Chau Say Tevoda to measure 42.6 m east to west and 38 m north to south.

An elevated causeway extends about 35 m east beyond the East Entrance Tower (EET). A cruciform terrace measuring about 25.4 m wide north-south, and 28.4 m long east-west connects with the east-

ern end of the causeway. A path, measuring about 110 m in length, and 5 m in width, leads out east of the Terrace; this path is lined by sculpted border stones.

The areas surrounding the group of structures and the entry path show some significant variation in landform. The ground surface surrounding the group of structures is usually higher than the ground of the structures themselves. Large piles of earth lie at the far end of the North Entrance Tower (NET) and the West Entrance Tower (WET). There are two pits, one on either side of the entry path, to the south and to the north midway along this path inside the surrounding brush. These rectangular pits are some 40 m long east-west, and 35 m wide north-south. They are about 1.5 m deep, with gradually sloping walls. There is no clear edge between the wall and the bottom.

A sunken entrenchment lies at the eastern side of the cruciform terrace. The entrenchment runs north-south, and is about 10 m wide. Two long piles of earth lie on either side (north and south) of the cruciform terrace. The cross section of the earth piles takes the shape of a hillock. It extends along the side of the terrace. On the western side of each hillock, there is an irregular shaped pit. A similar pit is found outside of the WET and west of the NET.

Numerous stones fallen from the structures can be seen on the ground surface. The majority of these are placed in an orderly fashion; some have even been joined and arranged. This is obviously the result of French intervention.

Between the stones and in the outlying areas, bricks, tiles and pottery fragments are scattered on the ground surface. The bricks are rectangular, of a tawney color and contain certain amounts of sand. They are generally uniform in size, measuring about 22.5 cm long, 13.5 cm wide and 5.4 cm thick.

The tiles are all of a tawney color, and the matrix is usually sandy. Sizes and shapes are quite numerous, with a wide range in the degree of arc and thickness. Generally, the tiles can be divided into two types: arched tiles and relatively flat tiles with curved sides.

The pottery collection consists mostly of wares which can be classified into glazed pottery and plain pottery. The glazed wares are all thick walled, and their color is dark reddish brown. The glaze usually does not reach the bottom. There are many types of plain pottery. The textures are of fine clay, sandy and streaked or spotted. Colors are red, brown, grey, and black. The ware is usually without decor (Figure I, Plate III, 4).

After completion of the initial survey, the team aimed to develop understandings of the distribution of ground surface remains. For this, specific areas were delineated for surface collection. As fallen stones cover the vicinity of the group of structures, and as remote areas are covered by forest, the survey area was located slightly beyond the structures. After dividing the whole site into smaller regions, the team chose the IT0104, 0105, IT0204, 0205 to the north of the cruciform terrace, sectors randomly selected within the designated area. The total survey area covered 100 m^2.

The area selected for the survey has a somewhat rough surface. Forest lies about 2 m from the western portion of the area, engendering some erosion. Only man-made objects were collected. Only pottery and tile fragments larger than 1 cm^2 were collected; all other types of artefacts were retrieved, regardless of size. Following are statistical results of collection and classification:[1]

[1] Percentage is that of the main categories. Yellow-white "china" refers to a fine ceramic type with yellowish and greenish glaze which can be easily chipped off. "China" or "chinaware" can refer to imported or local wares. Stone materials are sculpture remains.

Classification	Plain Pottery					Glazed Pottery	"Chinaware"				Tiles			Bricks	Stone Materials	Total
	Brown	Grey	Red	Black	Total		White	Yellow-White	Green	Total	Flat	Arch	Total			
Qty	11	1	3	2	17	3	4	2	1	7	9	23	32	2	2	64
%	26.8					4.7	10.6				50			3.1	3.1	99.2

1."Recruited" Artefacts

Aside from those collected during survey and excavation (see below), some artefacts were uncovered during clearance of earth accumulated around the temple structures, ground leveling and geographical survey and sampling. Since these objects were not collected through formal excavation, they are considered "recruited" items. Following is a record and description of these items.

a. Stone Images

Fragment of a sitting Buddha image. Specimen ZJ:07, grey sandstone, the upper body of the Buddha image is damaged, but the portion below the two hands are preserved perfectly. The carvings are exquisite. The figure is sitting on the naga with legs crossed and with hands in dhyana position. The naga is coiled, rising at the back of Buddha to form his back radiance. Under the seat is a piece of squared stone. The remaining size of the image is 80 cm high, 70 cm wide, and 41 cm thick (Figure II, Plate II, 5-6). It was excavated in a man-made pit about 30 m away from the NET (Plate II, 3).

Fragment of a standing image. Specimen ZJ:01, grey sandstone. This is a standing image carved on a squared cone-shaped tenon platform. Only the seat of the tenon and the foot portion remain. The remaining height is 6 cm (Figure III, 8; Plate V, 3).

One piece of crystal. Specimen ZJ:04, colorless and transparent, crystalloid, with scratches. The base is cracked off. The remaining height is 1.4 cm (Figure III, 4). Found inside a "china" jar ZJ:03.

b. One piece of metalware. Specimen ZJ:02, bronze, round, the edges are folded in bubble shape; it measures 4 cm in diameter, and is 0.05 cm thick (Figure III, 9; Plate V, 5). It was excavated from soil accumulated inside the northern "library".

c. Two pieces of ceramics. Specimen ZJ:03, a jar with black-brown glaze and a fine textured grey matrix. There is no glaze on the inner wall, the edge of the opening, the lower belly or the bottom. It has a small mouth, squared lip, rolled edge, wide shoulder, bulging belly, and slightly sunken bottom. Its top diameter is 4 cm, bottom diameter 8 cm, total height 10.4 cm (Figure III, 6; Plate III, 3). It was excavated at the foot of the hillock about 30 m to the east of the NET. Specimen ZJ:06, a box with shiny green-yellow glaze with cracked ice design. The mouth folds toward the inside, and is partially without glaze. A pressed design is apparent under the glaze. Its top diameter is 9.3 cm (Figure III, 3; Plate VI, 4). It was excavated in the geographic sampling pit outside of the WET.

d. Two pieces of glazed and unglazed ware. Specimen ZJ:010, glazed pot base with grey matrix, dark reddish brown glaze; unglazed on the bottom side and the side wall. The bottom is wider, and folds inwardly going upward. It has a linear design (Figure III, 2). Specimen ZJ:011, a jar, sandy grey-black, fired at low temperature, with loose texture. It has a folded edge with a square lip and the lower part of the belly folds inward. Its top diameter is 38 cm, the remaining height 10 cm (Figure III, 1). It was excavated in the geographic sampling pit about 5 m from the outside of the WET.

e. 3 architectural items. Specimen ZJ:08, a flat tile, sandy light orange, wide in front and narrow at the end, with clay strips on the outside of the front portion. The remaining length is 17.5 cm; the front is 15.5 cm wide, and the back is 13 cm wide (Figure III, 7). Specimen ZJ:09, a roof finial. Sandy red; the upper part is cone shaped, the middle portion decorated with a girdle, and the lower portion takes an arc shape. The overall height is 22.7 cm (Figure III, 5; Plate III, 2). Specimen ZJ:010, broken tile with green glaze suffused with white; glazed on both sides. There are glaze drops on certain areas. It has a greyish-white matrix. It is flat with curved sides, and the wall is about 1 cm thick. Excavated in the accumulated hillock outside of the NET.

III. Archaeological Excavation

1. Methodology

As the purpose of this mission was to provide the bases and references for restoration, and as the majority of the temple structures are still exposed on the ground surface, the scope of archaeological work was primarily limited to developing understandings of the layout of the site and the engineering procedures and techniques of foundational construction. Two kinds of excavation methods were employed, depending on the type of structure associated with the excavation: exploration tunnels and exploration squares, with tunnels more frequently employed.

The team first took the center of the cruciform terrace as the center coordinate, then divided the whole site into 4 regions. Each region is represented with a Roman numeral. Using 5 m as one unit, each region was then divided into several small areas. The serial number of each small area is composed of coordinates of the X-axis first and then the Y-axis, taking two digits to represent each axis. The Chinese pinyin initial for exploration square (or tunnel) "T" is added to the beginning of each serial number. Each exploration square (or tunnel) is named according to the region in which it lies.

During the excavation, dividing units were based on the texture and color of accumulated soil. Each exploration square (or tunnel) was numbered independently, from top to bottom. The artefacts were collected according to this scale system.

2. General Situation of the Excavation

The central area inside the enclosure of Chau Say Tevoda, aside from the main structures, is paved with laterite. No archaeological excavations could therefore be carried out in this area. Excavations were limited to areas outside of the enclosure. The area of excavation can be divided into two sectors, the inner and the outer groups. The inner group is close to the central temple area. Two exploration squares, IV T0901 outside the EET and III T1405 outside the SET, were set up in order to understand the foundational structures of the EET and the SET. Eleven exploration squares or tunnels were set up in the outer

enclosure area, II T0106, III T0106, II T0301, 0401, 0501, II T2101, III T1511, 1512, I T1501, 1502, 1503. The total area of excavation was 117 m^2 (including the area of expanded squares). Excavations lasted from December 21, 1998 to January 20, 1999.

Excavations have shown that the layout of earth accumulation at Chau Say Tevoda is not even, with differences in the characteristics of artefactual remains. Some accumulations can reach over 2 m deep, while some are less than 0.5 m deep. Aside from some exceptional cases, very few man-made remains were found in the accumulations. Those artefacts that were found are mainly materials related to the constructions, such as tiles, and fragments of ceramic vessels.

3. Detailed Description of the Exploration Squares

a. IV T0901

IV T0901 is located to the north of the main passageway of the EET and the elevated causeway. The front gate of Chau Say Tevoda, the EET, is structurally different from the other three gates in the west, south, and north. Aside from the main passageway connected with the elevated causeway in the center of the EET, the structure boasts two lateral passageways. Therefore, the EET is the largest of the four gates. In order to understand the foundational structure of the EET and its connection with the causeway, we chose to excavate the EET. The area of excavation was about 5 x 4 m^2. After clearance, and in order to understand the range of distribution of the filled sand layer, the team expanded the exploration square from the northeast corner to the north, about 1 x 1.5 m^2 (Figure IV, Plate I, 1).

Ground Layer Structures: taking the sectional plane of the north and south wall as examples

The first layer is sandstone gravel and filled lime soil. It is about 40 to 50 cm thick. It is manually rammed and very solid. The thickness of this layer is basically the same as the two lifts of laterite laid as structural foundations. It is assumed to have been made after the carving of the EET, using the sandstone chips produced from carving. This is the same for the ground layer structures of the other gates. As shown from the sectional plane of the south wall, the stone foundation of the EET is made of two lifts of laterite. The upper layer is 30 cm thick, and it varies in width; the lower layer, 15 to 20 cm thick, also varies in width. The bottom surface of the rock is not polished.

The second layer can only be seen under the causeway in the southwest of the exploration square. It is black sandy soil, about 50 cm thick. This layer breaks into the third to fifth sand layers, that is, it breaks into the upper portion of the sand layer foundation beneath the laterite of the EET. The sectional plane of the south wall also shows that the foundational structure is different from that of the EET. It has only one lift of laterite for the stone foundation; above it lies the sandstone bedding. The sandstone is 25 cm thick with carvings, such as lotuses, etc., on the side, indicating that the top sandstone layer would have been exposed above-ground during that time.

However, the top sandstone layer is not well aligned with the foundation of the EET. First, the surface of the top sandstone layer is aligned with the lower half of the lowest layer of the EET, which is 15 cm thick, and without carving. Thus, the two parts can not connect directly in terms of decoration. Second, since the top sandstone layer is 10 cm thicker than the lowest sandstone layer of the EET, in order to align the two, they would have had to cut off 10 cm from the laterite beneath the lower sandstone layer under the EET. If we take the original ground surface as our basis, 10 cm of the laterite foundation of the EET would have been exposed above-ground. Such exposure of the laterite foundation would have had a negative effect on the stability of the foundation of the whole structure, given in particular the porous charac-

teristic of this stone and the periodically rainy climate. Therefore, the construction of the elevated causeway is apparently later than the EET. This also goes for the passageway between the EET and the CS.

The third to sixteenth layers are all yellow sand layers, laid directly below the laterite. The total thickness of the sand layers is 2.1 m, with each layer ranging from 15 to 25 cm thick. Some layers are yellowish, and some tend to be brownish or black. From this we know that the sand layers were laid layer by layer, and some layers even contain some gravel. It is very common to use sand in temple foundations in the Angkor area. From the sectional plane of the east wall, we can see that the foundation excavated is ladder-shaped – the portion closest to the structure is deepest, and becomes shallower gradually moving toward the outside. Below the sixteenth layer is tawny natural soil, and the texture is quite solid.

Excavated Artefacts

Few relics were excavated from this exploration square. Findings included a fragment of a stone image, and ceramic fragments. All were found in the first layer.

Fragment of a stone image. Specimen IV T0901①:1. This is a female image sculpted in yellow sandstone and missing its head. The texture of the material is loose. The remaining height is 15.5 cm. The figure is wearing a necklace; the upper body is bare, with broad shoulders, rounded breasts and a slight waist. The body is quite fleshy. The right arm and the left forearm are lost; the left hand is pressing on the lap of the image. The figure wears a short skirt with the waistline folded outward. The left leg is crossed in a sitting position, and the right leg is bent up. A round seat supports the body (Figure V, 1; Plate III, 5).

This image is very small, and would not have served as a central object of worship. Observation of the texture of the stone and the style of the image indicates a date earlier than the 12th century. We do not know why it was buried in the gravel layer.

Two "chinaware" fragments:

Specimen IV T0901①:3. This is green "chinaware" from the Dragon-Fountain Kilns. The matrix is of a greyish-white color. The texture is fine and smooth. It has light green glaze on the outside. The distribution of the color is even. On the inside, there are drawings of dark green curly grass. It is 2.5 cm long, 1.5 cm wide, and 0.35 cm thick (Figure V, 3).

Specimen IV T0901①:4. The matrix is of a greyish-white color. It has light blue glaze on the outside. There is a cracked ice design on the glaze. It is 6.5 cm long, 2.5 cm wide, and 0.4 to 0.7 cm thick. It belongs to a bowl or plate (Figure V, 4). Observation of the texture of the matrix and the glaze indicate it to be imported green ware from China.

Two fragments of glazed ware. The fragments are very small and can not be identified as belonging to any specific container. The matrix is grey-black and sandy. It has dark reddish brown glaze on the outside. It is of local production.

One ceramic architectural component: Specimen IV T0901①:2. Sandy, tawny and fired at low temperature. There is a pressed dot design on the edge, with the center in a sharp circular shape. The remaining size is 8.5 cm high, 4 cm wide, and 1.2 cm thick. Observation of its shape indicates it to be a fragment of a sculpted niche, part of architectural decor (Figure V, 2; Plate V, 6).

b. III T1405

III T1405 is located at the southeast corner outside of the SET. The exploration square covers the southeast corner of the SET and the portion connecting the enclosure and the SET. The purpose of this excavation was to establish better understandings of the foundational structure of the SET and the enclosure. The area of excavation is 4x4 m^2.

Clearance of the second layer exposed a gravel and filled soil layer, the laterite stone foundation for the SET and the enclosure. Safety concerns for the buildings prohibited digging vertically near the foundation. Therefore, the excavation was carried out going downward along the south wall of the exploration square about 1 m wide. After excavating up to the natural soil, we dug along the western wall of the exploration square going north about 0.5 m wide up to the foundation of the SET (Figure VI; Plate I, 3).

Ground Layer Structures: taking the section plane of the north and south walls as examples

The first layer is road soil, about 10 cm thick. It is grey-black in color; the texture is solid.

The second layer is a sandstone gravel and filled soil layer, about 50 cm thick. It is manually rammed and very solid. The thickness of this layer is basically the same as the sectional plane of the layers of the EET. It would have been made after the carving of the SET structures, using the sandstone fragments produced from the carvings. As shown from the sectional plane of the west wall, the stone foundation of the SET and the enclosure is made of only one lift of laterite. The layer is 50 cm wide, and it varies in terms of thickness. Apparently, the bottom surface of the rock is not polished.

The third layer can be divided into two small layers, both seen at the foundation of the structures. It belongs to a part of the foundation. 3A layer is a grey rammed layer, about 20 to 30 cm thick. The texture is solid. It is laid directly below the laterite foundation. 3B layer is a yellow sand layer, about 30 to 60 cm thick. It is laid directly below layer 3A, and breaks into the fourth layer. This is the same as the EET. It belongs to the foundation of the SET. But the range of the yellow sand layer is smaller, and it is less thick. Coring exploration at the center of the SET showed the yellow sand layer at the center portion to be about 2.6 m thick, minus the 1 m height of the upper foundation, that is 1.6 m thick. Based on this observation, we can conclude that the foundational trench of the SET is also ladder-shaped – the center portion is deep and becomes thinner towards the outside. Only the range is not as wide as that of the EET. In addition, at the southwestern corner of the exploration square, there is also a yellow sand layer, which also breaks into the fourth layer. However, this part is already far from the SET, and can hardly be understood as the foundation.

The fourth layer is a grey-yellow clay layer with yellowish rusty spots and a solid texture.

Excavated Artefacts.

Few artefacts were excavated from this exploration square. They are all pottery fragments only found in the fourth layer. There are two types, according to texture: one is spotted and the other is sandy. The spotted type can be broken down into sub-categories of white pottery and red pottery. The sandy type can be broken down into tawny pottery and grey pottery.

Fragment of a container cap: Specimen III T1405④:1. White pottery; the texture is fine and smooth. It is damaged on the edge. The diameter is 4.8 cm (Figure VII, 1).

Fragment of a pot neck: Specimen III T1405④:2. Sandy grey, fired at high temperature. It has linear and pressed dot designs (Figure VII, 2).

Besides these, we also uncovered one tawny fragment of the belly portion of a cooking pot, and one piece of red flat tile fragment.

c. II T0106, III T0106

II T0106, III T0106 are both located in the south of the cruciform terrace outside the EET. They belong respectively to the II and III region of the excavation site. The excavation area of II T0106 was 5x2 m^2. A terrace of rammed earth was discovered in this exploration square. In order to further understand the

relationship between the area west of the rammed terrace and the pond in the west, the exploration square was expanded to the west forming III T0106. This square was 5x1 m^2.

Ground Layer Structure: taking the south walls of the II T0106 and III T0106 as examples

Because there is a rammed terrace inside the exploration squares, the ground surface itself takes the shape of a slope from the center going down on all sides. The deposit of the cultural layer has similar characteristics (Figure VIII).

The first layer is the surface earth layer, about 25 to 50 cm thick. It is grey-yellow sandy soil, and the texture of the soil is loose. The root systems of the plants are extensive. The excavated artefacts include ceramic fragments.

The second layer can be divided into two small layers. 2A layer is thicker, ranging from 40 to 80 cm. It is light yellow sandy loam, the content of sand is high, and the structure is loose. Few fragments of pottery were excavated in this layer. 2B layer can only be found in II T0106 exploration square, about 30 cm thick. It is grey-yellow sandy soil. Few fragments of pottery were, likewise, found in this layer.

The thickness of the third layer ranges from 30 to 80 cm. It is grey-sepia clay, and the structure is dense, with a certain degree of rigidity. This is a major cultural layer. Numerous ceramic fragments were excavated here. The bottom of the third layer in the east, 2.5 m away from the central area is already close to the bottom of the entrenchment in the east, judging from the depth of the entrenchment excavated in II T0501 east of the cruciform terrace. The bottom of the third layer in the west, 3 m away from the central area should be the bottom of the small pond in the west.

The fourth layer was found only in III T0106. This is a very thin layer. The texture of the soil is similar to the grey-yellow natural soil with rusty spots. A lot of iron dregs were excavated from this layer.

The fifth layer is grey-sepia rammed earth, about 1.6 m deep. The upper part of the rammed earth layer is very solid, and contains some small pieces of stone. But the lower part of it is less solid. The rammed earth is only distributed in the southwestern corner of II T0106 and the southeastern corner of III T0106. Observation of the sectional plane shows the rammed earth to have been laid in a north-south direction; its vertical plane is in ladder-shape, and it seems to have steps. Therefore, the rammed earth was most likely constructed to divide the entrenchment in the east and the pond in the west. Below the fifth layer is the natural soil.

Excavated Artefacts

Few fragments of pottery were excavated in the second layer. Findings mainly consist of spotted and sandy grey pottery, followed by spotted and sandy tawny pottery. However, the fragments are small and very few can be identified with specific containers. A small number of fragments of glazed ware, including "chinaware" were also uncovered.

More pottery fragments were excavated from the third layer. These are mainly spotted and sandy grey pottery fragments, followed by spotted and sandy tawny fragments. The types of containers are mostly cooking pots, jars, etc. We also found a small number of green "china" container caps.

Many pottery fragments were found here. Two cooking pot fragments:

Specimen III T0106③:1, sandy red, fired at low temperature. Its texture is loose, with a folded edge and pointed square lip. The belly is straight and the lower belly folds inward; the bottom is round. Its top diameter is 29.5 cm, and the remaining height is 10 cm (Figure IX, 4).

Specimen III T0106③:2, sandy tawny, fired at low temperature, with a broad opening. It has a folded edge and round lip, folded shoulder. The belly is folded inward. Its top diameter is 35 cm; the

remaining height is 6 cm (Figure IX, 3).

Three fragments of the opening edge of jars:

Specimen III T0106③:6, sandy tawny, fired at low temperature, with a narrow mouth, folded edge and round lip. Its top diameter is 14 cm, and the remaining height is 3.5 cm (Figure IX, 7).

Specimen III T0106③:7, sandy tawny, fired at high temperature, with a narrow mouth, folded edge and rounded lip. Its top diameter is 13 cm, and the remaining height is 2 cm (Figure IX, 6).

Specimen II T0106②A:2, sandy tawny, with a narrow mouth, folded edge and rounded lip, and bulging belly. Its top diameter is 16 cm (Figure IX, 2; Plate IV, 6).

Two pieces of glazed pottery:

Specimen III T0106③:8, jar edge, spotted grey matrix, with green glaze applied on both inside and outside walls. Part of the glaze surface is chipped off. It has a narrowing opening, folded edge and rounded lip. Its top diameter is 26 cm, and the remaining height is 4 cm (Figure IX, 8).

Specimen II T010②A:1, jar edge, spotted grey matrix, dark reddish brown glaze. Serious cracking of the glaze. It has a narrow mouth, folded edge with rounded lip, and folded shoulder. Its top diameter is 38 cm (Figure IX, 1).

Four fragments of green "chinaware", all are container caps of local production. Specimen III T0106③:3, greyish-white matrix, with green-white glaze applied on both inside and outside walls. Serious cracking of the glaze. The opening folds inward, with a pointed lip. Its top diameter is 6.6 cm; the height is 1.9 cm (Figure IX, 9).

Specimen III T0106③:4, greyish-white matrix, with green-white glaze applied on both inside and outside walls. It has a fitted top with a tall reach. Its top diameter is 10 cm; the height is 4.2 cm (Figure IX, 10).

Specimen III T0106③:5, greyish-white matrix, with green-white glaze applied on both inside and outside walls. It has a straight opening, squared lip. Its top diameter is 10.8 cm; the height is 2 cm (Figure XI, 11).

Specimen II T0106②A:3, a cap knob, greyish-white matrix, fired at high temperature, green glaze. Serious cracking of the glaze. Part of the knob is rounded, with a narrow neck. Its diameter is 4.4 cm; the height is 2.5 cm (Figure XI, 6).

d. I T1501, 1502, 1503

I T1501, 1502, 1503 are located in the north pond to the north side of the entry path about 75 m east of the cruciform terrace outside the EET. It is an exploration tunnel running north-south. The length is 14 m north-south, and the width is 1 m east-west. The area is 14x1 m^2. This aim of this excavation was to establish understandings of the relationship between the entry path with its border stones and the north pond, and the situation of earth accumulation of the north pond.

Ground Layer Structure

The ground surface of the exploration tunnel is sloped, with the south higher than the north. The ground layers are also accumulated in this manner. The following description takes the east wall sectional plane as examples (Figure X).

The first layer is the surface layer, about 30 to 50 cm thick. It is grey-yellow impure soil. As the north pond was previously overgrown with vegetation, the texture of the soil in this layer is loose and soft, the root systems of the plants very extensive. Fragments of pottery were excavated in this layer.

Under the first layer, in the middle portion of the exploration tunnel, there is a small grey pit,

labeled H1. Its opening is in an oval shape; it measures 1 m in diameter and 0.5 m deep. The bottom is round. The grey pit breaks into two layers. Inside the pit, there is grey-black impure soil. Two nearly complete pots were uncovered here.

The second layer is 30 to 50 cm thick. It is tawny sandy soil. From the south wall of the tunnel about 1 to 2 m north, at the bottom surface of the second layer, which is about 1 m away from the ground surface, three small pieces of laterite were found. This may be related to the entry path and its border stones, or it might be the edge of this area.

The border stones lining this path extend 30 cm under the ground surface. At the bottom of the stone, there is a round tenon, but below 30 cm, we found nothing compatible with the tenon. This suggests that the border stones were installed by later generations. However, the original ground surface could not be determined through the sectional plane of the ground layers. Several fragments of pottery and tiles were excavated in this layer.

The third layer can only be seen at the north end of the exploration tunnel. It is about 10 to 30 cm thick. It is composed of yellow rusty spotted solid soil which would seem to have been leached in water and then dried and hardened. Numerous tile fragments were excavated, showing that there must have been wooden structures in this vicinity. The third layer is the earliest accumulation since the north pond was abandoned. It probably dates to the abandonment of the temple and associated wooden structures. Below the third layer is tawny natural soil with rusty spots.

Excavated Artefacts

The ceramic fragments excavated in the first layer are mostly green "china", white "china", and other glazed ware. Two pot fragments were excavated in H1.

Many fragments of pottery were excavated in the second layer, including sandy, spotted, and glazed ware. There are more red and tawny pieces than grey pieces. However, very few container shapes can be identified through these fragments. A lot of red arched and flat tile fragments were found at the north end of the exploration tunnel. A fragment of deer horn fossil was also found. (Figure XI, 4; Plate V, 5).

Excavated items from the third layer are mainly tile fragments. Most of them are spotted red pieces, fired at low temperature, with a few exceptional grey fragments fired at high temperature. The tiles are of both the arched and flat types. There are also a small number of fragments of red or tawny ware. The vessel shapes that can be identified are mostly pots.

Four pieces of "chinaware":

One piece of green china, Specimen I T1502①:4. Triangular shaped fragment. The length of the side is 2 cm, and it is 0.25 cm thick. It has a green-white matrix; the texture is fine and smooth, with green glaze applied on the outside wall. The glaze is shiny; there are grass and flower designs. This is thought to be green china from the Dragon-Fountain kilns (Figure XI, 8).

Fragment of white china, Specimen I T1502①:3. Triangular shape. The length of the side is 2.5 cm, and it is 0.35 cm thick. It belongs to the opening edge of a bowl. It has a greyish-white matrix. There is no glaze applied on the inside wall of the opening edge, but the rest is covered with white glaze. There are raised grass and flower designs on the outside wall. This is probably a product of the Chinese De-Hua kilns (Figure XI, 10; Plate VI, 3).

Two fragments of a green-yellow glazed bowl. Specimen I T1502①:1. This fragment of "chinaware" is 6.5 cm long, 4.5 cm wide, 0.4 cm thick, with a tawny matrix. It has green-yellow shiny glaze on the outside wall. The lower part of the outside wall shows the matrix. There is a line of glaze along the inside wall of the opening edge, and the matrix of the rest areas are exposed. This type of ware is of local production (Figure XI, 5).

Three pieces of glazed ware:

Specimen I T1502①:5, a jar, damaged on the opening edge. It is 15 cm high, the belly diameter is 22 cm, the bottom diameter is 13 cm, and it is 0.6 to 1 cm thick. This is a sandy grey piece, with dark reddish brown glaze applied on both sides of the wall. Serious cracking of the glaze. The neck is narrow, and the belly bulges. There are two rows of linear design on the neck (Figure XI, 3; Plate V, 4).

Specimen I T1503②:3, the neck and shoulder of a jar. The piece has a dark reddish black glaze. The matrix is spotted grey. Fired at high temperature. There is a triangular container handle for the shoulder portion, with glaze applied on both the inside and the outside. An aligned arc pattern decorates the shoulder portion (Figure XI, 9; Plate VI, 1).

Specimen I T1503③:1, the mouth of a pot, dark reddish brown glaze. Serious cracking of the glaze. The matrix is quite thin. It is spotted grey pottery fired at high temperature. There is a folded sharp lip on the edge. Its top diameter is 16 cm, the thickness of the wall is 0.4 cm. This type of container mouth is rare (Figure XII, 1).

Six pottery fragments:

Specimen I T1502H1:1, spotted red pottery. The opening edge is damaged. The remaining height is 30 cm, the belly diameter is 21 cm, the bottom diameter is 10 cm, and it is 0.5 to 1 cm thick. It has a broad mouth, long and narrow neck, and folds inwardly from the lower part of the belly. Linear and cross-hatch design decorate the neck. Wheel marks can be seen on the inner wall of the lower belly (Figure XI, 1; Plate IV, 2).

Specimen I T1502H1:2, sandy grey pottery. The opening edge is damaged. The remaining height is 25 cm, the belly diameter is 20 cm, the bottom diameter is 10.5 cm, and it is 0.5 to 1 cm thick. This piece is similar to the previous one. It has a broad mouth, long and narrow neck, and folds inwardly from the lower part of the belly. A linear and cross-hatch design decorates the neck. Wheel marks can be seen on the inner wall of the lower belly (Figure XI, 2; Plate IV, 1).

Specimen I T1502②: 1, the mouth of a cooking pot. Sandy, tawny. The opening diameter is 24 cm. The wall of the container is quite thin, only 0.4 cm. Traces of soot can be seen on the surface. (Figure XI, 6).

Specimen I T1502②: 2, the opening edge of a jar. Sandy, tawny. Its top diameter is 14 cm, and the wall is 0.4 cm thick. Fired at low temperature and made on a wheel (Figure XI, 7).

Specimen I T1503③: 4, the mouth of a pot. Spotted red. Its top diameter is 13 cm, and the wall is 0.5 cm thick. Fired at low temperature and made on a wheel. It has a loose texture, a broad opening, and a sharp lip. There are two rows of linear design and one row of cross-hatch design at the lower part of the opening edge (Figure XII, 2; Plate VI, 5).

Specimen I T1503③: 5, the neck of a pot. Spotted, tawny. The wall is 0.8 cm. Fired at high temperature and made on a wheel. The piece bears linear and impressed dot designs (Figure XII, 3; Plate VI, 5).

A large number of tiles were found here:

Specimen I T1503③: 2, a flat tile with curved sides. Spotted and tawny. Fired at low temperature, of uncertain dimensions. Observation of the sectional plane shows the center of the tile to be relatively flat, and both sides take the shape of a half arc. A clay ridge is pressed on the front side of the tile, while the backside has a triangular nipple nail used to hold the tile (Figure XII, 4). Many specimens of this kind of tile were found.

Specimen I T1503③: 2, an arched tile. Spotted grey, fired at high temperature. The length is uncertain. The sectional plane of the tile is in a half circular shape; the diameter is 12 cm, and the thickness is 0.5 to 0.8 cm. The backside of the tile has a triangular nipple nail used to hold the tile (Figure XII, 5; Plate V, 2). Very few of this kind of tile were found.

e. II T2101

This square is located to the east of the temple's eastern entrance pathway, about 25 m from the western bank of the Siem Reap River. The exploration square is 5 m long east-west, and 2 m wide north-south. The area of the exploration square is 10 m^2. Through the excavation, the team gained an understanding of the situation of the stratigraphic layers before the construction of the temple, the foundational structure of the stone-lined path, and the situation of the formation of earth layers after temple construction.

The stratigraphy of this square is relatively simple. It is basically in horizontal distribution (Figure XIII). The first layer is light tawny sandy soil, about 0.25 to 0.32 m thick. It is relatively dense. The root systems of the plants in this layer are very extensive. Bricks, tiles and pottery fragments were excavated here. The layer was probably formed when the French cleared and restored the stone-lined entry path.

The second layer is a dark tawny color, containing more sand. It is 0.45 to 0.65 m thick. More impurities were found in this layer. Tiles, fragments of pottery, and materials leftover from stone carving were excavated. This might be the pavement soil of the entry path. It belongs to the accumulation formed during the construction of the entry path with its border stones.

The third layer is grey-sepia clayey sandy soil. The texture of the soil is fine and dense. It contains a small number of carbon bits. It is 0.2 to 0.4 m thick. The bottom surface is uneven. It is only seen at the northeast side of the exploration square. Fragments of pottery were excavated in this layer.

The fourth layer is very moist grey-yellow sandy loam, with rusty iron spots. It is 0.05 to 0.2 m thick. It is mostly distributed in the southern part of the square. There are fragments of pottery and grains of red burnt soil.

The third and the fourth layers were formed before the entry path, probably before the construction of the temple. Analysis of the carbon bits and red burnt soil produced by fire and found near the river bank indicates that people were living here at that time.

Excavated Artefacts.

Metal ring fragment. Specimen II T2101③:1, damaged and broken, bronze. The metal is seriously corroded. It is flat on one side, and arched on the other. The remaining length is about 3.5 cm; it is 0.8 cm wide (Figure XIV, 1; Plate V, 5).

"Chinaware" fragment. Specimen II T2101②:2. Green china with a dim glaze. The outside wall is yellowish, and the inner wall nearly green. The center part of the vessel wall is raised. There is a shallow groove pressed on the lower part of the piece. It is about 0.5 cm thick (Figure XIV, 3).

Two fragments of glazed ware:

Specimen II T2103③:3, a damaged low pedestal foot. White-brown, with an urn matrix. White coating on both sides of the wall drips down without reaching the bottom. The remaining height is 3 cm; it is 0.8 cm thick and the bottom diameter is 6 cm (Figure XIV, 2; Plate VI, 2).

Specimen II T2101②:4, a fragment of the neck and belly portion of a container. Grey with dark reddish brown glaze. There is no glaze on the inner wall. The neck is slanted, with sloping shoulders. The decor consists of a cross-hatched pattern set between two rows of raised arc lines. The wall is 0.7 cm thick (Figure XIV, 4).

Seven pottery fragments:

Specimen II T2101④:5, a pot. Sandy red, fired at low heat and made on a wheel. It has an everted mouth and sharp lip. The mouth is thickened with a clay strip along its outer edge. It has a long neck formed in an arc shape, with broad shoulders. Its top diameter is 16 cm, the remaining height is 15.2 cm,

and the wall thickness is 0.6 cm (Figure XV, 1; Plate IV, 5).

Specimen II T2101④:6, a jar opening. Sandy red, with high sand content. Fired at low heat. It has an everted mouth, round lip, and folded edge. There is a raised arc design on the middle portion (Figure XVII, 5).

Specimen II T2101③:7, a jar opening. Spotted brown. The texture is quite solid. Fired at high temperature and made on a wheel. It has an everted mouth, square lip, rolled edge, and sloping shoulders (Figure XV, 6).

Specimen II T2101④:9, knob of a container cap. Sandy white. Sharp arched tip in a mushroom shape. The diameter of the knob is 3.7 cm, and the remaining height is 2.4 cm (Figure XV, 4).

Specimen II T2101④:10, pottery fragment with impressed arc design. Spotted brown. The texture is quite solid. Fired at low heat. The thickness of the wall is 0.5 cm (Figure XV, 3).

Specimen II T2101③:11, pottery fragment with raised arc design. Spotted grey. The texture is fine and smooth. Made on a wheel. The design is sharply raised. The thickness of the wall is 0.5 cm (Figure XV, 2).

Two tile fragments, both seriously damaged. Specimen II T2101②:12, a tile with nail. Sandy and tawny. The degree of arc is quite flat. The nail is in an edged cone-shape. The thickness of the wall is 0.7 cm (Figure XVI, 2).

Specimen II T2101②:13, a decorative tile. Spotted grey, with a raised leaf-shape decoration on the front side. The thickness of the wall is 1.7 cm (Figure XVI, 1).

f. II T0301, 0401, 0501

These two exploration tunnels are located at the eastern side of the cruciform terrace in the east of the site. They cross over the entrenchment and are connected with each other. They measure 10 m in length east-west and 1 m in width north-south. T0501 is at the eastern side of 0401. There is a 1 m bridge between the two. T0501 is 7 m long east-west (including the expanded square), and 1 m wide north-south. The total area of the three excavations is 17 m^2 (Plate I, 1).

Through the excavation, the team gained an understanding of the foundational structure of the cruciform terrace, the structure of the entrenchment, and the formation of the earth accumulations.

Aside from the surface earth, the ground layer accumulations consist mainly in the foundation of the cruciform terrace and alluvium in the entrenchment (Figure XVII). The first layer is the surface earth layer. It can be subdivided into two small alluvia layers. 1A layer can only be found in the western end of 0301. It is isabelline sandy loam and contains some gravel pieces. It is 0.1 m thick. 1B layer is found in all three locations. It is greyish-white dry sandy loam, in powder form. It is 0.1 to 0.2 m thick.

The second layer can also be divided into two small layers. 2A can only be found in the western portion of 0301. It is tawny sandy soil, and is dense with traces of water leaching. It is around 0.2 m thick. 2B layer is grey-sepia sandy loam. It is quite loose. It is 0.05 to 0.3 m thick. The root systems of plants are very extensive. Bricks, tiles, and fragments of pottery including "chinaware" are found here.

The third layer can be divided into two small layers. 3A is more widely distributed. It is black-sepia sandy loam. It is softer and humid. It is 0.4 to 0.6 m thick. It contains more tree roots and bricks, tiles, and pottery fragments. 3B can only be found in the western portion of 0301. It is black-sepia hardened soil, around 0.3 m thick. Fewer artefacts were found here.

The fourth layer is brown sandy loam. It contains a lot of tawny colored spots. It is 0.1 to 0.7 m thick and contains more cultural artefacts.

The fifth layer is tawny sandy loam. It is quite soft. It is mainly distributed in 0401 and 0501. It is 0.2 to 0.8 m thick. Several fragments of huge stone blocks fallen from the cruciform terrace are buried

here. There are very few other artefacts.

The sixth layer is only distributed in 0301. It can be divided into two small layers also. 6A is yellow-white sandy loam. It is quite pure and even. The texture is dense. The thickest area is about 0.6 m. There are very few impurities. 6B is grey-sepia pan soil. The texture is solid and dense. It is around 1.2 m thick. There are very few impurities. This is the foundational pavement. It is rammed.

Excavated Artefacts.

Fragment of stone sculpture, specimen II T0301③B:14. This piece belongs to the damaged upper part of a grey sandstone sculpted naga. All facial features are complete. The mouth is slightly damaged. The remaining height is 17.5 cm (Figure XVIII; Plate III, 6).

Ten pieces of "chinaware", all seriously damaged. The colors of the glaze can be classified into white, green-white, green, and green-yellow. The texture of the glaze can be identified as shiny-smooth, and dim-crispy.

Specimen II T0301④:1, a bowl. White china, with a white matrix, an everted mouth, round lip, rolled edge, arc-shaped belly. It is 0.3 cm thick and might be a product of the Chinese De-Hua kilns (Figure XIX, 6; Plate VI, 3).

Specimen II T0301③B:2, dishware. Green-white china with a greyish-white matrix. There is no glaze on the inner wall and the edge of the mouth. Restrained mouth, square lip, arc-shaped belly, and melon slice decor. It is 0.4 cm thick. It may be a Chinese import (Figure XIX, 4; Plate VI, 3).

Specimen II T0401④:1, a bowl. White china with ivory colored glaze and a cracked ice design. It has an everted opening, a greyish-white matrix, round lip, slanted belly, concavo-convex lotus petal design. It is 0.4 cm thick. This is a southern Chinese product (XIX, 1).

Specimen II T0301④:3, a bowl. White china with fine and spotted white matrix. The glaze is shiny. There is a cracked ice design on the thick glaze on both the inside and the outside edge of the mouth. It has a broad mouth and a slanted wall. The mouth edge was thickened on the outside (Figure XIX, 10; Plate VI, 3).

Specimen II T0501④:1, a box. Green-white china with white matrix and shiny glaze. The opening edge is thickened. There is a sunken groove for placing the cap on top. It has a slanted wall (Figure XIX, 3).

Specimen II T0501④:2, a short pedestal base. Green china with white matrix. The inside of the pedestal foot is unglazed. The bottom diameter is 5.3 cm (Figure XIX, 8).

Specimen II T0301④:4, a cuspidor. Green-yellow china with light grey matrix. Green spots in the green-yellow glaze. The glaze is partially cracked on both the inside and the outside of the wall. It has a broad opening, a round lip and a bulging belly. There is a raised linear design on the neck. Its top diameter is 12 cm, and the remaining height is 4.4 cm (Figure XIX, 9; Plate VI, 4).

Specimen II T0301④:5, a box. Green-yellow glaze that tends to be grey with the grey matrix. The glaze on the outside wall has basically cracked off. The glaze layer on the inside wall is very thin. It has a sub-opening, an inclined shoulder, and a slanted arc belly (Figure XIX, 5).

Specimen II T0501④:3, a container cap. This piece has a green-yellow glaze that tends to be grey with a greyish-white matrix. The glaze has mostly cracked off. It has a straight opening and an arc tip with a raised and flattened center knob. The inner wall is sunken. The knob is damaged. Its top diameter is 8.4 cm (Figure XIX, 2).

Specimen II T0301④:6, a container cap. This piece has a green-yellow glaze that tends to be green with the grey matrix. Both inner and outside walls fully glazed. There is no knob on top of the arc (Figure XIX, 7).

Five pieces of glazed ware, all fragmentary:

Specimen II T0501③:1, a jar. Dark sepia glaze with sandy grey matrix, everted opening, thickened round lip, rolled edge. Linear design on the shoulder portion (Figure XX, 1).

Specimen II T0501③:2, a container cap. Dark reddish brown glaze with grey matrix, sub-opening, and sloping top. An incised cross-hatched pattern is set between two rows of linear design on the outside wall. (Figure XXII, 2; Plate VI, 1).

Specimen II T0501③:5, a container cap. Dark reddish black glaze with smooth sandy grey matrix. The top is sunken inward, and the belly of the cap is raised outward. There is a thin extruding brim, and a mushroom shaped knob. The diameter of the cap is 9.3 cm. It is 2.3 cm high (Figure XX, 4; Plate VI, 1).

Specimen II T0501③:3, a container base. The piece has a smooth sandy grey matrix. The glaze is cracked off. Several rows of linear design decorate the wall (Figure XX, 5).

Specimen II T0401②B:1, a bridge-shaped vessel lug. Grey urn matrix (Figure XX, 3).

Pottery fragments are abundant:

Specimen II T0301④:7, a jar. Sandy brown, with large sand grains. Everted mouth, sharp round lip, rolled edge, and sloping shoulder. Its top diameter is 24.5 cm (Figure XXI, 6).

Specimen II T0301④:8, a jar. Smooth sandy white-brown. The piece has a thickened round lip and a rolled opening edge with the inner side hooked upward. Its top diameter is 24 cm (Figure XXI, 2).

Specimen II T0301③B:2, a jar. Sandy red. Turned on a wheel. The piece has an everted mouth, a sharp round lip, and a folded edge. The surface of the edge is slightly sunken. Its top diameter is 17.6 cm (Figure XXI, 5).

Specimen II T0301④:9, a jar. Carbon filled grey. The surface is plastered with brown clay. Its matrix is grey-black. Inclusion of materials such as leaves and stems caused tiny bubbles to form during firing. It has an everted mouth, round lip and rolled edge, with the inner side of the opening edge hooked upward (Figure XXI, 4; Plate IV, 3).

Specimen II T0401④:5, a pot. Spotted red. The texture is quite fine. Broad mouth, thickened round lip, rolled edge and long arc neck. A raised linear design decorates the shoulder. Its top diameter is 16.5 cm (Figure XXI, 3; Plate IV, 8).

Specimen II T0301③B:3, a pot. Carbon filled grey. The surface of the piece is plastered with brown clay. The matrix has many holes. The piece has a broad opening, square lip and long neck. Its top diameter is 10.6 cm (Figure XXI, 7).

Specimen II T0301④:10, an alms bowl. Sandy red, with traces of black burnt on the surface. Wide opening, round lip; the outer surface of the edge is sunken. Its top diameter is 28 cm (Figure XXI, 1; Plate V, 8).

Specimen II T0401④:6, a pedestal foot. Sandy white-brown. The surface of the piece is quite rough. It was made by first shaping clay parts which were then turned on a wheel. Its opening is horn-shaped. The bottom side folds outwardly. Its bottom diameter is 8 cm (Figure XXI, 8; Plate V, 8).

Three fragments of pottery components and decorations, all broken:

Specimen II T0301③B:6, a pottery mold component. Spotted brown, in bent cylinder shape. The upper part is in the shape of divided petals with a top end pointed like a leaf. The remaining height is 6.7 cm (Figure XXII, 1; Plate V, 5).

Specimen II T0401②B:2, a cone-shaped vessel fragment. Spotted red. This is probably an accessory part extruding from the lower portion of an object. The remaining height is 2.9 cm (Figure XXII, 2).

Specimen II T0301③B:7, a hollow brick-shaped object. Spotted white-brown. This is probably an architectural component (Figure XXII, 3; Plate V, 6).

g. III T1511, 1512

These two connected exploration tunnels are located in the southern part of the site, about 35 m away from the SET. They are 10 m long north-south and 1 m wide east-west. The area of excavation is 10 m^2. Through the excavation, the team gained an understanding of the condition of the peripheral area of the temple.

The accumulation excavated is generally sloped with the north higher than the south. There are 5 layers (Figure XXIII). The first layer is grey-brown colored sandy soil, containing a lot of organic remains. The plant root systems are extensive. It is about 0.25 to 0.3 m thick. Bricks, tiles, and pottery fragments were excavated in this layer.

The second layer is tawny sandy loam. The texture is loose, and contains many impurities. It is 0.3 to 0.65 m thick. Fragments of tiles, glazed pottery and "chinaware" were excavated in this layer.

The third layer can be divided into two smaller A and B two layers, according to trivial differences. 3A is light yellow fine grain sandy loam. The color tends to be white, and the structure is dense. It is hardened, and is mainly found in the northern half. It is 0.35 to 0.6 m thick. Very few artefacts were found here. 3B is yellowish brown sandy loam. Its structure is looser and softer. It contains more ash, and there are also traces of burning. It is 0.5 to 1.25 m thick. Quite a number of fragments of tiles, glazed pottery and "chinaware" were excavated here.

The fourth layer is tawny sandy soil. Its structure is loose. It is 0.2 to 0.45 m thick. It is mainly distributed in the south. Very few artefacts were excavated here.

The fifth layer is brownish grey sandy soil. Its structure is dense, with rusty spots. It goes upward from east to west. It is 0.3 to 0.4 m thick. Small pieces of pottery fragments and carbon bits were excavated in this layer.

Excavated Artefacts.

Nine fragments of "chinaware":

Specimen T1511③B:1, the neck of a pot. Green china. The glaze is yellowish with a cracked ice design. The glaze on the lower half of the inner wall is cracked off. A sunken linear design is applied.

Specimen T1511③B:2, a bowl. Green china. The glaze is dim with a grey matrix. The surface is not flat. It has a broad opening, round lip, and arc shape belly. Its top diameter is 20 cm.

Specimen T1511②:1, a box. Green-yellow glaze, greyish-white matrix, sub-opening, sharp lip, and arc shaped belly. Its top diameter is 5 cm.

Specimen T1511④:1, a container cap. Green-yellow china. A lot of the glaze is cracked off. It has a grey matrix, straight opening, round lip, extruding brim, and arc shaped belly. Wheel marks can be seen. Its top diameter is 9.2 cm.

Specimen T1511③A:1, a container cap. Green china with a light grey sandy matrix. Turned on a wheel. It has an arc shaped top, a mushroom knob. Linear and sculpted design applied.

Specimen T1511③A:2, a container cap. Green-white china with thin white matrix. The glaze is fine and smooth. The piece has a pressed sunken flower design (Plate VI, 3).

Specimen T1511④:2, a container base. This piece has green-yellow glaze with a greyish-white matrix. A lot of the glaze is cracked off. Wheel marks can be seen on the inner wall. The lower belly is folded. It has a fake pedestal foot. The bottom diameter is 10 cm.

Specimen T1511③B:3, a container base. Green-white china with a white matrix. No glaze on the bottom. Cracked ice design on the inner wall. There is a raised picked flower design on the outside wall (Plate VI, 3).

Five fragments of glazed pottery:

Specimen T1511③A:4, a box with dark reddish brown glaze. The color of the glaze is intertwined with yellow and black. The matrix contains smooth sand and is grey-black. It has a round lip, folded edge, and bulging belly. Its top diameter is 17.2 cm.

Specimen T1511③A:5, a pot with dark reddish brown glaze. The matrix contains smooth sand and is grey-brown. It has a round lip, rolled edge, and bent neck. Its top diameter is 12.6 cm (Plate VI, 1).

Specimen T1511③A:6, a container cap with dark reddish brown glaze and black-grey matrix. The glaze is basically cracked off. It has a straight opening, sharp lip, extruding brim, and sloped top. Its top diameter is 9.5 cm.

Specimen T1511③A:7, a container base with dark reddish brown glaze and black-grey sandy matrix. The inner wall is fully glazed. There is no glaze on the outside bottom. The bottom is flat. Several rows of sunken linear design are applied. The bottom diameter is 14 cm (Plate V, 7).

Specimen T1511③A:8, glazed ware with spotted brown matrix. The surface has fresh green glaze, with attached brown clay strips forming a bamboo joint design. The turning design on the inner wall is like that of tiles. The upper half is covered in white. This piece is probably a multi-colored Chinese container from the Song Dynasty (Plate VI, 2).

Abundant pottery fragments:

Specimen T1511④:3, a jar. Smooth sandy red. Turned on a wheel. It has a an everted mouth, round lip, rolled edge, round shoulder, and bulging belly. There are 2 rows of sunken linear design. Its top diameter is 13.6 cm, and the remaining height is 14 cm (Figure XXIV, 1; Plate IV, 7).

Specimen T1511③B:4, a jar. Smooth, sandy and tawny. The piece has a square lip, rolled edge, and raised ridge along the edge of the lip (Figure XXIV, 8).

Specimen T1511④:4, a jar. Sandy red. Made on a wheel. It has a thickened round lip, restrained opening and slanted shoulder. Its top diameter is 19 cm (Figure XXIV, 3).

Specimen T1511③B:5, a pot. Smooth sandy red. Sharp round lip, everted mouth and slanted neck. Its top diameter is 9 cm (Figure XXIV, 9).

Specimen T1511③A:9, a basin. Sandy brown. The texture is quite solid. Square lip, rolled edge, bulging belly and linear pattern on the shoulder (Figure XXIV, 10).

Specimen T1511③B:6, an alms bowl. Smooth sandy red. Black burn traces can be seen on the surface. The piece has a round lip, restrained opening, and bulging belly. Its top diameter is 17.6 cm (Figure XXIV, 6).

Specimen T1511④:5, an alms bowl. Spotted brown. Made on a wheel. A sharp bamboo stick shaving mark can be seen on the inner wall. There are two sets of sunken linear patterns on the surface. Its top diameter is 25 cm (Figure XXIV, 2; Plate VI, 5).

Specimen T1511③B:7, a box. Spotted russet. The piece has a restrained opening, square lip, and arc shaped belly (Figure XXIV, 5).

Specimen T1511③A:10, dishware. Spotted tawny. Made on a wheel. It has a broad opening, round lip, and short pedestal foot. The surface has a tile-like design. Its top diameter is 24 cm (Figure XXIV, 7).

Specimen T1511③B:7. Pot fragment with linear and impressed design. Spotted brown (Plate VI, 5).

Tiles are abundant, all broken:

Specimen T1511④:6, smooth sandy tawny. Flat-topped tile with curved sides. Its head is wider

than its tail. A clay strip is attached. The thickness of the wall is 1.2 cm (Figure XXV, 1; Plate V, 1).

Specimen T1511②A:3, sandy brown slightly arched tile. Its front end is arched. The wall is 0.8 cm thick (Figure XV, 2).

IV. Archaeological Exploration

As coring equipment did not arrive according to the planned schedule, the archaeological exploration was postponed until after the excavation had basically been completed. Although this change was disadvantageous for effectively increasing the unit rate of return for the excavation area, it provided the exploration with more precise identification and analysis of the ground layers, and an understanding of the earth accumulations.

Most coring was done manually. As the layers are primarily sandy loam or sandy soil, the team used a combined coring method, using both a Luo-Yang shovel and a Rotating Harness shovel. The exploration work lasted from January 12 - 20, 1999.

As the site is characterized by large-scale structures, the exploratory bore-holes were distributed loosely, with an average interval of 5 m between the bore-holes. A total of 81 holes were drilled. Basically, each hole was bored up to the natural soil.

Aside from the general exploration, key explorations with small bore-hole intervals were also carried out in areas where the structure or the form of the remains needed to be studied.

Through the exploration, we learned that the earth accumulations of Chau Say Tevoda have certain variations according to specific location. Except the surface earth (containing the contemporary accumulation formed during site clearance) and the natural soil, there are 8 types of accumulations that can be identified according to the texture and color of the soil within the whole site. But there are usually no more than 4 types of soil in the individual bore-holes. The natural characteristics of the accumulations can be roughly classified as sandy loam (or sandy soil) and clay, the sandy loam being the more dominant of the two. The accumulations uncovered are constituted by both man-made architectural foundations and road foundations, as well as natural layers formed by alluvial and other deposition.

Confronted with information gained through archeological excavations, the exploration shows that:

a. The range of the site, in a long and narrow rectangular shape in the east-west direction and slightly wider in the north-south direction, basically corresponds to the temple structures. There are some remains formed by daily living in some peripheral areas.

b. There is no surrounding moat. The long entrenchment on the remote side of the cruciform terrace in the east side of the site is a drain running from south to north, which was probably formed after the temple was abandoned.

The northern end of the drain, which is at the northern side of the terrace, is probably connected with the sunken pit at the northwest of the terrace.

The irregular shaped pit between the cruciform terrace and the entry path might have been formed with the influence of rainwater from both sides during the monsoon season. This became the lowest point of the trench. The collapse of the steps at the eastern end of the Terrace was directly caused by rainwater erosion.

c. With the exception of the ponds on both sides of the eastern access path, the pits distributed in the periphery of the site would have been formed mostly after the temple was abandoned. These are probably ponds formed by farmers of later generations utilizing the original sunken landform. The shapes of

these sunken pits are irregular. They also vary in depth. All of them contain a certain amount of leached and depository accumulations. Stone materials or bricks and tiles fallen from the temple can be found occasionally in the bottom of the accumulation.

d. There is a manually paved road outside of the WET. The portion of the road that can be explored is 4.5 m wide and at least over 70 m long (because this road extends into the forest, it can't be explored any further). The road foundation is composed, from top to bottom, of tawny sandy loam, isabelline pan soil and sepia clay. It was rammed. The depth of the road foundation varies due to the rough landform of the original ground surface. It is over 1.5 m deep at most points, with some exceptional areas reaching 2 m.

e. The foundations of the elevated causeway and the cruciform terrace are typically located within 1.5 m of the outer edge of the structures. The depth of the cruciform terrace is around 1.8 m, and the elevated causeway is no more than 1.5 m. Both are layered pavements, and were rammed. However, the texture and color of the soil used for the two foundations are different, indicating that they were probably formed during different periods.

f. A stone platform lies 15.2 m from the NET (Plate I, 5,6). The platform is basically on the same axis with the NET. It is 3.55 m wide in the east-west direction. As the northern platform base is missing, the remaining width is 5.35 m in the north-south direction. The remaining height of the platform is 0.29 m. There is one lift of laterite. Two fragments of seven-head nagas were found near the platform (Plate III, 1). This proves that there were nagas-balustrades on the platform. The existence of the platform indicates that the NET, which is facing the road leading out from the Victory Gate, was used as the main passageway for entering Chau Say Tevoda for a certain period of time.

V. Conclusion

Although the positions of the earth layers discovered through excavation and exploration vary according to their different locations, three basic layer types can be defined: those formed by construction, by alluvia, and by other human production and living activity. Four stages of layering can be determined in relation to the temple: before temple construction, during temple construction, during temple use, after temple abandonment.

The layers under the bedding soil of the entry path and its border stones and the foundations of the structures are considered to predate the temple construction. These are the earliest remains of the site. Analysis of T2101 indicates that this probably represents remains of human activity during that time.

The rammed soil and the filled sand in the foundation of the structure and the cruciform terrace are dated to the time of temple construction.

The earth for the roads outside the four entries postdate temple use. The accumulation that buries the structures and the roads was formed after the temple was abandoned.

It is still difficult to draw definitive conclusions about the absolute date of all artefacts. We found very few artefacts predating temple construction, such as those from T2101. Findings there consist basically in pottery; there is no "chinaware", brick nor tiles. The date is therefore estimated to be quite early. Because the date of construction and use of Chau Say Tevoda is quite clear, the date of the artefacts for this period can also be identified more definitely. This dating is also corroborated by the fact that imported Chinese ware excavated from the accumulations all belonged to the periods of the Song and Yuan Dynasties.

After the temple was abandoned, a lack of maintenance would have allowed for new accumulations

to form very quickly. Analysis of the notably slight weathering of the excavated stone sculpture indicates that this type of accumulation was formed shortly after the temple was abandoned. The cause of the formation would have mainly been natural factors. Afterwards, still newer layers were formed by farming activities and contemporary clearing. The dating of accumulations at the site after abandonment are therefore relatively complex.

The excavation of IV T0901 on the north side of the main passageway of the EET and the elevated causeway, and of II T1405 at the southeast corner at the outer side of the SET, demonstrated the existence of a common feature for the foundation structures of the temple buildings. They all used laterite as foundational stone. The size of the laterite foundations differs according to the scale of the buildings. For example, the front gate of Chau Say Tevoda, the EET, is larger in scale than the other three gates. The load-bearing capacity of its foundation therefore needed to be strengthened. Accordingly, the stone foundation of the EET is made of two lifts of laterite. As the scale of the SET is smaller, it only uses one lift of laterite. The same goes for the WET and the NET. A yellow sand layer lies under the laterite of all gates. The sand layer for the EET reaches 2.1 m thick, and can be divided into sub-layers. The thickness of each sub-layer varies, ranging from 15 to 25 cm. Therefore, we can conclude that it was laid layer by layer when the sand layers were processed.

The foundational trench excavated at the SET is smaller than that of the EET. From the excavated part, one can only see the edge of the foundation trench. Therefore the sand layer is thinner. Coring at the center of the SET hall showed the yellow sand layer there to be about 1.6 m thick. The yellow sand layers at the NET and the WET are all about 2 m thick. What we see here is a typical example of Angkorian temple foundations.

The sequence of construction for the foundations is first to dig out an inverted ladder-shaped foundational trench, and then to lay sand layer by layer, and finally to lay the laterite. The main structures were then built. After the carving of the structures was completed, the sandstone chips from the carving together with lime soil were used for laying a bed up to the laterite layer. This was then manually rammed to make for a solid bed, protecting the foundation.

Excavations show the date of construction of the elevated causeway to have followed that of the temple itself. The same goes for the passageway between the EET and the central sanctuary. These belong to the same period. Yet, the fact that sculptural patterns of the decorative border of the elevated causeway resemble those of other temple structures, suggests that the causeway was constructed shortly after completion of the main structures.

The abundance of Chinese ware excavated reflects relations between China and Cambodia. Analysis of identifiable pieces indicates that basically all were produced in southern China during the Song and Yuan Dynasties. Among them, the more readily identifiable ones come from the Dragon-Fountain kilns, the De-Hua kilns, and some other areas of Fujian province.

There is also some green-white chinaware which could come from Jing-De-Zhen. In his book, *Cultural Documentaries of Zhen La* (published in English under the title *Customs of Cambodia*), Zhou Da-Guan of the Yuan Dynasty recorded that ceramics from Quan Zhou and Chu Zhou figured prominently among items traded between China and ancient Cambodia. The archaeological findings of Chau Say Tevoda confirm this.

Although Chau Say Tevoda is only a minor element of the Angkorian heritage, the temple has model significance in terms of layout, installation, sequence of constructions and changes in religious worship. This archaeological excavation has only uncovered some clues for developing further understandings. We are sure that more questions will be raised and answered as the overall restoration work is performed, thus making a greater contribution to research at Angkor as a whole.

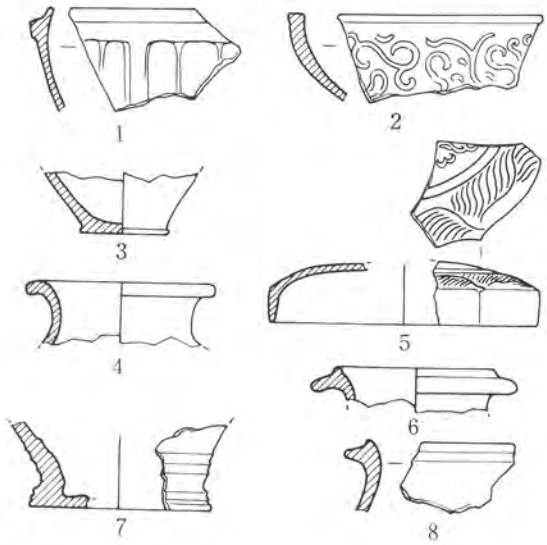

Figure I: Collected pottery fragments

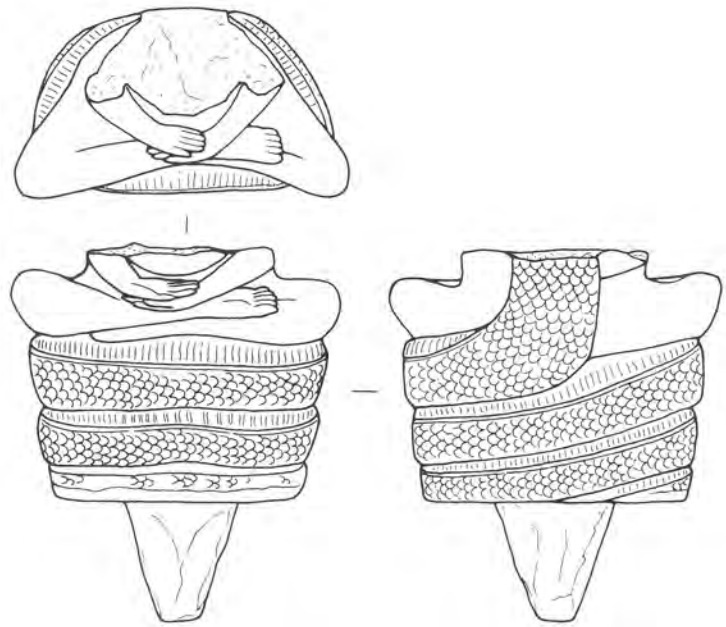

Figure II: Buddha Image

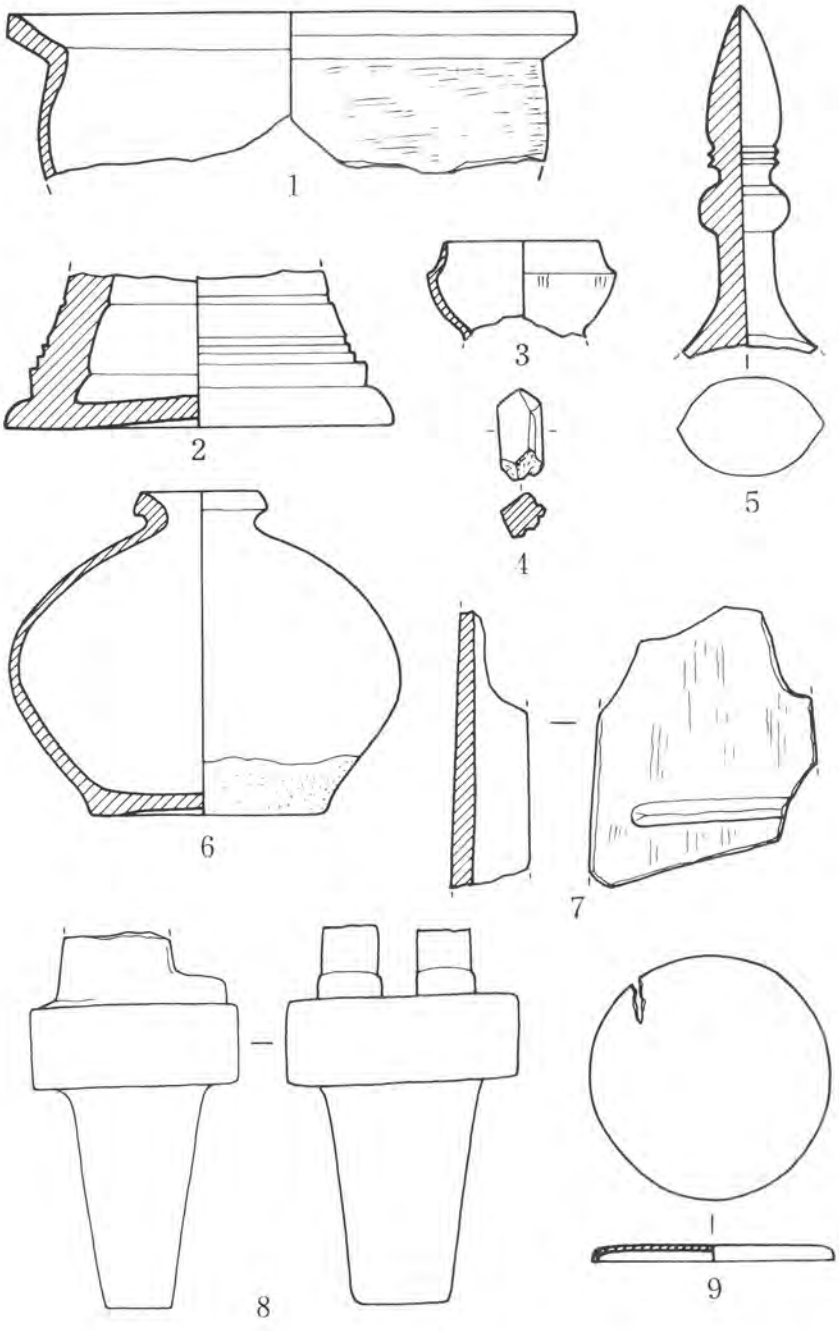

Figure III: Collected Artefacts

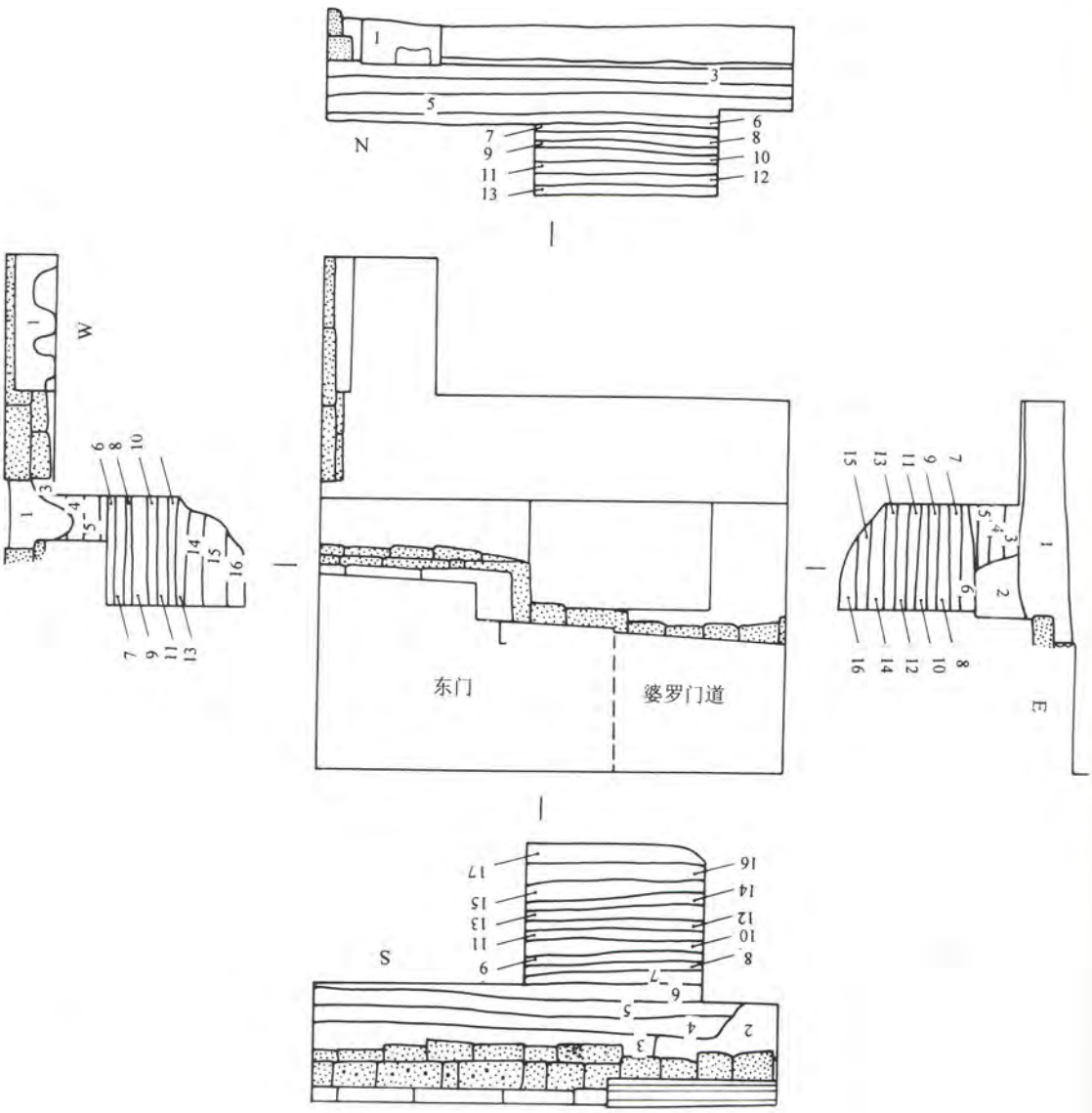

Figure IV: IV T0901, Plan and Section 1:50

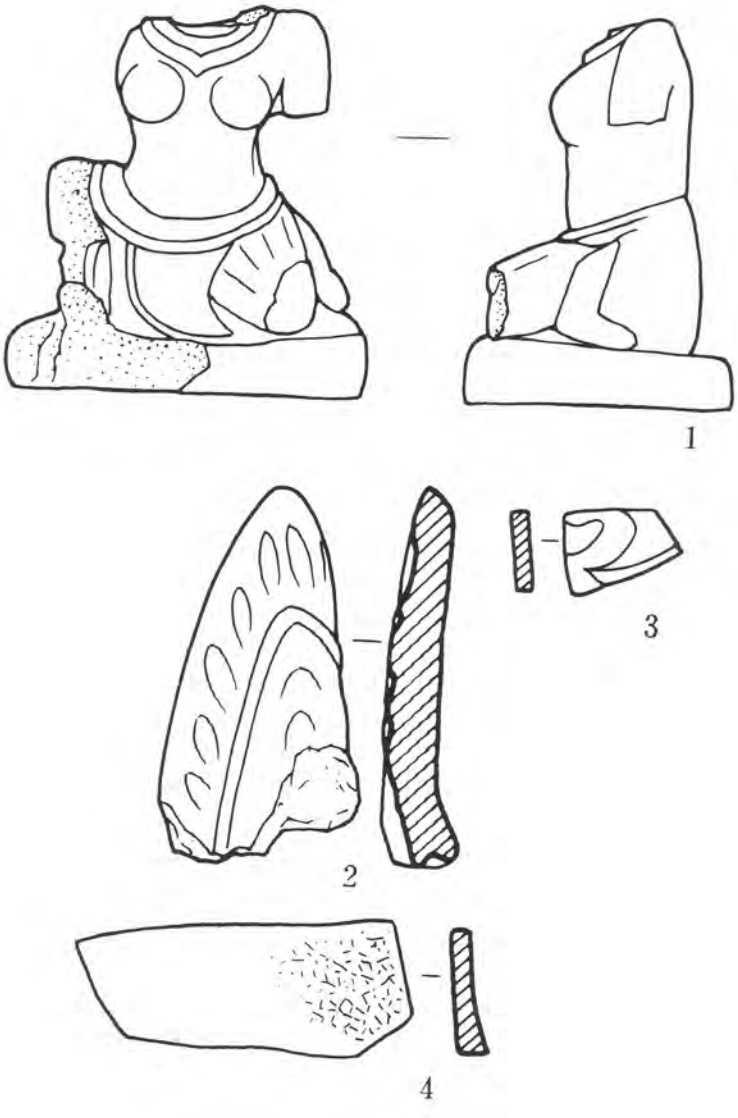

Figure V: Artefacts Excavated in IV T0901

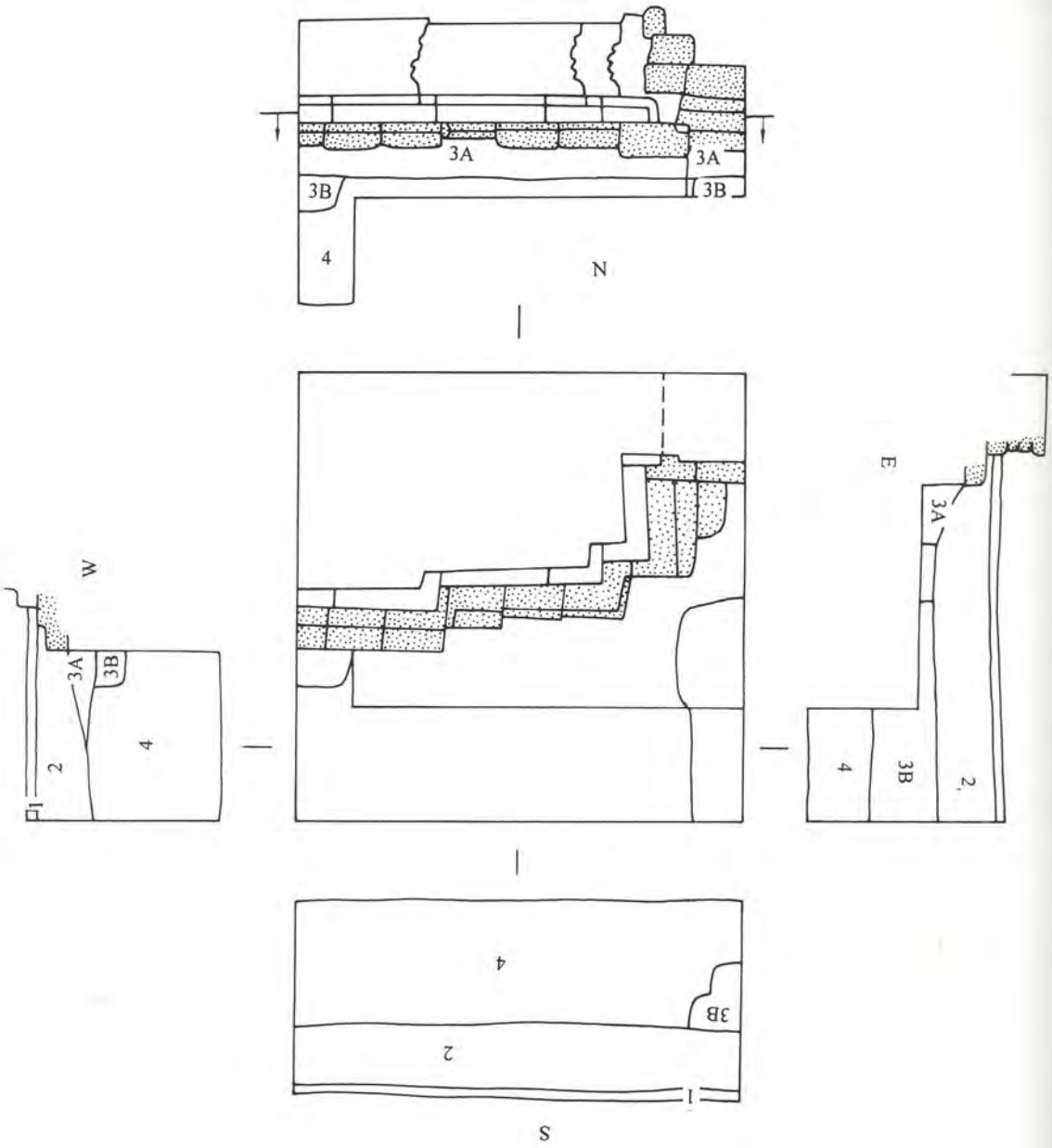

Figure VI: III T1405, Plan and Section 1:50

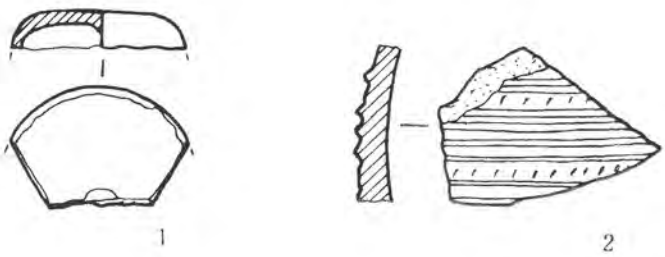

Figure VII: Ceramics excavated from III 1405

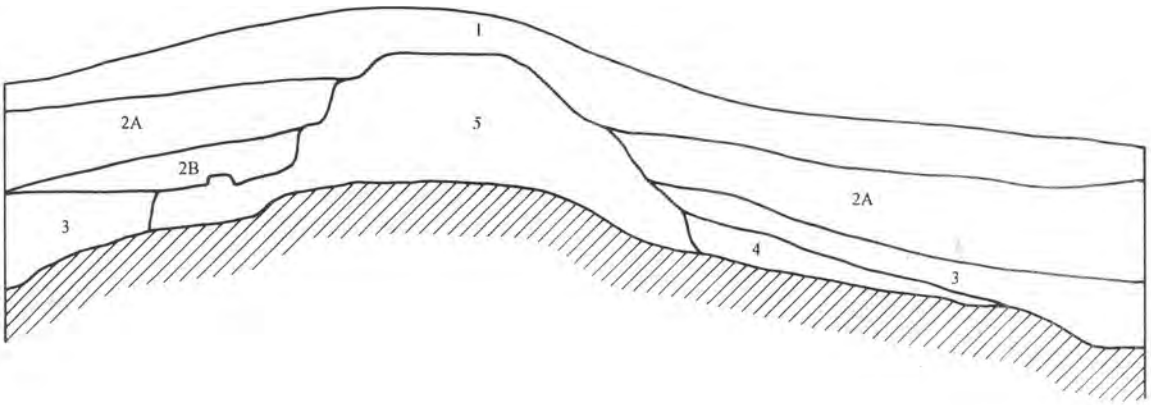

Figure VIII: II, III T0106, Section of southern wall 1:50

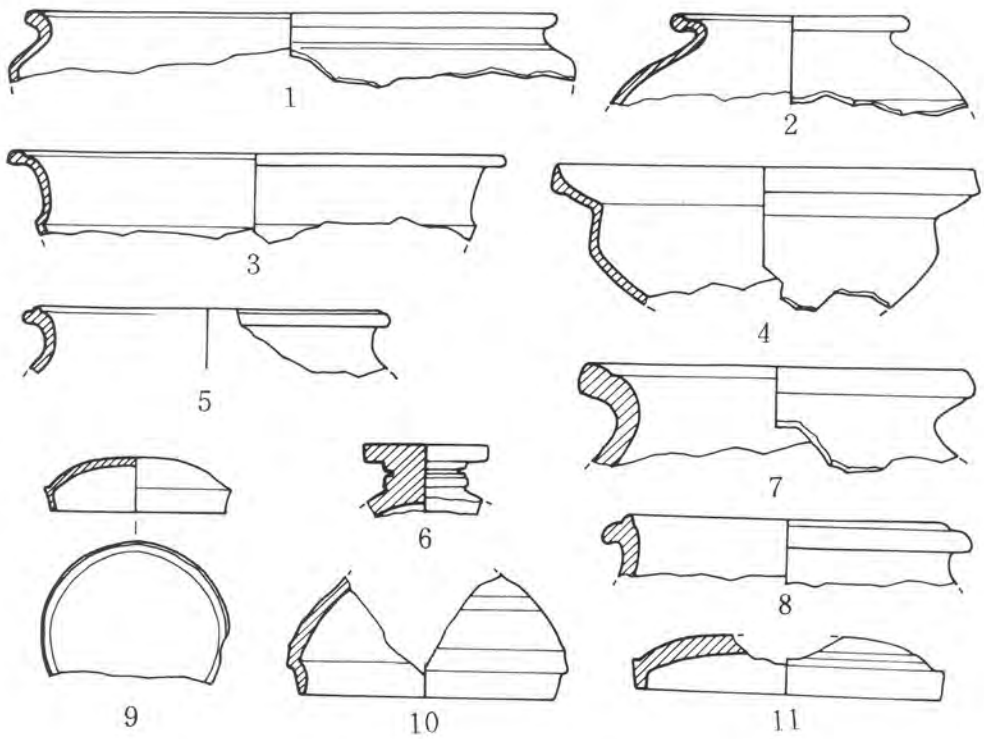

Figure IX: Artefacts excavated from III T0106

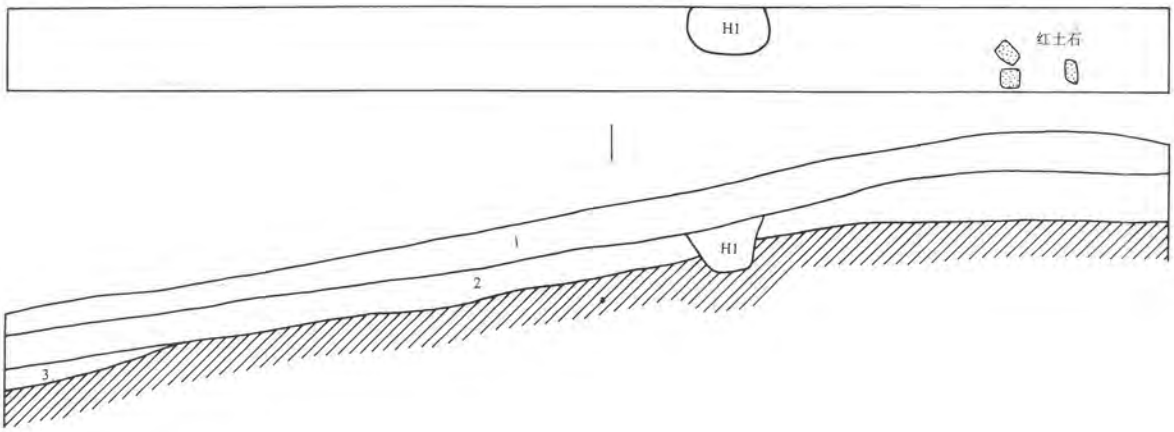

Figure X: Plan and Eastern Wall Section, T1501-1503

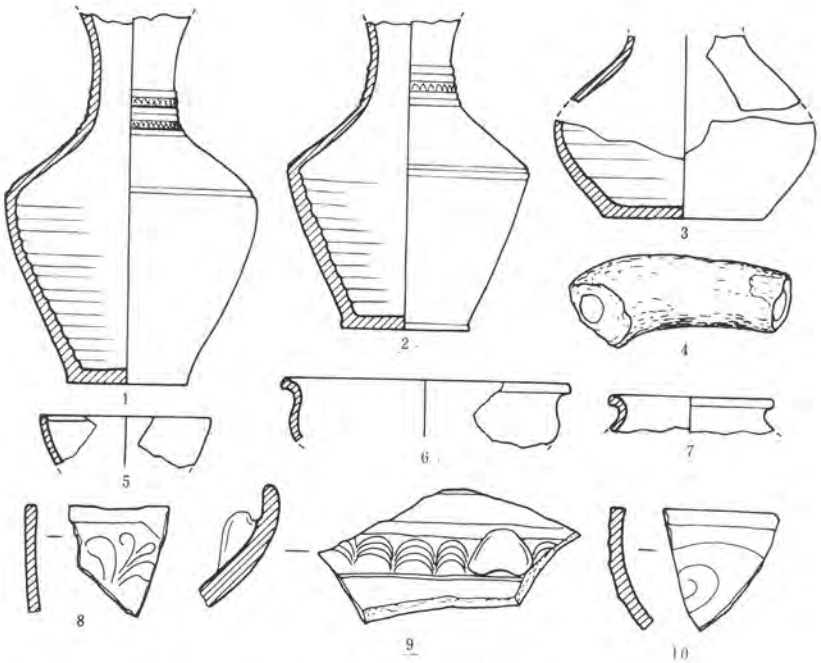

Figure XI: Artefacts excavated from I T1501-1503

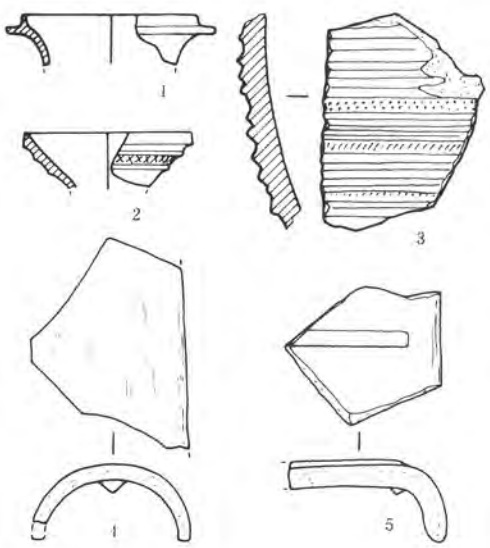

Figure XII: Artefacts excavated from I T1503③

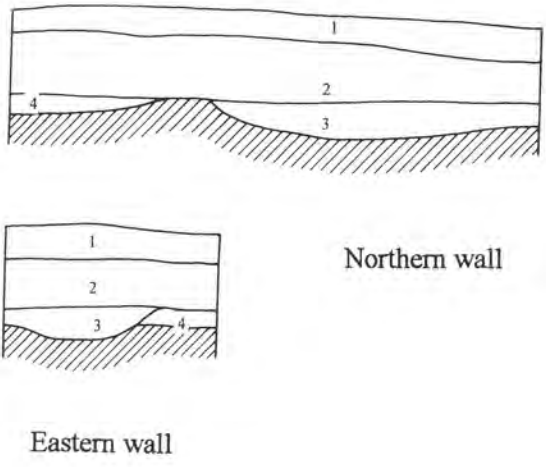

Figure XIII: Section of eastern and northern wall in II T2101 1:50

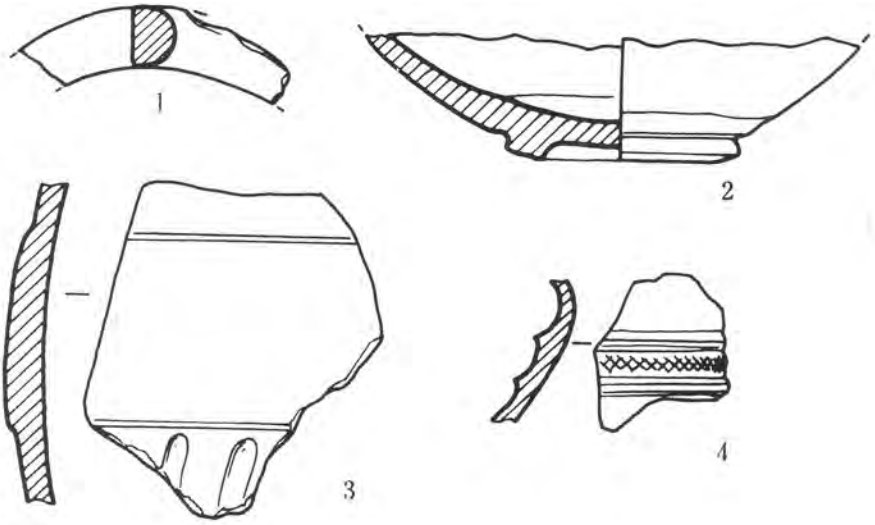

Figure XIV: Artefacts excavated from II T2101

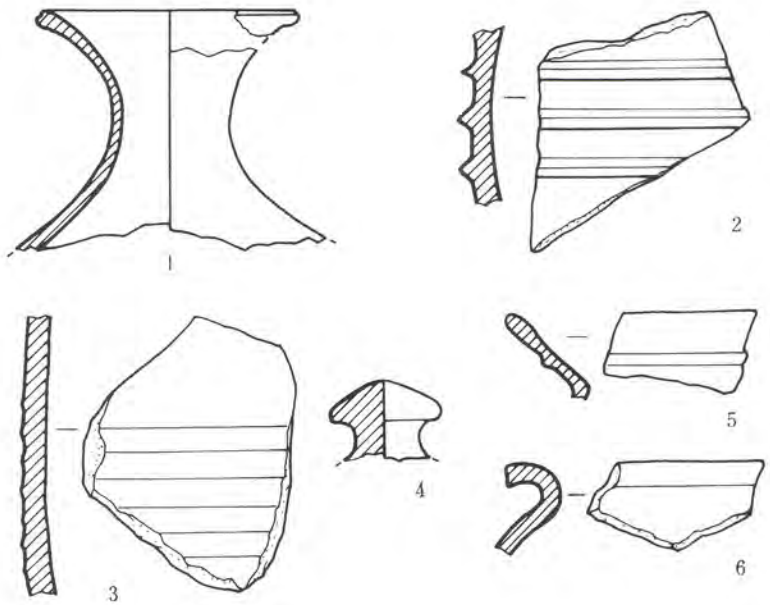

Figure XV: Ceramics excavated from II T2101

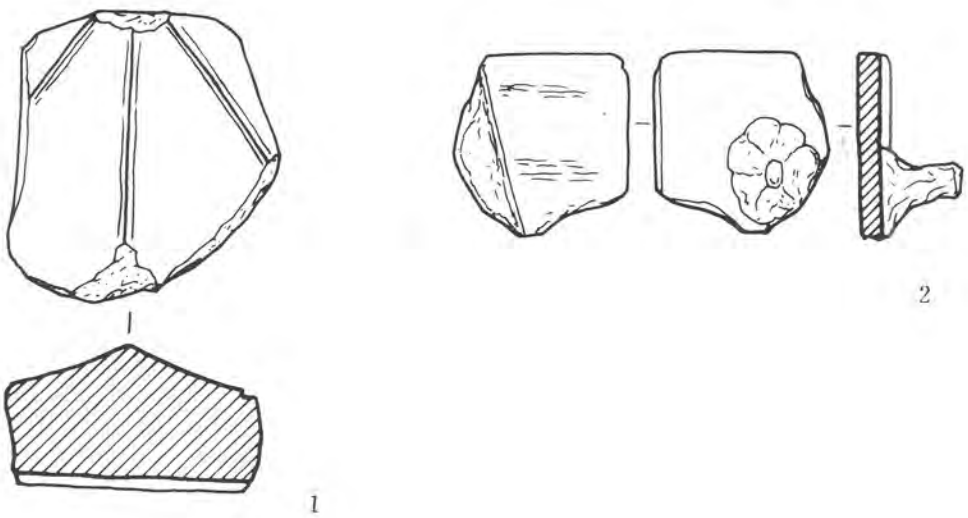

Figure XVI: Tile fragments excavated from II T2101

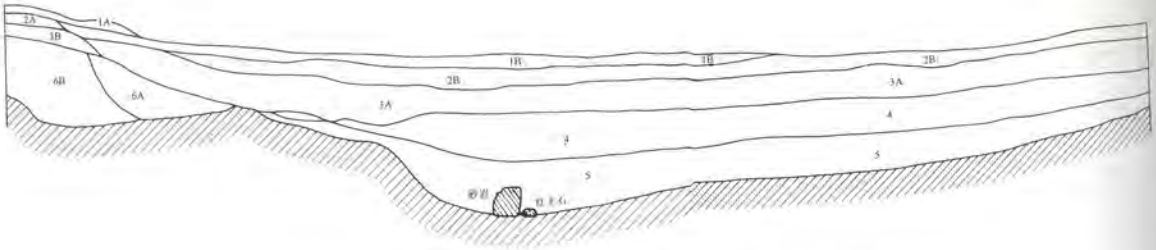

Figure XVII: Section of eastern wall in II T0301-0501 1:50

Figure XVIII: Stone sculpture fragment excavated from II T0301

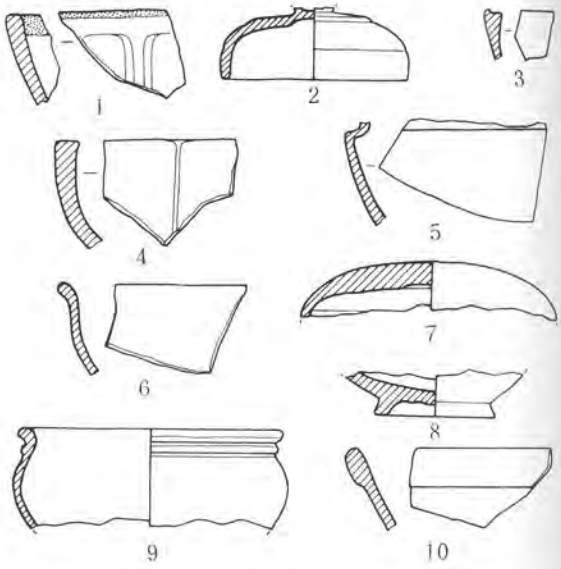

Figure XIX: Ceramics excavated from II T0301-0501

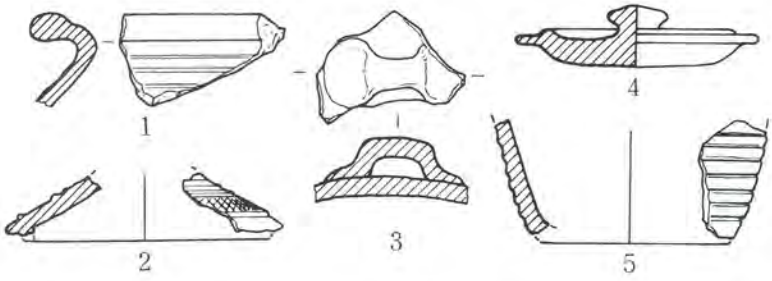

Figure XX: Excavated glazed ware fragments

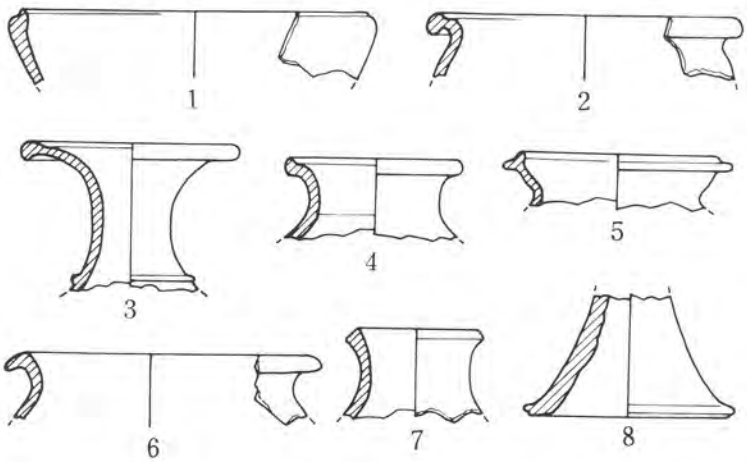

Figure XXI: Pottery fragments excavated from II T0301-0501

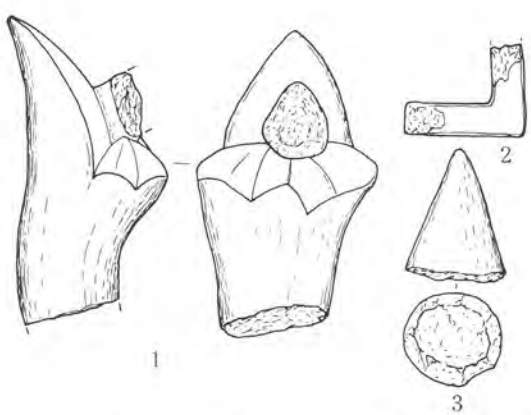

Figure XXII: Architectural components excavated from II T0301-0501

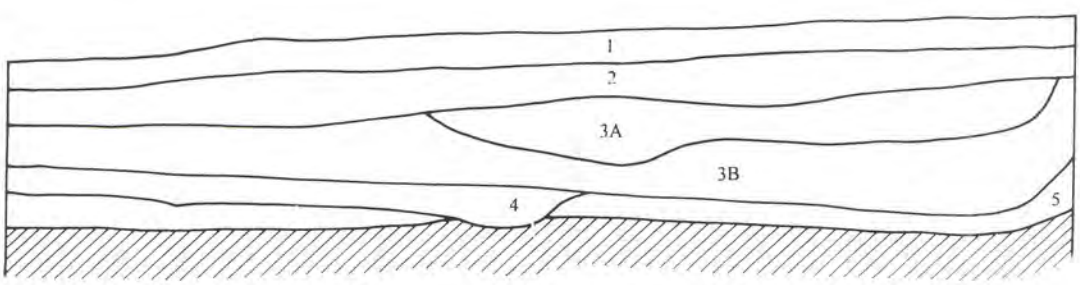

Figure XXIII: Section of western wall in III T1511-1512 1:50

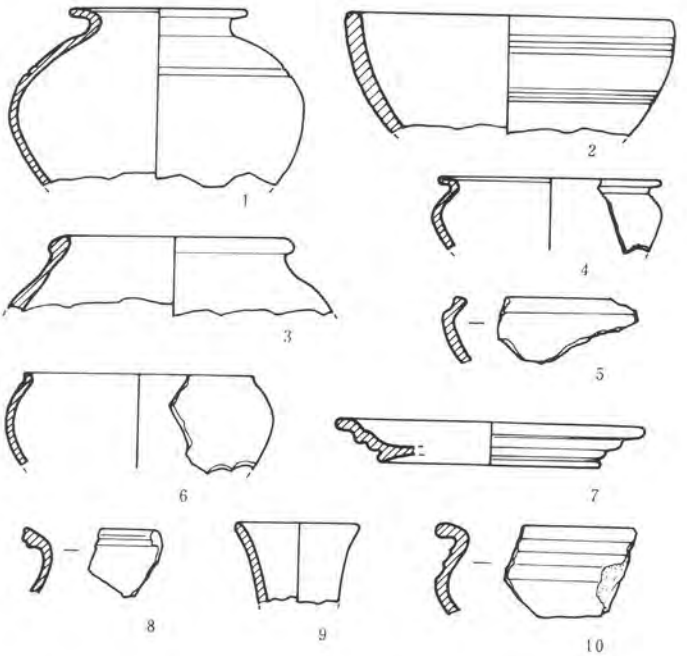

Figure XXIV: Pottery fragments excavated from III T1511

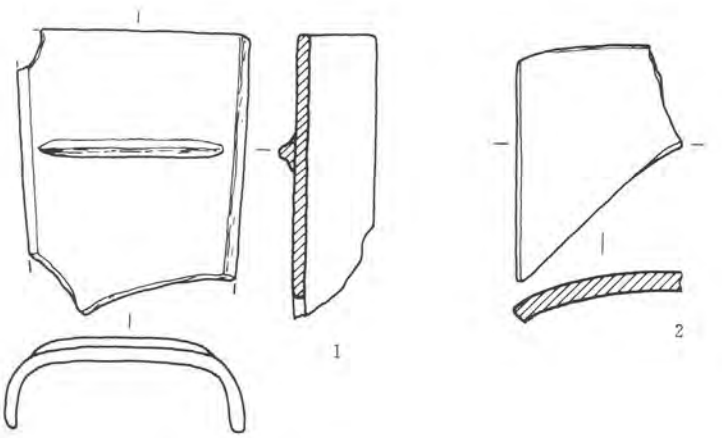

Figure XXV: Tile fragments excavated in III T1511

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Plate I

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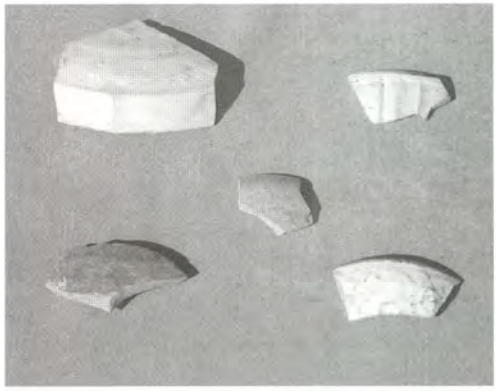

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Plate III

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Plate IV

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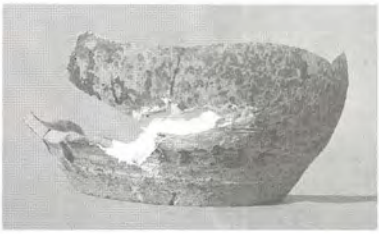

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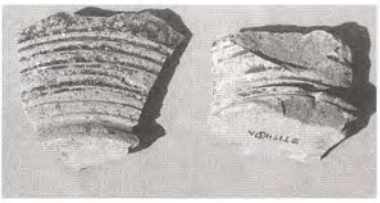

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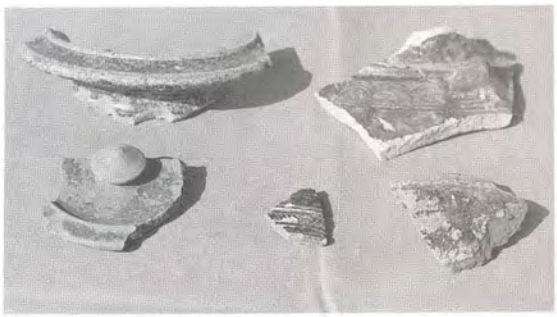
Plate V



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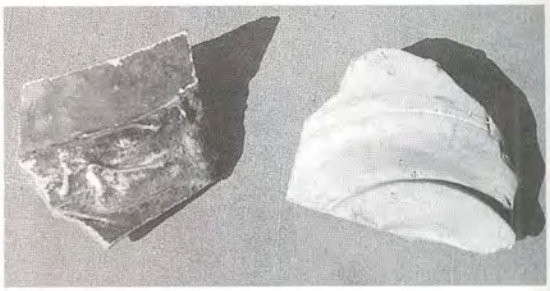

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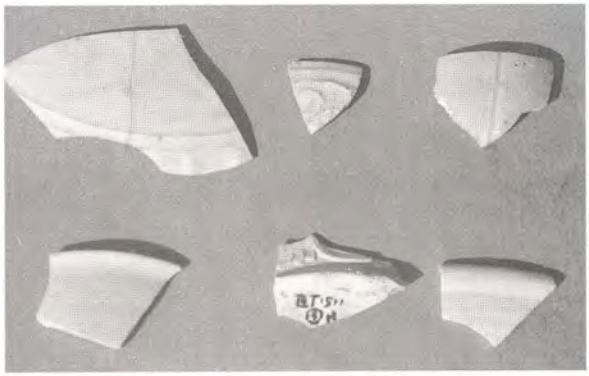

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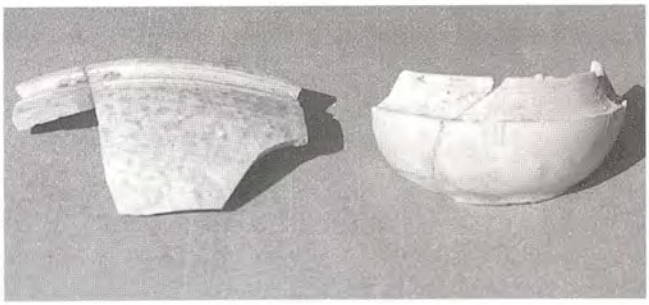

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Plate VI