

**THE SUPPORT STUDY REPORT
FOR
THE BURIED CULTURAL PROPERTY SURVEY
ON
THE PROJECT FOR IMPROVEMENT
OF VIENTIANE NO.1 ROAD
IN
LAO PEOPLE'S DEMOCRATIC REPUBLIC**

November 2004

**JAPAN INTERNATIONAL COOPERATION AGENCY
KOKUSAI KOGYO CO., LTD.**

Preface

In response to a request from the Government of Lao People's Democratic Republic, the Government of Japan decided to conduct a support study for the buried cultural property survey on The Project for Improvement of Vientiane NO.1 Road in Lao People's Democratic Republic and entrusted the study to the Japan International Cooperation Agency (JICA).

JICA sent a study team to Laos from the 7th of June to the 8th of October, 2004.

The team held discussions with the officials concerned from the Government of Laos, and conducted a field study at the study area and as a result, the present report was finalized.

I hope that this report will contribute to the promotion of the project and to the enhancement of friendly relations between our two countries.

I wish to express my sincere appreciation to the officials concerned from the Government of Lao People's Democratic Republic for their close cooperation extended to the team.

November 2004

Seiji Kojima

Vice President

Japan International Cooperation Agency

Letter of Transmittal

We are pleased to submit to you the support study report for the Buried Cultural Property Survey on The Project for Improvement of Vientiane NO.1 Road in Lao People's Democratic Republic.

This study was conducted by Kokusai Kogyo Co., Ltd., under a contract to JICA, during the period from June to November 2004. We have conducted the study with due consideration to the present situation of Laos for the project under Japan's grant aid scheme.

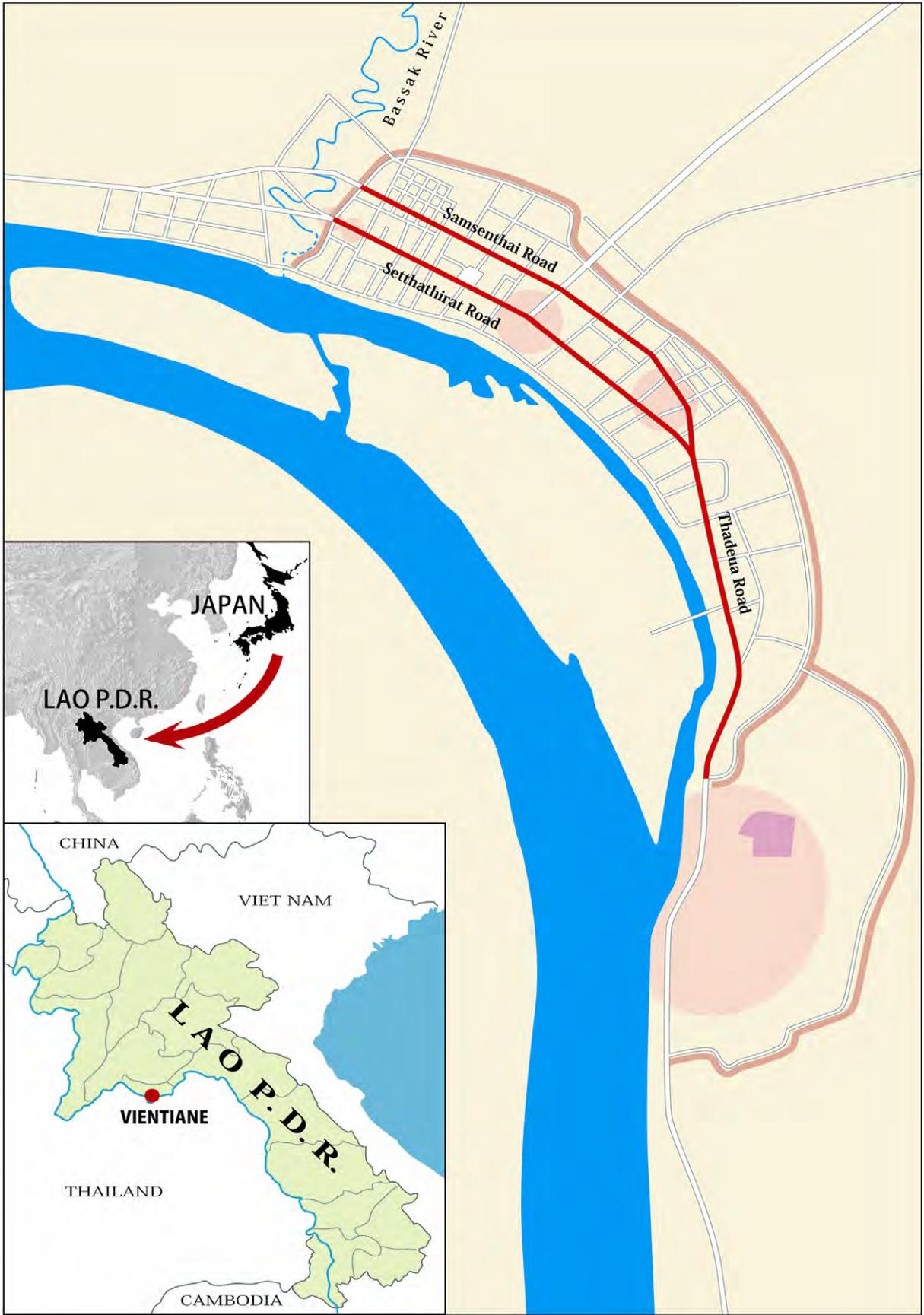
Finally, we hope that this report will contribute to further promotion of the project.

Very truly yours,

Shinya Kawada

Project manager,

Support study team for Buried Cultural Property Survey
on The Project for Improvement of Vientiane NO.1 Road
in Lao People's Democratic Republic
Kokusai Kogyo Co., Ltd.



Location Map

Photos



Steering Committee



Underground Radar System



Removal of Asphalt



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Abbreviations

BCP(s)	Buried Cultural Property(ies)
DIC	Department of Information and Culture, Vientiane Capital City
DOIC	Department of International Cooperation, Ministry of Foreign Affairs
DOMA	Department of Museums and Archaeology, Ministry of Information and Culture
DOR	Department of Road, MCTPC
EFEO	Ecole Française d'Extrême-Orient
EIA	Environmental Impact Assessment
IEE	Initial Environmental Examination
JICA	Japan International Cooperation Agency
Lao PDR	Lao People's Democratic Republic
MCTPC	Ministry of Communication, Transport, Post and Construction
MIC	Ministry of Information and Culture
TP	Test Pit
UNESCO	United Nations Educational, Scientific and Cultural Organization
URDRSS	Underground Radio Detection and Ranging Survey System
VUDDA	Vientiane Urban Development and Administration Authority

Summary

Vientiane No. 1 Road, which connects Wattai airport and downtown Vientiane and then leads to the Mekong Friendship Bridge, is one of the most important thoroughfares in Lao PDR, as well as a section of Asiatic Highway No. 12. However, degradation of the road surface and inadequate drainage, which generates occasional flooding during the monsoon season, have been a long time problem and immediate improvement is necessary. Under such circumstances, the Lao government requested grant aid from the Japanese government for swift improvement of the road, and the Japan International Cooperation Agency (JICA) implemented the support study from January to February 2003. Through the following Basic Design study on a 10km section of Vientiane No. 1 Road between Sikhai junction, about 1km from Wattai Airport, and Sikhai junction, it was found that there was a need to consider proper treatment for buried cultural properties that are expected in the area. The Government of Japan demanded the Lao side to proceed with the survey for buried cultural properties, while postponing the Basic Design study.

Although the Lao side intended to conduct the pilot survey for buried cultural property (BCP) on the 6km long site within the old city wall, Lao PDR requested the Japanese government to support the pilot survey team because it may have been difficult to implement the study without technical and archaeological support. The Government of Japan entrusted the support study to JICA, and JICA decided to conduct the support study for the BCP survey and sent a study team.

The mission is to assist in the Lao pilot survey and give aid for reconnaissance excavation, evaluation of unearthened objects, and decision making on the necessity of full-scale salvage excavation and to prepare arrangements for necessary precautions for the Basic Design survey as well as for execution of the construction. This project is planned to ensure that the Initial Environmental Examination (IEE) presented by Ministry of Communication, Transport, Post and Construction (MCTPC) fulfills JICA's Guidelines for Environmental and Social Considerations and that it contains a suitable level of information for deciding whether the Basic Design can be resumed or not.

Of the laws and regulations currently established in Lao PDR, those concerned with the protection of cultural property are as follows: Environmental Protection Law, Law on Urban Planning, Presidential Decree on the Preservation of Cultural, Historical and Natural Heritage, and Regulations and Guidelines for Environmental Assessment (EA) of Road Projects. Also, the Law for Natural and Cultural Heritage Preservation, which is currently being drawn up, is to be enacted in 2005. Article 6 of that law specifies that developers are obligated to conduct a study on the impact of works on natural and cultural heritage and that the developer must bear the burden of all expenses of the study.

The research for administrative organisation revealed that the Department of Museums and Archaeology (DOMA) of the Ministry of Information and Culture (MIC) is the organization at the

central level responsible for management of archaeological and cultural heritage. The department is staffed by five persons in addition to the Director General. In Vientiane Capital City, there is a Department of Information and Culture (DIC) with two staff. A minimum of one staff in charge of cultural affairs is assigned to each province and district. Among them, only two persons, the Director General and the director of the Archaeology section of DOMA, are established archaeologists while capacity building for others is still needed.

For smooth implementation of this project, the Lao government established a "Steering Committee" (chairman: Vice Minister of MCTPC, co-chairman: First Secretary of the Embassy of Japan) and decided basic policies. Influential foreign experts in Laos, including nationals of France, Australia, Italy, Canada, Sweden and the U.S.A., were contacted individually and an explanation was made. Information on the study was publicised several times through newspapers and TV while some of the most important artifacts were exhibited publicly in the National Museum on the 6th and 7th of October, 2004.

From the initial document survey, it was revealed that there are only a few resources regarding the archaeology of the Vientiane city area, in which findings of brick wall structures are mentioned. Also, a total of fifteen temples had once existed while only eight are still intact.

An attempt to use underground radar was made, perhaps for the first time in Vientiane city for archaeological purposes, and this resulted in detecting a peculiar reflective pattern, despite strong jamming from quartz pebbles used in road sub-base and radio noise from the traffic.

In respect to the above research and considering the traffic situation, a total of 32 spots were selected for test pit excavation. It was planned to be three meters deep to the pebble base layer, or the level of underground water. The survey area was to be four square meters at the lowest level, and all artifacts were to be identified, recorded and recovered.

The survey was performed from June 6 to November 8. The results showed that BCPs are present, and well preserved, in all points where test pits were dug, except for two. A total of 13,779 artifacts were collected, mostly from the Langxane period (14th to 19th centuries) but also including artifacts from the Palaeolithic (Bacsonian? c.8000BP), Neolithic (c.2000BP) and Bronze/Iron (c.1000BP) periods, as well as objects from Mon/Khmer culture (9th to 13th centuries).

The quantity, as well as the quality, of the BCPs were totally beyond initial expectation, which made it impossible for the post-excavation works and evaluation assistance to meet the planned deadline, and the schedule had to be extended.

The evaluation was based on the result of the study and excavations, where the proposed route had been classified into four categories, A to D, based on the prospected speed of salvage excavation, and was presented to be a parameter for the construction plan.

The area outside the inner city wall, having a total length of 22 km, was also studied according to the present situation, geography and documents, and an assumption of possible archaeological sites was made.

Finally, a plan for a holistic program was proposed for future precise scientific studies of artifacts and data, including the provision of equipment and assignment of an expert.

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1. Background of the Study

1-1 Background of the Study and Connection with the Road Improvement Plan

Vientiane No.1 Road, which connects the central district of Vientiane with Wattai Airport and the Mekong International Friendly Bridge, is not only the most important trunk road in Lao PDR but also a part of the major international road, Asian Highway No.12. However, smooth and safe transportation is hindered as a result of a deterioration of the road surface and the mixture of many kinds of vehicles. Moreover, due to lack of an effective drainage system for the road, there is frequent flooding in the rainy season over and along the road, which has resulted in accelerating deterioration of the pavement.

The government of Lao PDR decided there was an urgent need to improve No.1 Road and requested the government of Japan to offer Grant Aid for it. Japan International Cooperation Agency (JICA) conducted a preparatory study to confirm the request and its background from January to February 2003. During the study, the following surveys were carried out, i.e. a survey on the priority section in the requested project site, a test of pavement conditions by field CBR Test, a survey of current drainage and traffic conditions, a road plan, resettlement and an Initial Environmental Examination.

As a result of the preparatory study, it was confirmed that of the requested project site approximately 27 km long, the government of Lao put a priority on the 10 km section extending from Sikai Junction to Takao Junction, and that the section should be improved urgently because drainage conditions were extremely poor and the pavement was more deteriorated than any other section.

Based on the preparatory study, the Basic Design (B/D) Study started for the improvement of Vientiane NO.1 Road, from Sikai Junction to Takao Junction, in May 2003. However, it proved in July 2003 that consideration and preservation of buried property were inevitable. Therefore, the Government of Japan demanded the Lao side to conduct a BP survey and the B/D was interrupted.

1-2 Objective and Contents of the Study

Although the Lao side intended to conduct the pilot survey for buried cultural property (BCP) on the 6km long site within the old city wall, Lao PDR requested the Japanese government to support the pilot survey team because it may have been difficult to implement the study without technical and archaeological support.

In February 2004, a preparatory study was conducted to support the pilot survey. The Government of Japan entrusted the support study to JICA, and JICA decided to conduct the support study for the BCP survey and sent a study team which was scheduled to stay in the country from June 7 to October 7, 2004.

The Japanese Support Study was planned to give full support to the Lao Pilot Survey project by executing a reconnaissance excavation over the assigned area, evaluating the BCP, making a decision on the necessity of a full scale excavation and listing recommendations and matters that need to be considered when planning of the Basic Design for the construction is resumed and when it is applied. This plan is also designed and would be carried out to assure that the Initial Environmental Examination (IEE) based on the Pilot Survey by Lao PDR can fulfill JICA's Environmental and Social Considerations Guidelines and to ensure that its quality and level is sufficient for the judgment of resumption of the Basic Design Study.

2. Situation of Buried Cultural Property Surveys in Laos

2-1 Administrative Issue of Archaeology

(1) Laws and Regulations

Of the laws and regulations currently established in Lao PDR, those concerned with the protection of cultural property are as follows:

- 1) Environmental Protection Law
- 2) Law on Urban Planning
- 3) Presidential Decree on the Preservation of Cultural, Historical and Natural Heritage
- 4) Regulations and Guidelines for Environmental Assessment (EA) of Road Projects
- 5) The Law for the Preservation of Natural and Cultural Heritage (currently being formulated)

In the “Environmental Protection Law”, the following is described concerning cultural heritage. In Article 2 Environment, it is stipulated that “Environment includes soil, water, forests,...archaeological artifacts, and historical heritage.” Moreover, in Article 16 Protection of Cultural, Historical and Natural Conservation Sites, it is provided that “Any person or organization...that causes a negative environmental impact on cultural, historical and/or natural conservation sites, such as archaeological sites, traditional, historic, tourism sites or protected forests shall strictly comply with the regulations and measures issued by the relevant sectoral and local administration agencies”. However, effective administrative management has not been conducted because the relevant regulations were not issued by the relevant sectoral agency, MIC.

In the “Law on Urban Planning”, Article 1 stipulates that it is important to advance urban development while protecting heritage monuments. In Article 4, it specifies that “ethnic cultural heritage” must be protected.

The “Presidential Decree” gives extensive authority to MIC for the management of cultural property but no legal power against developers.

“MIC may cancel an excavation license and instruct the termination of excavation in case that the premises authorized for excavation bears utmost importance and necessitates that the excavation be performed by MIC itself. From the receipt of a notice from MIC for the termination of excavation activities, such activities shall be ceased at once.”

It also stipulates that “to ensure the efficient management, conservation and preservation of the national heritage, an agency may be established to provide consultations or opinions on such activities”. Such an agency is the “National Committee”. However, its rank is too high so it cannot function effectively in practical management.

In the “Regulations and Guidelines for Environmental Assessment (EA) of Road Projects”, archaeological/historical and cultural districts, along with wetlands and protected forests, are cited as environmentally sensitive areas. Furthermore, for all road works to be implemented in those environmentally sensitive areas, an Initial Environmental Examination (IEE) must be conducted to determine whether or not it is necessary to implement an EIA. However, a clear definition of “archaeological/historical and cultural districts” is not given.

The “The Law for the Preservation of Natural and Cultural Heritage”, which is currently being drawn up, is to be enacted in 2005. Article 6 of that law specifies that developers are obligated to conduct a study on the impact of works on natural and cultural heritage and that the developer must bear the burden of all expenses of the study. An EIA is an environmental assessment study; however, a study where “environment” is limited to the “archaeological field” can be called an Archaeological Impact Assessment (AIA).

(2) Administrative organization

The Department of Museums and Archaeology (DOMA) of the Ministry of Information and Culture (MIC) is the organization at the central level responsible for management of archaeological and cultural heritage. The department has five staff in addition to the Director General. In Vientiane Capital City, there is a Department of Information and Culture (DIC) with two staff. A minimum of one staff in charge of cultural affairs is assigned to each province and district. Duties include research/studies and cultural activities such as the planning and execution of festivals, providing advice on landscape preservation, instruction in traditional music, dance and costumes, and so on. However, only two members of staff, the Director General and the Director of the Archaeological Research Division of DOMA, have a formal education in archaeology. Planning for succession of such position has not been going well. Other staffs have received practical training through on-site participation in archaeological studies to the extent that they have acquired some techniques for classification of excavated objects. However, it is necessary that they undergo thorough training in the future. The archaeologists of MIC are expecting to establish an archaeological course at universities in Laos. If that is done, it will be possible to facilitate students to acquire skills by having them participate in excavation surveys of buried cultural properties required for public works. This is necessary to develop capable staff for the future.

(3) Current condition of work

For government officials to carry out their work, what is most important is to establish a legal system and secure the necessary budget. The current budget covers only personnel costs and not the cost of activities. To implement an activity, it is necessary to make a request for funds to the central government or receive financial support from international organizations on a case-by-case basis.

Therefore, daily activities are limited to those that do not involve any costs.

The staff in charge of cultural affairs is not given any legal authority. Therefore, they visit construction sites of public works, not in an official capacity as a manager of cultural heritage, but as a private visitor or researcher to take photographs and collect data. Therefore, reports on excavations and cultural heritage cannot be prepared.

To solve this problem, it is necessary to give authority to MIC staff through the development of new laws, and to set up a body to enable discussion with the Ministry of Communication, Transport, Post and Construction (MCTPC). The Department of Roads (DOR) of the MCTPC has an Environmental Section. However, as there is no expert in cultural properties, adequate consideration is not given to such matters.

2-2 Techniques for BCP Survey

Archaeological surveys in Lao PDR are carried out by the archaeology section in DOMA of MIC. Only a very few people seem to have internationally qualified knowledge and ability to operate such projects, by organising and commanding the local Departments of Information and Culture staff. Other members of the archaeology section are more often educated in different fields.

One of the principal reasons for this may be lack of archaeology courses in higher education, and the only option is to study abroad. Recent foreign projects provide opportunity to the counterparts to be trained by some of the leading research experts, and some of them are currently studying in foreign universities. Some of them may become the core of the future archaeological projects when they return.

The other problem is lack of funding. The income for these staff is limited and this situation is perhaps one of the main obstacles for capacity building. Also, lack of funding naturally prohibits the purchase of necessary equipment for surveys and for training, thus generating an environment which is not adequate for encouraging human resources again.

The followings are some of the evaluations concerning the abilities for archaeological works in different fields.

- **Basic ability for fieldwork:**

Through devoted attempts of the top personnel, archaeological excavations are performed in a satisfactory manner, considering the lack of equipment and other resources. The fieldwork seems to be producing the best results.

- **Usage of heavy machinery:**

Recent salvage excavations utilise heavy machinery to remove excess soil from the excavation. This method is sometime not so enthusiastically received by some researchers, but none of the Lao staff showed discomfort to this practice. On the other hand, Lao staff may still

lack adequate experience for closer cooperation with the machine operators.

- Survey ability:

There was no evidence that Lao staff have experience in surveying, which is necessary for the fieldwork.

- Ability for post-excavation works:

There was no evidence that Lao staff maintains adequate capacity for drawing, photographing and editing reports.

- Storage:

It is difficult to see any standardised method or system for adequately storing artifacts and documents.

As mentioned above, even lacking a systematic attempt at capacity building for archaeological projects, Lao staff painstakingly maintains a certain standard of excavation works when they are needed. However, as the number of development projects increases and when they are faced with more salvage projects, it is difficult to see how they will be able cope with such a situation.

3. Implementation system of the study

The following work teams were organized for efficient operation.

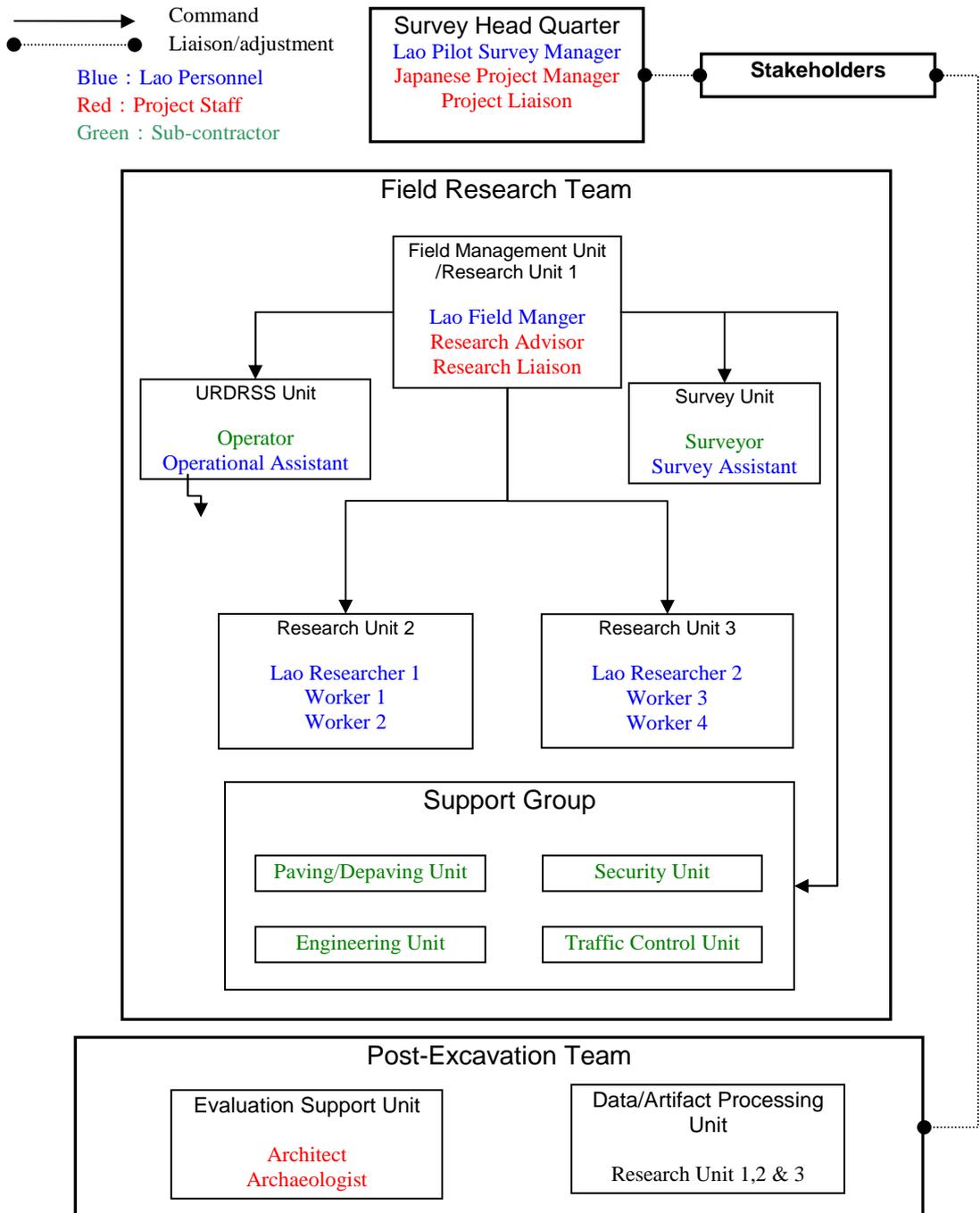


Figure 1 Study Implementation System

3 Implementation system of the study

The members shown in the table worked together to excavate the test pit by hand and pick up unearthed artifacts.

NO	Name	Organization
1.	Mr. Thongsa SAYAVONGKHAMDY	Director General, Dept. of Museums and Archaeology (DOMA), MIC
2.	Mr. Viengkeo SOUKSAVATDY	Director of Div. of Arhaeological Research, DOMA, MIC
3.	Mr. Phonphana Sichanthongthip	Management of Cultural Heritage, MIC
4.	Mr. Sangkhom Keophiavong	DOMA, MIC
5.	Mr. Seng Phet	DOMA, MIC
6.	Mr. Samlane Luangaphay	Deputy of Div. of Arhaeological Research, DOMA, MIC
7.	Mr. Onela	DIC, Vientiane Capital City
8.	Mr. Phoukhong Sisuctham	DIC, Vientiane Capital City
9.	Mr. Dedsongkham Thammavong	MCTPC
Several members from Water Supply Authority, 2 policemen / day		



Staff and Workers for Test Pit Excavation

4. Test Pit Excavation

4-1 Investigation of Documentary Records

In selecting the sites for test pit excavation, the maps produced by the École Française d'Extrême-Orient (EFEO) in 1905 and 1912 were used as the main source of reference. In particular, “L'Art du Laos” by Henri Parmentier (Vol. 2, nouvelle édition revue et mise à jour par Madeleine Giteau, Paris, 1988), in which the map of 1912 appears, has many descriptions of temples that no longer exist.

The fifteen temples bordering the road targeted in the study are listed below in order of the survey points located on the road.

Eight of the temples mentioned above are still in existence, and the majority of them have changed (i.e. the size of the temple grounds have changed and/or the buildings that make up the temple have been rebuilt) since the study by H.Parmentier in the early 20th century. However, they have been outlined in recent documents and materials, and information was also provided in the studies, “Historical Assets of Old Vientiane City on NO.1 Road in Vientiane Capital” and “Interview Survey to Collect Information about the History of the Temple, Historical Heritage in Old Vientiane City”, which were assigned to the JICA Office in Laos in February 2004. As for the seven temples that have disappeared, information was collected based on the descriptions by H. Parmentier, as it is the only data available.

The results of the investigation are shown in Table 1.

Table 1 Outline of temples bordering the road targeted in the study (including those that no longer exist)

No	Road	Name	Built	Destroyed	Re-built	Characteristics
1.	NO.1	Inpeng	1566	1829	1912	An historically old temple. The old precincts of the temple are not clear but present NO.1 Road may pass through the old precincts. However, no artifacts were found during construction of NO.1 Road and even within the precincts, no artifact has ever been collected.
2.		Ongtu	1566	1829	1912	The most important temple in Vientiane in 1566; surrounded by four temples, Inpeng, Haysok, Mixai and Chanthabury. The oldest That and Buddha statue in bronze exists there.
3.		Haysok	1566	1829	? /1959	The precincts of the temple were possibly broader. A Buddha statue and silver coins were found during construction work. The present road passing through the precincts was constructed under the reign of France, but no archaeological records exist. Need to prevent vibration because the That is unstable.
4.		Mixai	1566	1829	1920/57/60/74	It is said that this temple was adjacent to Vat Ongtu. Therefore, NO.1 Road passes possibly through the precincts but no archaeological record remains. Need to prevent vibration because the That is unstable.
5.		Sibun Gnun	-		No longer exists	This temple was dilapidated when H. Parmentier conducted research. A Linth was placed in the Sim and there was a stone inscription in Résidence Supérieure.
6.		Pakhao	-		No longer exists	This temple was destroyed due to road construction when H. Parmentier conducted research.
7.		Sisaket	1818	NO		Rebuilt in 1924 and 1930. Just one temple saved from destruction in 1829. The precincts of the temple were reduced due to construction of Lane Xang Road in 1957. Famous for its 6,840 small Buddha statues. The That was built in 1818.
8.		Ho Phakeo	1565	1829	1936	The road was possibly constructed on the boarder between this temple and Vat Sisaket.
9.		Kaognot	-	1829	-	The main buildings were re-constructed in 1940. A two-story building was constructed in 1962.
10.		Simuang	1566	1829	-	There is a massive historical structure made of laterite stone (at the era of Mon Khmer?) in this temple. It is supposed that this temple had been operating as a Hindu temple before it was arranged as a Buddhist temple.
11.		Xakhuong			No longer exists	The precincts of the temple were divided into two parts in 1911; there remained nothing in the eastern part. In the western part there was a collapsed Stupa (That), the remains of a building and a Buddha statue between a Sim and the riverbank. The base of the Stupa had multiple steps and the wall was decorated with glass beads.
12.		Khamhien			No longer exists	There were no ruins of the temple when H. Parmentier conducted research.
13.	1-A	Sisumon			No longer exists	The temple had been destroyed when H. Parmentier conducted research. There was a Plinth in bronze for That.
14.		Simungkhun			No longer exists	A part of the precincts had been destroyed due to road construction when H. Parmentier conducted research. There was nothing but a gigantic head of a Buddha statue and an octagonal pillar.
15.		Gnotkeo			No longer exists	A Sim was destroyed by Ernest Outrey (residents-superior of 1863-1941 and 1910.8-1911.7) because it was dangerous. It was simply domestic style, with a front and back porch arranged with double-lined pillars, balustrade between the pillars, three doorways in front and two doorways at the back; the base with steps in the center is a little higher than usual one, surrounded by a low wall, and the central gateway is decorated with a pair of lions. A Buddha statue in Bronze was moved from the sim to Résidence Supérieure. In 1911 there was a small library similar to the existing one in Vat Inpeng. The entrance faced north and a pair of yaks were arranged there and windows were in the form of open and close, arranged on both sides with a pair of apsaras hanging up a sprig, and on the sters there was arch decoration of birds and spiral. Especially That- styled roof with multiple steps over the window was an excellent decoration. In 1927 this small masterpiece had ceased to exist.

4-2 Interview survey

Interviews were conducted with EFEO in Laos, MIC, UNESCO, the Siam Center (Thailand), etc.

(1) Wat Inpeng area

Historic relics and ruins from the Vientiane and Mon/Khmer periods may possibly exist.

The grounds of Wat Inpeng during the Vientiane period extended farther on the north side than today and existing NO.1 Road passes through the old grounds. Furthermore, it was confirmed that a portion of the foundation of an old building is exposed in the sidewalk section of NO.1 Road.

Wat Inpeng may possibly be related to the walled city of the Mon period in the northern extremity of That Luang, and the stone monuments discovered on the grounds of the temple are important relics of Mon culture.

(2) Royal Guesthouse area

The road existing during the Vientiane period passed through a different area than the current NO.1 Road. A section of No.1 Road even passes through the grounds of the ancient royal palace. Therefore, from the front of the royal guesthouse to the front of Lang Xang, there is a high possibility that the royal palace wall and related facilities of the Vientiane period remain below the ground. The wall structure thought to surround the royal palace, which was discovered during the construction of Lang Xang Road, remains to a depth of about three meters from the surface of the site. The structure is made of brick and there is a good chance that it continues under NO.1 Road.

Relics of the Mon/Khmer periods are displayed inside Wat Ho Phakeo. Many of them were collected from the Wat Ho Phakeo area, including parts of the royal palace.

(3) Wat Simuang area

In the temple, there is a large structure made of laterite stone and believed to be of the Mon/Khmer period, and a linga (object of worship of the Hindu god Shiva), which is thought to trace back to the Khmer period. This suggests that Wat Simuang was functioning as a Hindu temple before it was set up as a Buddhist temple. Therefore, related remains may be buried under neighboring NO.1 Road and 1A Road.

(4) Sisattanak District

In a survey conducted by the University of Sidney and the MIC in 1991, the remains of a kiln thought to be of the Vientiane period was confirmed in Sisattanak District. Therefore, there is a possibility that ceramics and other relics related to ceramic production will be discovered in the area targeted in this study.

4-3 Underground Radar System

This system, especially incorporated for this project, is performed by analyzing the reflection of electro-magnetic waves (EMW) transmitted into the ground for detection of possible BCPs.

Unlike those used for communication purposes, the electro-magnetic waves used in the system are called “pulse waves,” and are counted by ns, or nano-seconds.

The reflective pattern of the electro-magnetic waves does not numerically indicate material, shape, size, solidity or density. However, by analyzing this pattern, the location of BCPs can be detected without actual excavation and contribute to narrowing down the suspected area for planning the positions of test pits.

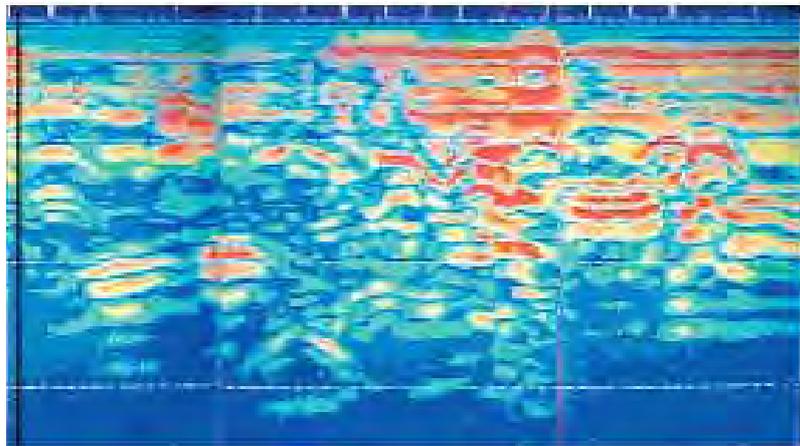


Figure 2 Reflective pattern of electro-magnetic waves



Japanese Expert and MIC staff



Underground Radar System

4-4 Test Pit Excavation

- 1) The topsoil and recent refill soil, including paving, as well as buried rubble or debris are removed. This work shall be done by mechanical means, only when there is absolutely no possibility of damaging BCPs; otherwise, it shall be done manually. When the original soil surface and/or the soil layer with possible inclusion of BCP is exposed and cleaned, the situation is to be recorded by means of photograph and plan drawing with measurements of elevation.
 - 2) The soil layer with possible inclusion of BCP is removed portion by portion at 50cm depth intervals. Initial manual probe digging on several spots must be done, and if no trace of BCP is confirmed, the rest of the soil may be removed mechanically.
 - 3) If any trace of BCP, or the possibility of its presence is assumed, the soil is carefully removed manually using a trowel, wooden spatula, brush and other tools until the BCP is fully exposed.
 - 4) The BCP(s) are recorded by photograph, scale drawing(s) and observation notes.
 - 5) All possible concerned personnel must be immediately called, and the following evaluations must be done.
 - a) Is (are) the excavated object(s) considered BCP(s)?
 - b) Is it possible to continue further digging after everything is recorded and the BCPs recovered?
 - c) If the BCP is not recommended to be removed, is it necessary to re-bury it immediately and if so, how?
 - 6) If the situation prohibits immediate convocation of concerned personnel, an appropriate date and time must be fixed, and all possible measures to protect the concerned area must be taken by use of tarpaulins, sandbags, fences and others.
 - 7) If no BCP is found, or if all BCPs are recorded and recovered, the same routine is to be continued until the underground water level, or base level is reached. The excavation depth is limited to the water level to avoid risk of collapse. The decision to continue excavation work will be made by a Lao person in charge. However, in some cases a Japanese research advisor may independently halt the work.
 - 8) When excavation is completed, one face of the wall is cleaned to record the soil stratigraphy by photograph, soil section drawing, and observation notes (including soil color, granularity, viscosity and other conditions). When necessary, soil samples 5x10x10cm in size may be collected vertically on the soil section. Samples are to be kept in sealed containers and appropriately labeled.
 - 9) After the excavation is completed and all records reconfirmed, the test pit is appropriately filled in and restored to its original state.
 - 10) Any matters of concern will be solved in conjunction with the Lao counterpart.
-

4-5 Recording and preservation of artifacts

The situation of artifacts must be recorded including the coordinates of the point where the object was exposed, in situ photographs and observations. Artifacts are to be recovered from the site when it is necessary. They should be numbered, marked with coordinates, secured in plastic bag, and labeled. Labels should be made of waterproof material, and information including the artifact number, test pit number and date must be written on it using a waterproof marker. Artifacts must be contained in a secure case and immediately moved to a storeroom.

- Artifacts from each test pit are stored and processed accordingly.
- If any artifact is missing during the post-excavation processes, all efforts must be made to search and find the lost item.
- All artifacts are cleaned and dried.
- Labels must not be lost during the procedure.
- The artifact number is to be marked on the artifact using water-soluble white paint.
- After the paint is dry, an overcoat of transparent varnish must be applied.
- Artifacts are classified according to different parameters, which are decided by an expert.
- The parameters are entered into the artifact ledger.
- Classified artifacts are stored in an appropriate container.
- Containers must be labeled.
- Artifact containers are stored in a long-term storeroom.
- Copies of drawings and photographs as well as other data are to be stored with the artifacts.
- Records must be kept of all those who enter the storeroom and if necessary, guards must be stationed at the door.
- Some artifacts are to be selected for the site report and photographed. If necessary, scale drawings of them will also be made.
- Observations, comments, and opinions are to be listed in the artifact ledger.
- Finally, the manuscript for the report is written by the expert.
- Artifacts of maximum importance may be exhibited at the national museum.

4-6 Discussions with stakeholders

In the “Regulation and Guidelines for the Environmental Assessment of Road Projects” of the Ministry of Communication, Transport, Post and Construction, a stakeholder is defined as “someone who has an interest in a project or activity. This includes, but is not limited to, project affected peoples, village and community groups, ministries, governmental entities, provincial authorities, district and village administration, interested members of the wider community, funding agencies, donors, aid community, non-governmental organizations, the business community and service providers.” It means that anybody can be a stakeholder.

For this study, a Steering Committee was organized consisting of relevant governmental officers to manage the study efficiently and basic policy was decided by the Steering Committee.

The member list of the Steering Committee is as shown in Table 2.

Table 2 Member list of the Steering Committee

NO	Name	Position/organization
1.	Mr. Sommad PHOLSENA	Vice Minister / MCTPC
2.	Mr. Viensavath SIPHANDONE	Director General /Dept of Road /MCTPC
3.	Mr. Kazunori KAWADA	First Secretary/Embassy of Japan (~August2004)
4.	Mr. Ken NAKAMURA	Second Secretary/Embassy of Japan(September2004~)
5.	Mr. Hidetaka NISHIWAKI	Resident Representative / JICA
6.	Mr. Thongsa SAYAVONGKHAMDY	Director General /Dept of Museum & Archaeology /MIC
7.	Mr. Viengkeo SOUKSAVATDY	Division Chief of Archaeology Research /MIC
8.	Mr. Phengsavanh VONGCHANDY	Director of National Museum / MIC
9.	Mr. Soutanh PHONGSONGKHAM	Deputy Director/DIC/Vientiane Capital City
10.	Mr. Chanthone	Deputy Chief of IC / Chanthabury District
11.	Mr. Simongkhon SIHANHOUT	Deputy Chief of IC / Sisathanak District
12.	Mr. Somphone SENGSILAVONG	Deputy Chief of Vientiane Capital City
13.	Mr. Saveng PHOMMALY	Deputy Director / Dept of Security/Vientiane Capital City
14.	Ms. Khampien INTHALUESA	Deputy Director of VUDDA
15.	Mr. Dedsongkham THAMMAVONG	Project Coordinator
16.	Mr. KAWADA, Mr. KOBIKI	JICA Study Team

Information on the study was made public several times through newspapers and TV at the beginning, middle and end of the study, and the main unearthed artifacts were exhibited publicly in the National Museum on the 6th and 7th of October, 2004.

Although foreign experts do not usually stay in Laos in the rainy season and it was very difficult to make contact with them during the study, meetings or interviews were held at every opportunity.

The foreign experts contacted are as follows:

(1) Team leader, Lao Pako Project/ Uppsala University

Nationality: Swedish

Contact time: June 10 (Thursday)

Place: National Museum

Discussion: Study process and management of the study

Response: Comprehended the study

(2) Instructor, Department of Sociology and Anthropology, Langara College

Nationality: Canadian

Contact time: July 9 (Friday)

Place: Study Team Office

Discussion: Study process and management of the study

Response: Comprehended the study. He came to examine the possibility of destruction of buried cultural property due to the project funded by the Canadian Government. Appreciated the activity of the Japanese Government for cultural property

(3) Associate Professor, Northern Illinois Univ./Director, Center for Burma Studies

Nationality: French

Contact time: July 9 (Friday), 11 (Sunday)

Place: At the Site, Study Team Office and Sunset Cafe

Discussion: Study process and management of the study

Response: She wanted the study team to pay allowance to the staff from MIC and to provide a computer and digital camera. She had a favorable understanding of the study.

(4) Freelance Consultant/Team Leader, Digital Conservation Facility Laos

Nationality: American

Contact time: July 11 (Sunday) 2004

Place: Study Team Office and Sunset Café.

Discussion: He agreed with the excavation of a test pit, but doubted whether an archaeological survey would be conducted prior to road improvement construction.

(5) Conservationist, Lao Pako Project

Nationality: Australian

Contact time: August 5 (Thursday), 6 (Friday)

Place: On the site, Study Team Office and home

Discussion: Study process and management of the study

Response: Quite agreeable to the study and ready to offer some support to the study. She pointed out items of concern for archaeological excavation in Laos (regarding MIC and European experts).

(6) Directeur, L'ecole Francaise de L'extreme Orient dans Lao PDR

Nationality: French

Contact time: August 6 (Friday)

Place: At the site

Discussion: Study process and management of the study

Response: Agreeable to the study. Ready to offer convenience of free access to EFEO library and private library.

4-7 Support in evaluation

This study is to support the BCP survey conducted by the Lao Government. In particular, the evaluation of relics unearthed in test pit excavations has to be done by the Lao government. Therefore, a steering committee shall be set up to manage the overall study and important items shall be decided based on discussions with the steering committee. Regarding the evaluation of cultural property, an effort shall be made to implement such work mainly by MIC staff, which includes archaeological experts. The JICA study team carried out detailed analysis of each relic and provided data classified into period, shape, production method, size, type, etc. so that the Lao side can easily carry out evaluation work. (Refer to attached report on test pit excavations)

5. Results of the Study

5-1 Site of Test Pit Excavation

The sites for test pits were selected based on an investigation of documentary records, interviews with relevant organizations and radio detection.

The selection results are shown in and the criteria for selection are shown in Table 3. Test pit No.16 was not selected based on the criteria of “temple”, “city wall” or “radio detection”, but because there would be no test pit in a section 350m long and because there was information on an ancient habitation site from French documents.

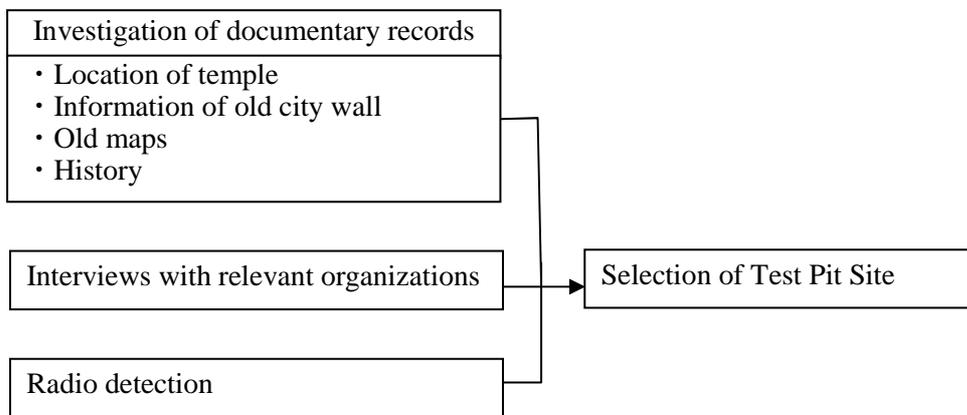


Table 3 Site Selection of Test Pit

Test Pit	Temple	City Wall	Radio	Other	Test Pit	Temple	City Wall	Radio	Other
TP1		○	○		TP17	○			
TP2		○	○		TP18		○		
TP3		○	○		TP19		○		
TP4	○				TP20		○		
TP5	○				TP21		○		
TP6			○		TP22	○		○	
TP7			○		TP23	○			
TP8	○				TP24	○			
TP9	○		○		TP25	○			
TP10			○		TP26	○			
TP11			○		TP27	○			
TP12	○		○		TP28	○			
TP13			○		TP29	○		○	
TP14			○		TP30	○		○	
TP15	○				TP31	○			
TP16				○	TP32	○			

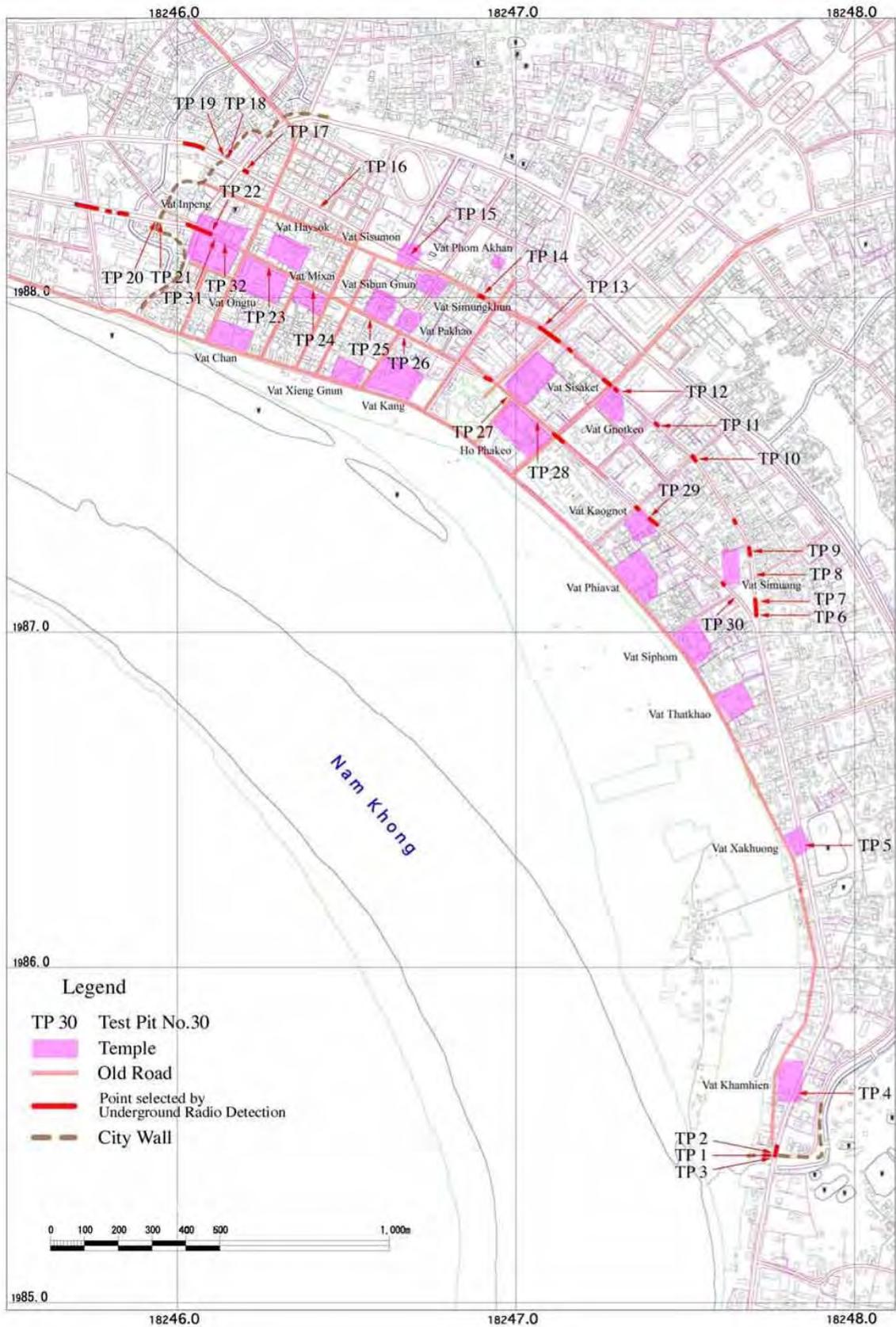


Figure 3 Location of roads, temples, city wall and test pits

5-2 Summary of Results

The pilot survey was started on June 11, 2004.

It was initiated with a preliminary survey using an underground radar system which, in theory, detects irregularities in the soil by analysing the visualised pattern of reflection of radio waves. A similar device had been used at the Lao Pako site near Vientiane but it had never been tried in an urbanized area of the city. In retrospect, there were numerous obstacles in the use of underground radar to produce satisfactory results, i.e. various sources of jamming radio noise, electrical interference from power lines, the sub-base of quartzite gravel which reflects radio waves, and the rainy season weather. Some spots, however, showed suspicious reflective patterns, and considering them with other information including the locations of temples and historical accounts, a total of 30 locations for test pits were selected (32 locations were actually excavated).

Test pits were first dug by mechanical means to remove the existing asphalt surface and sub-base, and when a layer including artifacts was exposed, it was excavated manually. Post-excavation works were planned to keep pace with the fieldwork, but the large amount of artifacts made it necessary for the processing work and evaluation to be extended well after the fieldwork was finished.

The initial plan was to survey down to the base gravel bed; however, the clay layer at the lower part of the stratum is very fragile and easily collapsible, prohibiting deeper excavation as it would cause the road to cave in.

The topography of the surveyed area was quite flat, within the range of somewhere around 170m above sea level. The basic stratigraphy was somewhat similar among the test pit locations:

- I: Asphalt layer: The existing road surface.
- II: Sub-base layer: Mixture of pebble and laterite soil. Sometimes the older paving surface and their sub-bases were preserved, showing laminated configuration.
- III: Dark grey silty-clay layer: Quite uniform soil where most artifacts were included. Occasionally, the underground water level could be as high as this layer on a rainy day.
- IV: Grey silty-clay layer: Uniform layer with very few inclusion.
- V: Grey clay layer: Uniform layer with very few inclusions. Color may vary from sand-yellow to green-grey, but mostly light grey.
- VI: Base gravel bed: Found at around a depth of three meters from the surface. Deposits and stains of oxidized iron were observed.

From the test pits, a total of 13,779 artifacts were collected, a quantity which immensely exceeds the prior estimate. (Table 4)

The majority of shards belong to locally produced stoneware from the Lane Xang period, but numerous imported ceramic pieces were also found.

Another group of interesting artifacts includes bronze fragments of Buddhist sculptures, prehistoric pot shards with stamped patterns and various stone tools (including the suspicious pieces).

5-3 Evaluation Results of Buried Cultural Property

From the results of the test pit excavations, the surveyed area was classified into four categories:

- A: Area of extreme importance including archaeological features. Detailed and cautious excavation survey is required.
- B: Area where important artifacts were found. Finding features as well as more artifacts with archaeological importance are expected.
- C: Area scattered with artifacts. Relatively few artifacts are expected to be found.
- D: Area where no artifacts were found. Possibility of finding archaeological material is low.

These categories also suggest the "excavation time" where Category C areas are workable at 100% of the standard excavation speed, Category A areas require 250%, Category B areas require 200% and Category D areas need 50% respectively. (Table 4 and)

Table 4 Type of Excavated Objects and Evaluation Results of Test Pits

Test Pit NO.	Stoneware	Earthenware	Imported ceramics	Bone	Others	Glass	Stone Tools	Stone	Brick	Laterite stone	Metal Objects	Stucco/Mortar	Wooden Objects	Roof Tiles	Architectural Ornaments	Total	Remark	Category	Excavation Time(%)
TP 01	9	0	0	0	1	0	1	1	56	0	0	0	3	0	0	71	near Old City Wall	B	200
TP 02	1093	172	54	15	6	0	2	21	27	0	7	0	0	0	0	1397	near Old City Wall	A	250
TP 03	72	6	7	0	0	0	1	2	9	0	1	0	0	4	0	102	near Old City Wall	B	200
TP 04	102	5	13	1	0	0	1	2	6	0	0	0	0	1	0	131		B	200
TP 05	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		D	50
TP 06	21	6	2	3	0	3	0	2	76	11	3	10	16	96	0	249		B	200
TP 07	2	1	11	0	0	1	0	2	0	0	1	0	1	4	0	23		C	100
TP 08	8	10	14	0	1	2	0	1	7	0	0	0	0	2	0	45		C	100
TP 09	17	13	5	0	0	0	0	3	14	0	1	0	0	5	0	58		C	100
TP 10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		D	50
TP 11	112	146	37	1	0	0	1	8	13	0	3	0	0	4	1	326	Prehistoric Pottery	B	200
TP 12	43	10	11	1	3	3	1	17	55	0	103	97	0	280	4	628	Artifacts associated	A	250
TP 13	55	48	19	50	0	0	2	11	12	0	2	1	0	23	0	223	Piece of Stone Stele	B	200
TP 14	13	6	5	2	0	0	0	0	4	0	7	0	0	0	0	37	Brick Feature	C	100
TP 15	116	29	10	0	0	0	0	1	54	1	0	9	0	179	0	399		B	200
TP 16	23	22	10	4	0	1	0	2	31	0	0	3	0	11	0	107		C	100
TP 17	97	82	39	30	0	5	0	2	24	0	0	0	2	8	0	289		B	200
TP 18	44	927	33	6	0	5	0	3	18	0	14	7	1	16	0	1074	Brick Feature	A	250
TP 19	27	5	24	32	0	47	0	2	194	0	21	49	0	2	0	403	Brick Feature/near	B	200
TP 20	2	3	2	45	0	2	0	0	152	0	2	1	0	1	0	210	Brick Feature/near	B	200
TP 21	3	6	23	24	1	13	0	0	43	0	6	6	0	8	0	133		B	200
TP 22	7	1	7	0	0	0	1	2	51	0	23	14	0	118	0	224		B	200
TP 23	298	216	84	98	0	0	3	16	68	0	30	8	0	30	0	851		B	200
TP 24	100	77	37	74	0	0	5	89	78	0	16	27	0	769	0	1272		A	250
TP 25	253	78	73	114	0	0	2	7	21	0	3	0	0	3	0	554		B	200
TP 26	414	344	175	69	0	0	0	16	53	0	14	14	0	305	0	1404		A	250
TP 27	156	79	17	0	0	0	4	6	59	0	7	2	1	357	3	691		B	200
TP 28	373	267	105	28	0	0	4	17	33	0	12	9	0	142	0	990		B	200
TP 29	167	87	49	5	0	0	5	14	20	0	23	3	0	645	0	1018	Artifacts associated	A	250
TP 30	138	74	84	14	0	0	0	9	5	0	1	0	0	14	0	339		C	100
TP 31	14	4	4	1	0	0	0	2	16	5	3	18	0	133	0	200		B	200
TP 32	14	1	7	0	0	0	0	3	54	0	3	5	0	244	0	331		B	200
Total	3793	2725	961	617	12	82	33	261	1253	17	306	283	24	3404	8	13779			

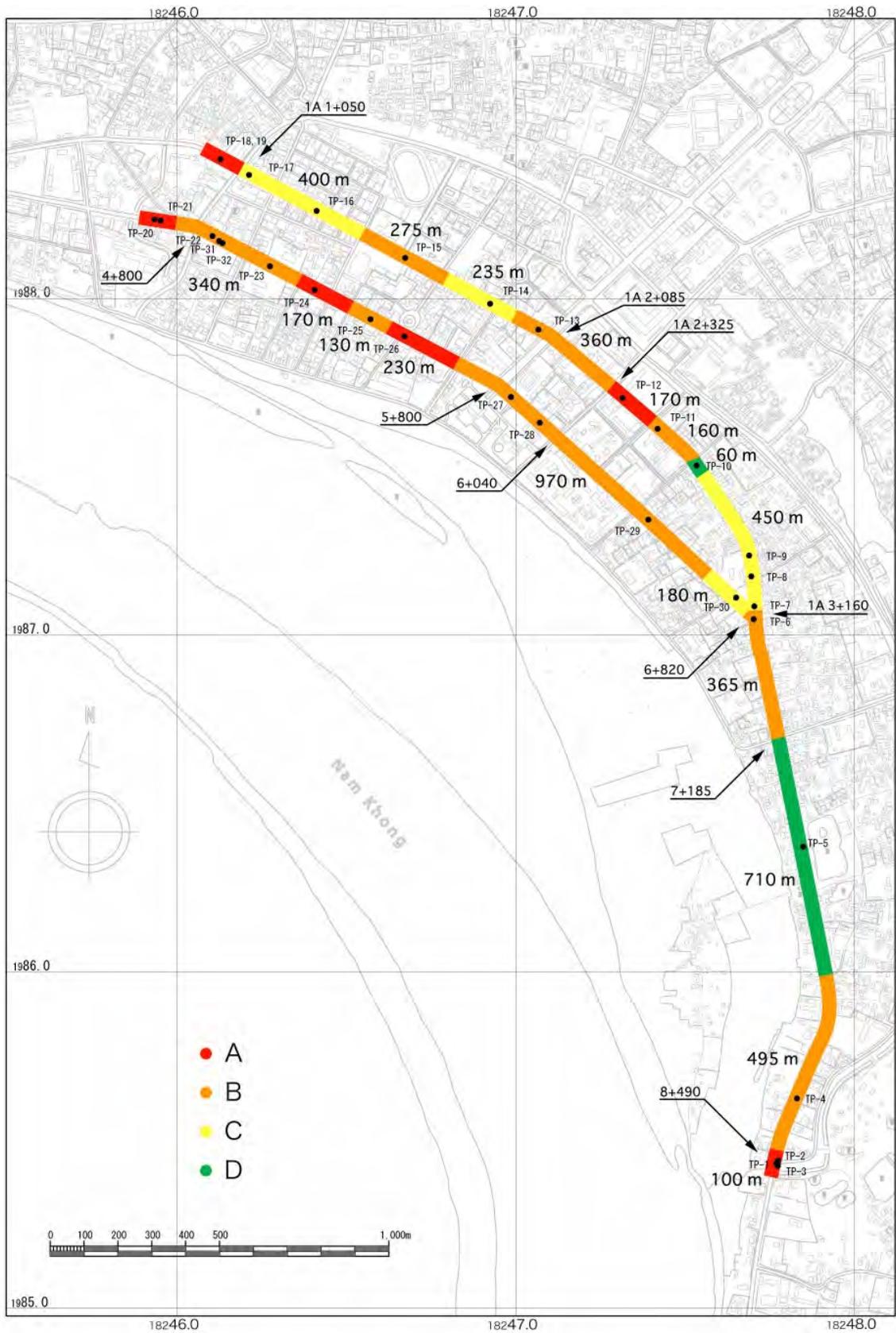


Figure 4 Length of each road section classified by category

5-4 Points to Consider in the Implementation of Road Improvement Work

(1) Within the Inner City Wall Area

As a result of the test pit excavation, it proved that artifacts of some kind are buried all along NO.1 and 1A Road. Therefore, it is difficult to drive forward the road improvement construction without taking measures to cope with the situation. Prior to construction, buried cultural properties should be recovered. It is impossible, however, to allow the recovery of cultural properties to delay the road improvement process from the viewpoint of Japan's Grant Aid system.

1) Measures for processing of Buried Cultural Properties

To solve the problem, the following procedures should be implemented during the construction.

- i. Remove surface and roadbed to the depth of about one metre.
- ii. When soil layers including buried cultural properties are reached, the ground will be removed manually, while searching for artifacts, to the depth of 25 centimeters. This procedure will be continued for four consecutive layers until the archaeologically sterile layer is reached.
- iii. Artifacts are to be collected according to the 2 by 2 meter grid system. They are to be washed in situ, and then stored in labeled plastic bags.
- iv. Artifacts are transported to the work area.
- v. Artifacts are re-washed, dried, labeled, classified, counted and observed.
- vi. Artifacts are kept in labeled plastic bags, sealed and stored in labeled lidded boxes.
- vii. Boxes are transported and stored in temporary storage.

2) Calculations for processing Buried Cultural Properties

The amount of work for recovery required to prevent a delay in road improvement construction was calculated.

The calculation was made based on the following assumptions:

- One recovery group consists of eight members (three for excavation, three for soil carriage, one for washing, one for management).
 - On sites evaluated as Category C, an area of 18m² (6m²/worker) should be excavated by one group per day.
 - The recovery on Category B sites takes twice as long as Category C sites.
 - The recovery on Category A sites takes two and half times as long as Category C sites.
 - The recovery on Category D sites takes half as long as Category C sites.
 - The roadbed is excavated to a depth of one meter by machine and then one meter more is
-

excavated by hand.

- Immediately after completion of recovery, regular excavation should be commenced successively.

As shown in Table 5, the gross area to be recovered will be 54,540m² taking the weight of each category into consideration. On the assumption that construction will be done 260 days per year and the total work schedule inside the wall will be 1 year and 2 months, the total work days for recovery is to be 302 days (260+21x2=302).

$$54,540 / 302 = 180\text{m}^2$$

$$180 / 18 = 10 \text{ groups}$$

The result of the calculation ascertains that ten groups of recovery per day can prevent a delay in the improvement construction work on the road. In order to realize this assumption, it is necessary for each group to be engaged in recovery activities continuously; therefore, the time schedule of work should be formulated after due consideration of the recovery.

Table 5 Gross area for recovery by Category A, B, C and D

Distribution of Category A,B,C&D							Gross Area(m ²)			
Route		Length by Category (m)	Total	%	Gross length	Left	Right	Total		
						2.732	3.000			
CA4	1	B	340	A	400	0.22	1,000	2,732	3,000	5,732
		A	170	B	1,440	0.78	2,880	7,868	8,640	16,508
		B	130	C	0	0.00	0	0	0	0
		A	230	D	0	0.00	0	0	0	0
		B	970							
	To	1,840		1,840	1.00				22,240	
	1-A	C	400	A	170	0.12	425	1,161	1,275	2,436
		B	275	B	635	0.44	1,270	3,470	3,810	7,280
		C	235	C	635	0.44	635	1,735	1,905	3,640
		B	360	D	0	0.00	0	0	0	0
A		170								
To	1,440		1,440	1.00				13,356		
CA5	1	C	180	A	0	0.00	0	0	0	0
		B	365	B	365	0.67	730	1,994	2,190	4,184
				C	180	0.33	180	492	540	1,032
				D	0	0.00	0	0	0	0
	To	545		545	1.00				5,216	
	1-A	B	160	A	0	0.00	0	0	0	0
		D	60	B	160	0.24	320	874	960	1,834
		C	450	C	450	0.67	450	1,229	1,350	2,579
				D	60	0.09	30	82	90	172
		To	670		670	1.00				4,586
CA6	1	D	710	A	100	0.08	250	683	750	1,433
		B	495	B	495	0.38	990	2,705	2,970	5,675
		A	100	C	0	0.00	0	0	0	0
		C	0	D	710	0.54	355	970	1,065	2,035
		To	1,305		1,305	1.00				9,143
Total				A	670	0.12	1,675	4,576	5,025	9,601
				B	3,095	0.53	6,190	16,911	18,570	35,481
				C	1,265	0.22	1,265	3,456	3,795	7,251
				D	770	0.13	385	1,052	1,155	2,207
	To	5,800		5,800	1.00	9,515	25,995	28,545	54,540	

2.732 & 3.000: width of excavation on left and right side respectively (m)

As one supervisor and his assistant have to control five groups on the site, a total of two supervisors and two assistants are to be assigned. A Japanese expert should control two groups and a total of five Japanese experts should be assigned, including a team leader responsible for overall management of activities. The calculations are shown in Table 6.

To store unearthed artifacts, 10,000 boxes and a temporary floor space of 220m² are necessary.

The apportionment of works is as shown in Figure 5

Table 6 Personnel required for cultural property excavation (inside the inner city wall)

Organization	Member	Days	Member/day		Amount (member · day)
Contractor	Worker	302	10G x 8=	80	24,160
	Supervisor	302	10G/5 x 1 =	2	604
	Assistant	302	10G/5 x 1 =	2	604
Consultant	Archaeologist	302	10G/2 x 1=	5	1,510
	Manager	302	10G/10 x 1=	1	302
Artifact Box: 10,000					
Lao side	Artifact Box (0.24m ² + bringing space 0.2m ²) x 10,000 / 20 = Area 220m ² : Two-storey prefabricated building: Floor space = 9m x 14.4m, 2 floors (installed with fluorescent lamps, windows, window screens, electric outlets, etc.)				

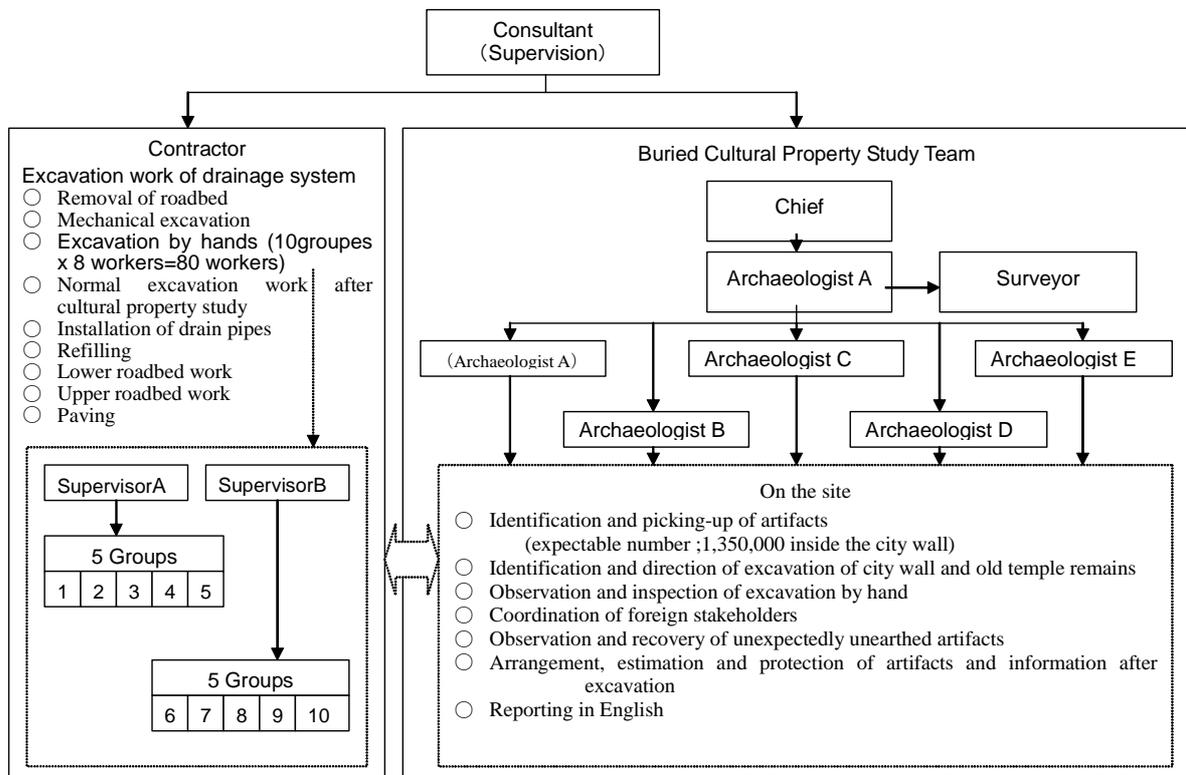


Figure 5 Responsibilities of contractor and cultural property study team

(2) Area Outside the Inner City Wall

This pilot study covered only the area within the inner city wall; however, a great number of artifacts were unearthed. Before conducting the pilot study, far less artifacts were expected to be unearthed inside the inner city wall area, much less outside the inner city wall area and the possibility of artifacts unearthed outside the inner city wall was considered to be negligible. However, based on the result of the study, the team could not neglect the situation in the 22 km long area outside the inner city wall and also made assumptions of the possibility of buried cultural properties in this area by collecting available resources and field reconnaissance.

The result is as shown in Table 7 and Figure 6

The government of Lao PDR is considering implementation of "The Law for the Preservation of Natural and Cultural Heritage" in 2005, which, in effect, will result in possible enforcement of the salvage of BCPs.

Table 7 Sections to be selected for recovery outside the inner city wall

No.	Reason for selection	Category	Length (m)	Excavation	Recovery Area
1	Adjacent to a temple and slight elevated area	C	100	Center&both sides	$(100+100) \times (3.000+6.800+3.000) \times 1.0 = 2,560$
2	Adjacent to a temple and slight elevated area	C	100	Center&both sides	
3	Temples along the road and possibly crossing old inner city wall	B	1,150	Both sides	$(1,150+1,050+1,500) \times 1.5 \times 2 \times 2.0 = 22,200$
4	Crossing old inner city wall	B	1,050	Both sides	
5	Adjacent to the wall and ancient kiln, in a slight elevated area, possibly crossing extended inner city wall, near an old sim	B	1,500	Both sides	
6	Slight elevated area	C	200	Both sides	$(200+200) \times 1.5 \times 2 \times 1.0 = 1,200$
7	Slight elevated area	C	200	Both sides	
8	Possibly crossing old external city wall	B	300	Both sides	$300 \times 1.5 \times 2 \times 2.0 = 1,800$
9	Slight elevated area	C	550	Both sides	$(550+300) \times 1.5 \times 2 \times 1.0 = 2,550$
10	Slight elevated area	C	300	Both sides	
11	Slight elevated area	C	100	No excavation	0
			5,550		Total=30,310 m ²
					30,310/144=210days

B: Recovery speed of 200%, C: Recovery speed of 100%

It may be judged at present that there are possibly no cultural properties in areas outside the inner city wall other than those indicated in Table 7 and that road improvement construction work can be implemented taking no heed of BCPs.

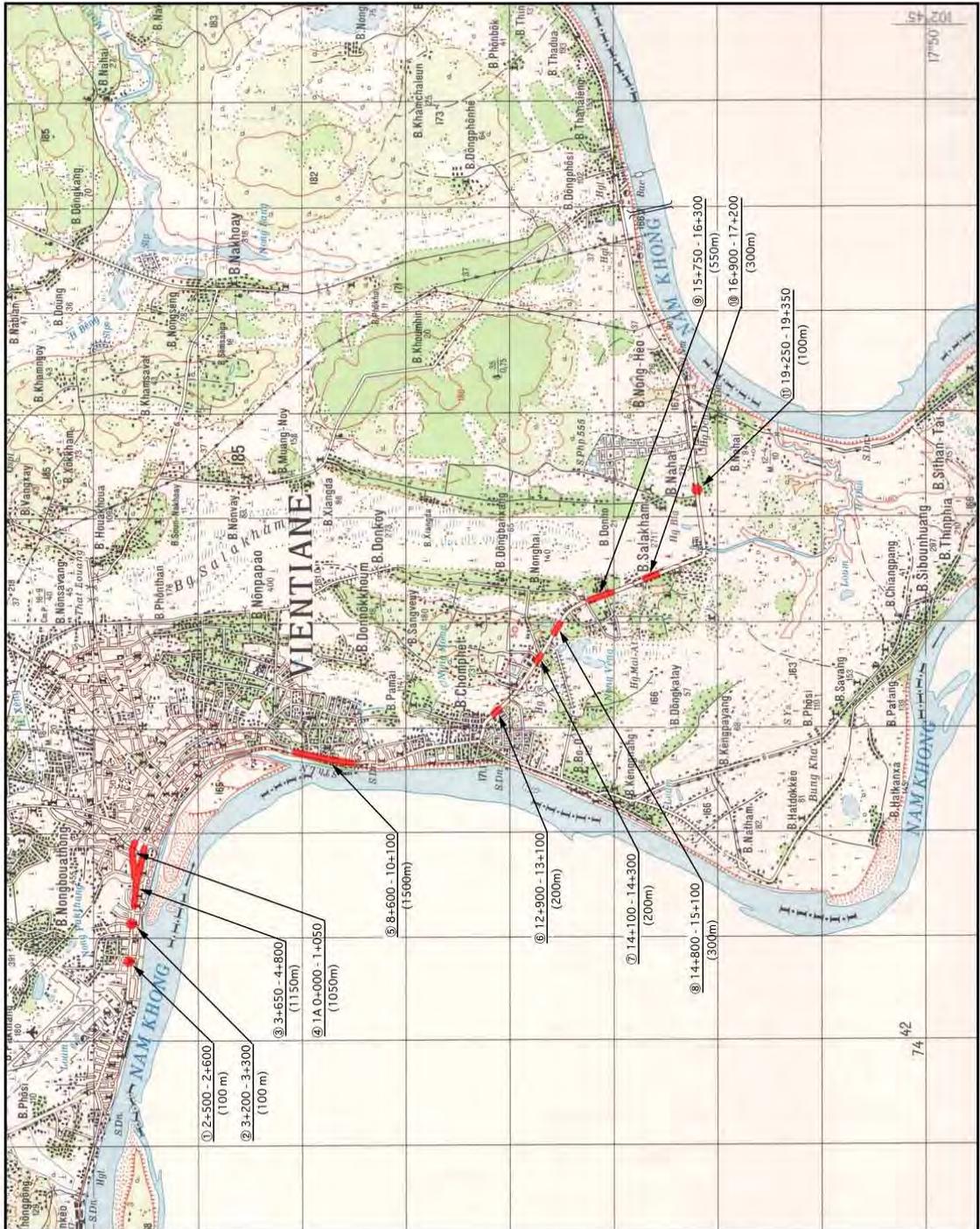


Figure 5. The recommended for annual recovery between the urban and city trail

1) Recovery of BCPs outside the inner city wall

Recovery of BCPs in the area outside the inner city wall is the same as that inside the wall, i.e. a series of works of excavation by hand, picking-up of artifacts, washing, grouping and transporting them to the temporary repository.

2) Personnel required for recovery of BCPs

The personnel required for recovery of BCPs is as shown in Table 8 when road improvement construction is carried out in the area outside the inner city wall shown in Table 7. Although the area to be recovered outside the wall is 5,550m long in total and equal to the length of the whole area inside the wall, the possibility of artifacts being unearthed is assumed to be not more than 10% of that in the area inside the wall. Therefore, 1,000 artifact boxes and temporary floor space of 22m² are necessary and a final total floor space of 242 m² should be prepared, combined with space for artifacts unearthed inside the wall.

Table 8 Personnel required for recovery of BCPs (outside the inner city wall)

Organization	Member	Days	Member/day		Amount (member · day)
Contractor	Worker	210	10G x 8=	80	16,800
	Supervisor	210	10G/5 x 1 =	2	420
	Assistant	210	10G/5 x 1 =	2	420
Consultant	Archaeologist	210	10G/2 x 1=	5	1,050
	Manager	210	10G/10 x 1=	1	210
Artifact Box: 1,000					
Lao side	Artifact Box (0.24m ² + bringing space 0.2m ²) x 1,000/20 = Area 22m ² : Two-storey prefabricated building: Floor space = 220 + 22 = 242m ² (including artifacts unearthed from inside the city wall, installed with fluorescent lamps, windows, window screens, electric outlets)				

(3) Proposal for Reconnaissance Excavation along the area outside the inner city wall

1) Necessity of confirmation of archaeological site during D/D phase

The distribution of potential archaeological sites shown above is based on assumptions and surface exploration without concrete evidence.

To acquire necessary information on the situation of BCPs, soil condition and depth of existence, an additional test excavation survey might be necessary during the detailed design period. This may make the road improvement construction works effective and efficient because it would be clear where care should be taken of BCPs during the construction work. It also means that archaeological excavation can be conducted appropriately in harmony with construction works.

The advantage of this operation will be as follows:

- i) If the majority, or at least some of the area evaluated as “Category C” is confirmed as archaeologically sterile, the efficiency of construction will increase and the cost can be reduced.
- ii) It can minimise the risk of unearthing BCP from unexpected areas and can include them in the implementation plan, which can again contribute to improving efficiency.
- iii) An archaeologically reliable basis for the assumption of possible BCPs in the area is provided, which could promote better understanding from the stakeholders on the whole project.

2) Practical method of confirmation of BCPs distribution

It will be the same as this study, with one test pit set for every 1 km, and additional test pits for every 200 m for areas considered to be potential archaeological sites in the 5,550m long area. An additional five test pits are to be kept as reserve. Since the test pit excavation survey for the confirmation will be carried out in the rainy season from July to September in 2005, the personnel required for the survey was planned, assuming that one pit can be excavated per day.

3) Personnel required for confirmation of BCPs distribution

The team consists of four members. The team manager will control the survey and coordinate it with stakeholders and relevant persons from governmental organizations of Lao PDR. Two archaeologists will be responsible for test pit survey because one of them has to observe the process of excavation while the other identifies and picks up unearthed artifacts. The surveyor will measure the location of test pits and coordinates of unearthed artifact.

The personnel required for confirmation of BCPs distribution is as shown in Table 9.

Table 9 Personnel for confirmation of BCPs distribution at Detail Design phase

Member	Survey	Arrangement
Team Manager (Archaeologist A)	2 months	1 month
Archaeologist B	2 months	1 month
Archaeologist C	2 months	1 month
Surveyor	2 months	-

The confirmation survey in the area outside the inner city wall is compared to this study in the area inside the wall in Table 10.

Table 10 Confirmation survey outside the inner city wall in comparison with this study inside the wall

Item	Inside the wall	Outside the wall
Target	Test pit survey Primary analysis	Confirmation of existence
Man-month	12.97	11
Personnel	6	4
No. of Pits	32	50
Length	Approx.6km	Approx.22km
Size of a pit	3.0 × 5.0 × 2.0 m	2.0 × 2.0 × 2.0 m
Contractor	Japanese company	Lao company
Others	Underground Radio System	—

5-5 Problems during Implementation of the Road Improvement Works

(1) Expected technical transfer during Archaeological Survey

Activities related to BCP are primarily the internal concern of Lao PDR, and should be under the jurisdiction of MIC. Therefore, the Japanese side must stay in the position of supporting the activities of MIC. Such activities must include

- i) Planning and selecting an appropriate method of excavation
- ii) Correspondence with "stakeholders"
- iii) Supervision and participation during excavation
- iv) Coordination with developers

However, as mentioned in Chapter 2, there is little opportunity for MIC staff to gain technical knowledge on the general procedure concerning the treatment of BCP. Cooperation with the Japanese

staff will contribute to capacity building on the subject and to learning methods of coordination, planning, excavation, lab work, recording, and preservation, and as an output, enhance abilities of cultural administration in Lao PDR. In 2005, "The law for Preservation of Natural and Cultural Heritage" is expected to be enacted, and the responsibilities of MIC should become more important. The techniques concerned in the field of BCP are difficult to learn from books, and must be acquired through experience. In this respect, participation of MIC staff from every part of the country is most effective in order to contribute to the upgrading of BCP processing capacity.

(2) Analysing unearthed objects

Excavated objects from this project will be handed over to the Lao side, but it is another important problem how the artifacts are handled and analysed. The pilot survey yielded 13,779 artifacts from only one percent of the projected area, and it is expected that more than 1.3 million artifacts will be found from the inner city wall area alone. This immense quantity of artifacts may be forgotten and discarded, once they are put into storage, if proper analyses is not done to gain full scientific information from them. In Japan, it usually takes 150 to 200 percent of the time and cost to analyse artifacts compared to what is spent in the field. It also depends on the expertise and ability of the archaeologists.

In the case of this project, many artifacts are not known from past archaeological data, and numerous ones are brought from abroad, so foreign experts are expected to give support in effective processing of these findings.

Analytical works include the following:

1. Observation and detailed classification of artifacts: By analysing shape, type, material, decoration, pattern and size, it is expected to know the usage, origin and date of each artifact.
 2. Drawing and photographing of artifacts: Selected artifacts from every category must be recorded in terms of drawings and photographs, which will constitute a very important part of the site report.
 3. Preservation: Fragile artifacts such as those made of wood or metal must be processed through chemical treatment.
 4. Distribution and geographical analyses: A statistical approach must be taken to know the detailed reconstruction of ancient land use.
 5. General analysis: The main objective of a BCP survey is to acquire information useful to reconstruct human activity of a certain place during a certain time. In this case, it is expected to find the origin and development of Vientiane city and its surroundings.
 6. Publicising: The final aim of analytical work. The results and supporting data should be included in the form of a site report. This is usually done in the form of printed matter,
-

however, electronically edited data may be considered.

(3) Need of holistic program

As a result of this project, a large quantity of artifacts and associated data will be generated, but the project itself cannot cover the analysis and publication of these resources. Analyses must be done by the Lao side. However, when considering human resources, budget, equipment and facilities, it is also considered that it is responsibility of the Japanese side to give support to such activities and to avoid criticism from any third parties. The following is a brief list of expected holistic programs.

Project purpose: To publish an archaeological report related to Vientiane No.1 Road improvement.

Impact: Ability for processing BCP in Lao administration is improved.

1) Equipment grant: MIC lacks even fundamental equipment and supplies for various procedures to process BCP, and the budget to acquire them, therefore, the supply of this equipment is a prerequisite of any assistance. It may include the following types of equipment:

- a) Recording equipment: drawing set, tracing table, digital camera with accessories, lighting devices, personal computer with accessories (including software), electric current stabiliser.
- b) Observation equipment: microscope, magnifying glasses, supports.
- c) Preservation/restoration equipment: various chemicals, hand tools, colouring equipment set.
- d) Storage equipment: sealed cases, specialised package set, dehumidifier, dry boxes, storing furniture.

In addition to the above, basic furniture such as worktables and chairs may be needed.

2) Dispatch of experts

Works must be done by experts in different fields. Capacity building can be realised through collaboration with MIC staff. The period must be no shorter than two consecutive years. Experts from the fields of both archaeology and restoration will be ideal. Transferable techniques include:

- a) General planning ability
 - b) Methods for classification
 - c) Knowledge for utilising methods from different fields (such as scientific analyses)
 - d) Drawing technique
 - e) Storage management technique
 - f) Photographing
-

g) Report editing and publishing

Methods for the Japanese side include the dispatching of experts and volunteers. However, among those the most effective one may be the use of "Senior Volunteers" rather than "Junior Volunteers" because to fulfill the task, long experience and deep knowledge on the subject is required in this field. Since there are almost no experts in Lao archaeology in Japan, experts who have worked in the surrounding countries of Southeast Asia would be ideal; researchers who have experience in Angkor Vat in Cambodia will be especially useful for analysing relatively similar artifacts of Vientiane.

3) Organising international workshop

Since this project is not a research excavation, it is important that the acquired data be opened to scholars from any nation, which is sometimes not seen in some of the similar projects. The support study team considers that more than ten academic papers can be written from the material unearthed only from the pilot survey. If these data and forthcoming materials are shared by the international community under permission of the Lao side, the Japanese aid will become a great contribution to the world's researchers in different fields. To publicise information, material has to be stored and managed in an orderly manner. Moreover, if participation of researchers from third nations is permitted, it will enhance the effectiveness and efficiency of the analysis work as well as be appreciated as another form of Japanese aid. To realise this, it may be easier to organise an international workshop under dispatched experts. This workshop can be handed over for management by the international community such as UNESCO so that any donor nation can provide sufficient resources for future studies.

Appendix

1. Member List of the Study Team

NO	Duty	Name	Organization
1.	Leader	Hidetaka Nishiwaki	Resident Representative Laos Office, JICA
2.	Project Coordinator (First time)	Kotaro Nishigata	Traffic Infrastructure Team Project Management Group II Grant Aid Management Department JICA
3.	Project Coordinator (Second time)	Kenshiro Tanaka	Traffic Infrastructure Team Project Management Group II Grant Aid Management Department JICA
4.	Project Manager /Excavation Plan	Shinya Kawada	Overseas Operations Department Kokusai Kogyo Co.,Ltd.
5.	Archaeological Excavation /Identification	Harunobu Kobiki	Archaeology and Museology Department Kokusai Kogyo Co., Ltd.
6.	Archaeology	Naho Shimizu	Consultant
7.	Architecture	Tsuyoshi Narita	Consultant
8.	Administrative Management of Culture	Yoshio Kawasaki	Archaeology and Museology Department Kokusai Kogyo Co., Ltd.
9.	Protection of Culture	Hiroshi Fujita	Overseas Operations Department Kokusai Kogyo Co., Ltd.
10.	Team Coordinator	Hiroyuki Nakai	Archaeology and Museology Department Kokusai Kogyo Co., Ltd.

2. Study Schedule

Code: EOJ: Embassy of Japan
 JICA: JICA Laos Office
 MCTPC: Ministry of Communication Transport Post and Construction
 DOR: Department of Road, MCTPC
 MIC: Ministry of Information and Culture
 DICO: Department of International Cooperation, Ministry of Foreign Affairs
 DICu: Department of Information and Culture, Vientiane Capital City
 NRT: Narita Airport
 BKK: Bangkok Airport
 VTN: Vientiane Airport

1: Team Leader
 2: Project Coordinator
 3: Project Manager/Excavation Plan
 4: Archaeological Excavation/Identification
 5: Archaeology

6: Architecture
 7: Administrative Management of Culture
 8: Protection of Culture
 9: Team Coordinator

NO.	Date	Official Members	Consultant Members
1	6/06 Su	NRT(11:00)→BKK(15:30) JL717 (Member No.2)	Equal to Official Member (Member No.3,4,5,7)
2	6/07 Mo	BKK(8:20)→VTN(9:30) TG690 Courtesy Call (JICA, EOJ, DICO, MCTPC) (Member No.1,2)	ditto
3	6/08 Tu	Discussion (DOR, MIC, DICu) (Member No.1,2)	ditto
4	6/09 We	Discussion (MCTPC, MIC) (Member 1,2)	ditto
5	6/10 Th	Report (EOJ, DICO) Discussion (MCTPC, MIC) (Member No.2)	Equal to Official Member VTN(10:30)→BKK(11:35) TG691 (Member 7) NRT(11:00)→BKK (15:30)JL717 (Member No.6)
6	6/11 Fr	Report (JICA) VTN(10:30)→BKK(11:35) TG691 (Member No.2)	Site Survey (Member No.3,4,5) BKK(8:20)→VTN (9:30)TG690 (Member No.6) BKK(8:35)→NRT(16:35) JL708 (Member No.7)
7	6/12 Sa	BKK(8:35)→NRT(16:35) JL708 (Member No.2)	Site Survey (Member No.3,4,6) VTN(10:30)→BKK(11:35) TG691 (Member No.5)
8	6/13 Su		Site Survey (Member No.3,4,6) BKK(8:35)→NRT(16:35) JL708 (Member No.5)
9	6/14 Mo		Site Survey (Member No.3,4) VTN(10:30)→BKK(11:35) TG691 (Member No.6)
10	6/15 Tu		Site Survey (Member No.3,4) BKK(8:35)→NRT(16:35) JL708 (Member No.6)
11	6/16 We		Site Survey (Member No.3,4)
12	6/17 Th		ditto
13	6/18 Fr		ditto NRT(11:00)→BKK (15:30)JL717 (Member No.9)
14	6/19 Sa		ditto BKK(8:20)→VTN(9:30)TG690 (Member No.9)

NO.	Date	Official Members	Consultant Members
15 21	6/20 ~6/26		Site Survey (Member No.3,4,9)
22	6/27 Su		Site Survey (Member No.4,9) VTN(10:30)→BKK(11:35)TG691 (Member No.3)
23	6/28 Mo		Site Survey (Member No.4,9) BKK(8:35)→NRT(16:35)JL708 (Member No.3)
24 26	6/29 ~7/1		Site Survey (Member No.4,9)
27	7/2 Fr		Site Survey (Member No.4) VTN(10:30)→BKK (11:35) TG691 (Member No.9)
28	7/3 Sa		ditto BKK(8:35)→NRT(16:35)JL708 (Member No.9)
29 32	7/4 ~7/7		ditto
33	7/8 Th		ditto NRT(11:00)→BKK (15:30)JL717 (Member No.8)
34	7/9 Fr		ditto BKK(8:20)→VTN(9:30)TG690 (Member No.8)
35 62	7/10 ~8/5		Site Survey (Member No.4, 8)
63	8/6 Fr		ditto NRT(11:00)→BKK (15:30)JL717 (Member No.5)
64	8/7 Sa		ditto BKK(8:20)→VTN(9:30)TG690 (Member No.5)
65	8/8 Su		Site Survey (Member No.4,5,8)
66	8/9 Mo		Site Survey (Member No.4,5) VTN(10:30)→BKK (11:35) TG691 (Member No.8)
67	8/10 Tu		ditto BKK(8:35)→NRT(16:35)JL708 (Member No.8) NRT(11:00)→BKK(15:30)JL717 (Member No.6)
68	8/11 We		ditto BKK(8:20)→VTN(9:30)TG690 (Member No.6)
69	8/12 Th		Site Survey (Member No.4,5,6)
70	8/13 Fr		ditto NRT(11:00)→BKK(15:30) JL717 (Member No.3)
71	8/14 Sa		ditto BKK(8:20)→VTN(9:30) TG690 (Member No.3)
72 83	8/15 ~9/5		Site Survey (Member No.3,4,5,6)
84	9/6 Mo		ditto NRT(11:00)→BKK(15:30) JL717 (Member No.7)
85	9/7 Tu		ditto BKK(8:20)→VTN(9:30) TG690 (Member No.7)
86	9/8 We		Site Survey (Member No.3,4,5,6,7)

NO.	Date	Official Members	Consultant Members
87 90	9/9 ~9/12		Site Survey (Member No.3,4,5,6,7)
91	9/13 Mo		ditto VTN(10:30)→BKK (11:35) TG691 (Member No.7)
92	9/14 Tu		ditto BKK(8:35)→NRT(16:35)JL708 (Member No.7)
93 102	9/15 ~9/24		Site Survey (Member No.3,4,5,6)
103	9/25 Sa		ditto NRT(11:00)→BKK(15:30) JL717 (Member No.9)
104	9/26 Su		ditto BKK(8:20)→VTN(9:30) TG690 (Member No.9)
105	9/27 Mo		Site Survey (Member No.3,4,5,9) VTN(10:30)→BKK (11:35) TG691 (Member No.6)
106	9/28 Tu		ditto BKK(8:35)→NRT(16:35)JL708 (Member No.6)
107	9/29 We		ditto
108	9/30 Th		ditto
109	10/1 Fr		Site Survey (Member No.4,5,9) VTN(10:30)→BKK (11:35) TG691 (Member No.3)
110	10/2 Sa		ditto BKK(8:35)→NRT(16:35)JL708 (Member No.3)
111	10/3 Su	NRT(11:00)→BKK(15:30)JL717 (Member No.2)	ditto
112	10/4 Mo	BKK(8:20)→VTN(9:30)TG690 Courtesy Call (MCTPC) (Member No.2)	ditto Equal to the Official Member (Member No.4,5,9)
113	10/5 Tu	AM: Discussion on the Minutes PM: Handover Ceremony	Equal to the Official Member
114	10/6 We	AM: Steering Committee PM: Signing on the Minutes	Equal to the Official Member
115	10/7 Th	VTN(10:30)→BKK (11:35) TG691 BKK(22:15)→ JL718 (Member No.2)	VTN(10:30)→BKK (11:35) TG691 (Member No.4,5,9) BKK(22:15)→ JL718 (Member No.4)
116	10/8 Fr	→NRT(6:15) (Member No.2)	→NRT(6:15) (Member No.4) BKK(8:35)→NRT(16:35)JL708 (Member No.5,9)

3. List of Contact Persons

- MCTPC(Ministry of Communication, Transport, Post and Construction)

Mr. Sommad PHOLSENA: Vice Minister

Mr. Viengsavath SIPHANDONE: Director General, Department of Road (DOR)

Mr. Phan PHOUTHAVONGS: Deputy Director General, Department of Road

Mr. Math SOUNMALA: Director General, Department of Planning and Cooperation

Mr. Chansy NOUANMALY: Director, Division of International Relations

Mr. Soukkhaseum PAKDIMANIVONG: Director, Project Monitoring Division, DOR

Ms. Pho Ngeun SOUVANNAVONG, Director, Environmental and Social Division, DOR

Mr. Dedsongkham THAMMAVONG: Project Coordinator, Vientiane No.1 Road, DOR

Mr. Bansack THEODAVANH: Project Manager, Vientiane Municipality Road Project, DOR

Mr. Oudong VONGHILY: Deputy Porject Manager, Vientaine Municipality Road Project, DOR

Mr. Phaknakone RAFTANA: Environmental and Social Division, DOR

- MIC(Ministry of Information and Culture)

Dr. Khecke SOISAYA: Vice Minister

Mr. Thongsa SAYAVONGKHAMDY: Director General, Department of Museum and Archaeology (DOMA)

Mr. Bounhom CHANTHAMAT: Deputy Director General, Department of Museum and Archaeology

Mr. Viengkeo SOUKSAVATDY: Director, Division of Archaeological Research, DOMA

Mr. Samlane LUANGAPHAY: Deputy Director, Division of Archaeological Research, DOMA

Mr. Phonphana SICHANTHONGTHIP: Division of Conservation of Historical Monuments, DOMA

Mr. Sangkhom KEOPHIAVONG: DOMA

Mr. Seng PHET: Division of Archaeological Research, DOMA

- Ministry of Foreign Affires

Prof., Dr. Bountheuang MOUNLASY: Director General, Department of International Cooperation

- Vientiane Municipality

Mr. Somphone SENGSILAVONG: Deputy Chief of Vientaine Capital City

Mr. Saveng PHOMMALY: Deputy Director, Department of Security

Mr. Soutanh PHONSONGGKHAM: Deputy Director, Department of Information and Culture (DIC)

Mr. Onela : DIC

Mr. Phoukhong Sisucham: DIC

Ms. Khampien INTHALUESA: Deputy Director of VUDDA

- National Museum

Mr. Phengsavanh VONGCHANDY: Director, Lao National Museum, MIC

Mr. Bounheuang BUASISENGPASEUTH: Deputy Director, Lao National Museum, MIC

Mr. Phetmalayvane KEOBOUNMA: Deputy Director, Lao National Museum

- Chanthabury District

Mr. Chanthone: Deputy Chief of Information and Culture

- Sisathanak District

Mr. Simongkhon SIHANHOUT: Deputy Chief of Information and Culture

- Foreign Experts

Ms. Anna KARLSTROM: Uppsala University/ Team Leader, Lao Pako Project, Sweden

Mr. Rick BLACKLAWS: Instructor, Department of Sociology and Anthropology, Langara College,
Canada

Ms. Catherine RAYMOND: Associate Professor, Northern Illinois University/ Director, Center for
Burma Studie

Mr. Alain POTKIN: Freelance Consultant/ Team Leader, Digital Conservation Facility Laos

Ms. Marion RAVENSCROFT: Conservationist, Lao Pako Project

Mr. Michel LORRILLARD: Director, L'ecole Francaise de L'extreme Orient dans Lao PDR

- Japanese Embassy in Lao PDR

Mr. Kazunori KAWADA: First Secretary

Mr. Nomi TOMOHITO: Second Secretary

Mr. Ken NAKAMURA: Second Secretary

- JICA office in Lao PDR

Mr. Hidetaka NISHIWAKI: Resident Representative

Mr. Shuichi IKEDA: Deputy Resident Representative

Mr. Shunsuke SAKUDO: Assistant Resident Representative

Mr. Hiroshi MURAYAMA: Assistant Resident Representative

Mr. Masatoshi KAIMASU: Assistant Resident Representative

Mr. Chanthaneth PHAKAYSONE: Assistant Program Office

4. Minutes of Discussion

Minutes of Discussions
on the Support Study for Buried Cultural Property Survey
on the Project for Improvement of Vientiane No.1 Road
in Lao People's Democratic Republic

In response to a request from the Government of Lao People's Democratic Republic (hereinafter referred to as "Laos"), the Government of Japan decided to conduct a Basic Design Study on the Project for Improvement of the Vientiane No.1 Road in Lao People's Democratic Republic (hereinafter referred to as "the Project") and entrusted the study to the Japan International Cooperation Agency (hereinafter referred to as "JICA").

JICA dispatched to Laos the Basic Design Study Team from May 16 to July 23, 2003. However the handling of buried cultural properties could not be decided, and the Study was suspended.

JICA dispatched to Laos the Preparatory Study Team from February 5 to 26, 2004, to find a solution of the resumption of the Basic Design Study. In the course of discussions and field survey, JICA was requested to conduct the Support Study for Buried Cultural Property Survey on the Project for Improvement of Vientiane No.1 Road (hereinafter referred to as "the Study") as a part of the Pilot Buried Object Survey (hereinafter referred to as "the Pilot Survey") conducted by the Lao side and JICA agreed to conduct the Study with the Lao side.

JICA dispatched to Laos the Survey Team of the Study (hereinafter referred to as "the Team"), headed by Hidetaka NISHIWAKI, Resident Representative, JICA Laos Office, and is scheduled to stay in the country from June 7 to 11, 2004.

The Team held discussions with the officials concerned of the Government of Laos and conducted a field survey at the study area.

In the course of discussions and field survey, both sides confirmed the main items described in the attached sheets.

Vientiane, June 11, 2004



Mr. Hidetaka NISHIWAKI
Leader
Preparatory Study Team
Japan International Cooperation Agency



Mr. Sommad PHOLSENA
Vice Minister
Ministry of Communication, Transport,
Post and Construction
Lao People's Democratic Republic

Witness



Dr. Kheckeo SOISAYA
Vice Minister
Ministry of Information and Culture
Lao People's Democratic Republic

ATTACHMENT

1. The Purpose of the Study

- 1.1 The Study is conducted along about 6.0 km section, inside the initial city wall of Vientiane, of the Project for Improvement of Vientiane No.1 Road as a part of the Pilot Survey, the Buried Cultural Property (BCP) survey, conducted by the Lao side. The title of the Study has been changed into "the Support Study for Buried Cultural Property Survey on the Project for Improvement of Vientiane No.1 Road"
- 1.2 The Study is carried out to assure that the Environmental Impact Assessment (EIA) based on the Pilot Survey by Laos can fulfill the Regulation on Environmental Impact Assessment of Road Projects in Laos and JICA's Environmental and Social Consideration Guidelines (hereinafter referred to as "the Guidelines"), and to ensure that its quality and level is sufficient for the judgment of resumption of the Basic Design Study.

2. The Site of the Study

The site of the Study is shown in Annex 1.

3. Responsible and Implementing Organisation

- 3.1 The responsible and implementing organisation of the Pilot Survey is the Department of Road (DoR) of the Ministry of Communication, Transport, Post and Construction (MCTPC).
- 3.2 The Department of Museums and Archaeology (DoMA) of the Ministry of Information and Culture (MIC) is responsible for archeological matter and cultural properties management according to the Decree of the President on the Preservation of Cultural, Historical and Natural Heritage, 1997.

4. Implementation System for the Pilot Survey (including BCP survey) and the Study

- 4.1 The Lao side agreed to formulate a steering committee consisting of the representatives of MCTPC, MIC and Vientiane Capital for the coordination of the Pilot Survey and the Study.
- 4.2 The Lao side also agreed to organise an implementation committee under the steering committee consisting of the representatives of MCTPC, MIC, Vientiane Capital, and other organisations for smooth implementation of the Pilot Survey and the Study.
- 4.3 Both sides agreed that the steering committee shall conduct the meetings for the parties concerned before and in the course of the BCP survey to collect the public opinion of the methods and the results of the BCP survey.
- 4.4 The Lao side agreed to organise the work team for the practical BCP survey as Annex 2.

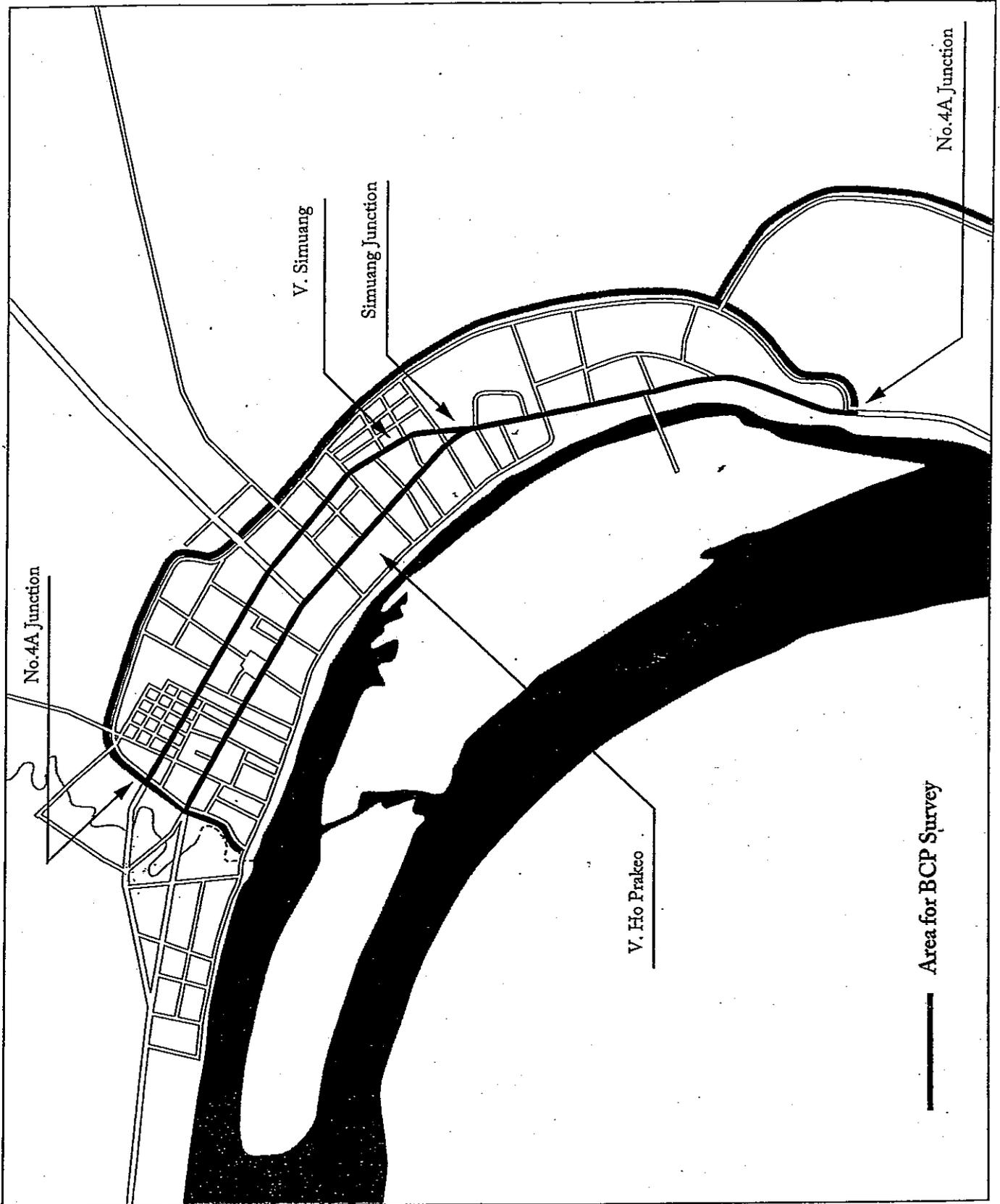
5. Further Schedule of the BCP survey and the Study

- 5.1 The consultant members of the Team will proceed with further studies in Laos until September 17, 2004.
- 5.2 The Lao side will prepare the report of the BCP survey, as a part of the Pilot survey, by September 10, 2004.
- 5.3 Based on the result of the above report, the Japanese side will decide the detailed policy of Basic Design Study after September.

6. Safety Management

- 6.1 The Team and Lao side agreed to take measures for safety management of the Pilot Survey and the Study described in 6.9 and 6.10 of Inception Report.
- 6.2 The Lao side agreed to assign exclusive counterpart personnel during the Study.
- 6.3 The Team and the Lao side agreed to prepare an urgent transmission system of information.

#21



The site of the study

Lao work team member list

NO	Title	Organization	Name
1.	Lao Pilot Survey Manager	Director General Department of Archaeology and Museums, MIC	Mr. Thongsa SAYAVONGKHAMDY
2.	Lao Field Manager	Director Division of Archaeological Research, Department of Archaeology & Museums, MIC	Mr. Viengkeo SOUKSAVATDY
3.	Lao Researcher 1	Vientiane Capital Division of Information and Culture	Not decided
4.	Lao Researcher 2	National Museum, MIC	Not decided
5.	Lao Researcher 3	Chanthabury District Office of Information and Culture	Not decided
6.	Lao Researcher 4	Sisathanak District Office of Information and Culture	Not decided

Minutes of Discussions
on the Support Study for Buried Cultural Property Survey
on the Project for Improvement of Vientiane No.1 Road
in Lao People's Democratic Republic

In response to a request from the Government of Lao People's Democratic (hereinafter referred to as "Laos"), the Government of Japan decided to conduct a Basic Design Study on the Project for Improvement of the Vientiane No.1 Road in Lao People's Democratic Republic (hereinafter referred to as "the Project") and entrusted the study to the Japan International Cooperation Agency (hereinafter referred to as "JICA").

JICA dispatched to Laos the Basic Design Study Team from May 16 to July 23, 2003. However the handling of buried cultural properties could not be decided and the Study was suspended.

JICA dispatched to Laos the Preparatory Study Team from February 5 to 26, 2004, to find a solution of the resumption of the Basic Design Study. In the course of discussions and field survey, JICA was requested to conduct the Support Study for Buried Property Survey on the Project for Improvement of Vientiane No.1 Road (hereinafter referred to as "the Study") as a part of the Pilot Buried Object Survey (hereinafter referred to as "the Pilot Survey") conducted by the Lao side and JICA agreed to conduct the Study with the Lao side.

JICA dispatched to Laos the Survey Team of the Study (hereinafter referred to as "the Team"), headed by Mr. Hidetaka NISHIWAKI, Resident Representative, JICA Lao Office, and is scheduled to stay in the country from June 7 to October 8, 2004.

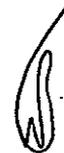
The Team held discussions with the officials concerned of the Government of Laos and conducted a field survey at the study area.

In the course of discussions and field survey, both sides confirmed the main items described in the attached sheets.

Vientiane, October 7, 2004



Mr. Hidetaka NISHIWAKI
Leader
Preparatory Study Team
Japan International Cooperation
Agency



Mr. Sommad PHOLSENA
Vice Minister
Ministry of Communication,
Transport, Post and construction
Lao People's Democratic Republic

Witness

Dr. Khecke SOISAYA
Vice Minister
Ministry of Information and Culture
Lao People's Democratic Republic



ATTACHMENT

1. The Result of the Pilot Survey

- 1.1 As a result of the Pilot Survey, buried cultural properties (BCPs) have been found near 1.0m - 2.0m below the project road at the all sites of trial pits. Many of the BCPs are supposed to belong to Lanxang era, but some of them are from earlier age.
- 1.2 Although the Pilot Survey surveyed about 1% of the inner old wall, 7,000 or more BCPs, much more-than-expected number, has been found. The BCPs will contribute the study on the mystery of the Lanxiang era and early Vientiane.
- 1.3 Based on the importance, quantity, etc. of the BCPs, sections of the project road inside of the old wall are categorized A-D. In addition, some parts of the project road outside of the old wall are supposed to be categorized B or C with archaeological view. However, category S sections, which require the Project to be canceled, adjourned or changed widely, could not be found under the project road.

2. Social Environmental Consideration

- 2.1 BCP surveys are required in the construction works in the A-D section of the project road. The contents of the BCP surveys depend on the category.
- 2.2 Although excavated BCPs are handed over to Lao side after the survey, it is requested for the Lao side to make the BCPs classify, analyze, store and exhibit archaeologically and appropriately.
- 2.3 The Lao side requested the Japanese side to support the Lao side to make the BCPs classify, analyze, store and exhibit archaeologically and appropriately. The Team replied to convey the request to relevant departments in JICA Head Quarter.

3. Hand Over of the BCPs and Survey Instruments

- 3.1 ~~BCPs, excavated, classified and analyzed in the Survey, the catalog of BCPs and the~~ instruments used in the Survey were handed over to Lao side. It is required to store and exhibit the BCPs archaeologically and appropriately.

5. Pilot Survey Report

Buried Cultural Properties Pilot Survey in Vientiane No.1 Road



Japan International Cooperation Agency
Prepared by Kokusai Kogyo Co. Ltd.

2004

Acknowledgment

1) This is a report for the support study for the pilot survey for buried cultural properties on the project for improvement of Vientiane No. 1 Road in Lao People's Democratic Republic.

2) The Pilot Survey was conducted by Ministry of Communication, Transport, Post & Construction and Ministry of Information and Culture of Lao People's Democratic Republic with the support from Japan International Cooperation Agency (JICA).

3) The support study was conducted from June 6, 2004 to October 8, 2004. The Pilot Survey officially started on June 11, 2004. The field excavation was started from July 7, 2004.

The results were handed over to Lao side in October 5

4) Participants of the Support Study Team:

Team Leaders:	Hidetaka Nishiwaki (Resident Representative, Laos Office, JICA, to July 2004) Kenshiro Tanaka (Grant Aid Management Department, JICA, from August 2004)
Project Coordinators:	Kotaro Nishigata (Grant Aid Management Department, JICA), Masatoshi Kaimasu (Assistant Resident Representative, JICA) Shunsuke Sakudo (Assistant Resident Representative, JICA) Hiroshi Murayama (Assistant Resident Representative, JICA)
Project Manager	Shinya Kawada (Overseas Operations Department, Kokusai Kogyo Co.,Ltd.)
Advisors	Harunobu Kobiki (Archaeology and Museology Department, Kokusai Kogyo Co., Ltd.) Naho Shimizu (Consultant on archaeology). Tsuayoshi Narita (Consultant on architectural history) Yoshio Kawasaki (Archaeology and Museology Department, Kokusai Kogyo Co., Ltd.) Hiroshi Fujita (Overseas Operations Department, Kokusai Kogyo Co., Ltd.)
Coordinator:	Hiroyuki Nakai (Archaeology and Museology Department, Kokusai Kogyo Co., Ltd.)
Liasons:	Kensuke Sakato Yuji Iwatsuki.

5) The study team would like to express gratitude for kind assistance and cooperation of the following:

Ministry of Communication, Transport, Post and Construction (MCTPC)

Mr. Sommad PHOLSENA: Vice Minister, Mr. Viengsavath SIPHANDONE: Director General, Department of Road (DOR), Mr. Phan PHOUTHAVONGS: Deputy Director General, Department of Road, Mr. Math SOUNMALA: Director General, Department of Planning and Cooperation, Mr. Chansy NOUANMALY: Director, Division of International Relations, Mr. Soukhaseum PAKDIMANIVONG: Director, Project Monitoring Division, DOR, Ms. Pho Ngeun SOUVANNAVONG, Director, Environmental and Social Division, DOR, Mr. Dedsongkham THAMMAVONG: Project Coordinator, Vientiane No.1 Road, DOR, Mr. Bansack THEODAVANH: Project Manager, Vientiane Municipality Road Project, DOR, Mr. Oudong VONGHILY: Deputy Project Manager, Vientiane Municipality Road Project, DOR, Mr. Phaknakone RAFTANA: Environmental and Social Division, DOR.

Ministry of Information and Culture (MIC)

Dr. Khecke SOISAYA: Vice Minister, Mr. Thongsa SAYAVONGKHAMDY: Director General, Department of Museum and Archaeology (DOMA), Mr. Bounhom CHANTHAMAT: Deputy Director General, Department of Museum and Archaeology, Mr. Viengkeo SOUKSAVATDY: Director, Division of Archaeological Research, DOMA, Mr. Samlane LUANGAPHAY: Deputy Director, Division of Archaeological Research, DOMA, Mr. Phonphana SICHANTHONGTHIP:

Division of Conservation of Historical Monuments, DOMA, Mr. Sangkhom KEOPHIAVONG: DOMA, Mr. Seng PHET: Division of Archaeological Research, DOMA.

Ministry of Foreign Affairs

Prof., Dr. Bountheuang MOUNLASY: Director General, Department of International Cooperation.

Vientiane Municipality

Mr. Somphone SENGSILAVONG: Deputy Chief of Vientiane Capital City, Mr. Saveng PHOMMALY: Deputy Director, Department of Security, Mr. Soutanh PHONSONGGKHAM: Deputy Director, Department of Information and Culture (DIC), Mr. Onela : DIC, Mr. Phoukhong Sisucham: DIC, Ms. Khampien INTHALUESA: Deputy Director of VUDDA.

National Museum

Mr. Phengsavanh VONGCHANDY: Director, Lao National Museum, MIC, Mr. Bounheuang BUASISENGPASEUTH: Deputy Director, Lao National Museum, MIC, Mr. Phetmalayvane KEOBOUNMA: Deputy Director, Lao National Museum.

Chanthabury District

Mr. Chanthone: Deputy Chief of Information and Culture.

Sisathanak District

Mr. Simongkhon SIHANHOUT: Deputy Chief of Information and Culture

Foreign Experts

Mr. Michel LORRILLARD: Director, L' ecole Francaise de L' extreme Orient dans Lao PDR, Ms. Anna KARLSTROM: Uppsala University/ Team Leader, Lao Pako Project, Sweden, Ms. Marion RAVENSCROFT: Conservationist, Lao Pako Project, Mr. Rick BLACKLAWS: Instructor, Department of Sociology and Anthropology, Langara College, Canada, Ms. Catherine RAYMOND: Associate Professor, Northern Illinois University/ Director, Center for Burma Studie, Mr. Alain POTKIN: Freelance Consultant/ Team Leader, Digital Conservation Facility Laos

Japanese Embassy in Lao PDR

Mr. Kazunori KAWADA: First Secretary, Mr. Nomi TOMOHITO: Second Secretary, Mr. Ken NAKAMURA: Second Secretary.

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1 Introduction

1-1 Objective and Contents of the Road Improvement Plan

Vientiane NO.1 Road, which connects the central district of Vientiane with Wattai Airport and the Mekong International Friendly Bridge, is not only the most important trunk road in Lao PDR but also a part of the major international road of Asian Highway NO.12. However, smooth and safe transportation is hindered due to deterioration of the road surface and the mixture of many kinds of vehicles. Moreover, due to lack of an effective drainage system for the road, there is frequent flooding in the rainy season over and along the road, which has resulted in accelerating deterioration of the pavement.

The government of Lao PDR determined that improvement of NO.1 Road was urgent and made a request to the government of Japan for Grant Aid to carry out the improvement work. JICA conducted a preparatory study to confirm the request and its background from January to February 2003. The study included a survey to assess the priority section in the requested project site, a test of pavement conditions by field CBR Test, a survey of current drainage and traffic conditions, examination of the road plan and resettlement, and an Initial Environmental Examination.

As a result of the preparatory study, it was confirmed that of the requested project site approximately 27 km long, the government of Lao put priority on the 10 km section extending from Sikai Junction to Takao Junction. It was also found that the section should be improved urgently because drainage conditions were extremely poor and the pavement was more deteriorated than any other section.

Based on the preparatory study, the Basic Design (B/D) Study started for the improvement of Vientiane NO.1 Road from Sikai Junction to Takao Junction in May 2003. However, it proved in July 2003 that consideration and preservation of buried property (BP) were inevitable because a section of the road approximately 4 km long was prescribed as a cultural property protection area under Presidential Decree. Therefore, the B/D Study Team required the Laos side to conduct a BP survey and the B/D was interrupted.

1-2 Relationship between the Road Improvement Plan and the Support Study

Although the Lao side intended to conduct the pilot survey for buried cultural property (BCP) on the 6km section of road within old city wall, Lao PDR requested the Japanese government to support the pilot survey team because it may be difficult to implement the study without any support.

In February 2004, a preparatory study was conducted to support the pilot survey.

The Government of Japan entrusted the support study for the BCP survey to the Japan International Cooperation Agency (JICA) and JICA decided to send a study team headed by Mr. Kenshiro TANAKA, an officer of the Transportation Infrastructure Team of the Second Project Management Division in the Grant Aid Management Department of JICA, which is scheduled to stay in the country from June 7 to October 7 2004.

The Japanese Support Study aims to give full support in the Lao Pilot Survey project by executing a reconnaissance excavation of the assigned area, evaluating the BCP, determining whether a full scale excavation is necessary and listing recommendations and points to consider when planning of the Basic Design for the construction is resumed and when it is applied. This plan is also designed and would be carried out to assure that the Environmental Impact Assessment (EIA) based on the Pilot Survey by Lao PDR can fulfill JICA's Environmental and Social Considerations Guidelines and to ensure that its quality and level is sufficient for resumption of the Basic Design Study.

2 Procedure

2-1 Secting the Locations of test pits

The most sound method for this support study was considered to be opening several test pits along the target area to acquire information on condition of buried cultural properties (BCP hereafter). In selecting the sites for test pit excavation, several methods were cohesively introduced.

a) Document study

Old maps always are the powerful tool to know urban conditions in the past. The information was provided in the studies, "Historical Assets of Old Vientiane City on NO.1 Road in Vientiane Capital" and "Interview Survey to Collect Information about the History of the Temple, Historical Heritage in Old Vientiane City", which were assigned to the JICA Office in Laos in February 2004. The maps produced by Ecole Francaise d'Extreme-Orient (EFEO) in 1905 and 1912 were used as the main source of reference. Also, "L'Art du Laos" by Henri Parmentier (Vol. 2, Paris, 1988), in which the map of 1912 appears, has useful descriptions of temples that no longer exist. Through the study of these materials, particular importance were given to the following categories:

- 1) Area where inner city wall are supposed to be intersecting.
- 2) Vicinity of the temples.
- 3) Area near the known archaeological sites.

b) Use of Underground Radar System

An attempt to narrow down the suspicious area for planning the positions of test pits by using underground radar system has been made. However, underground soil rich in iron and quarts, which reflects radio wave, as well as abundant jamming radio noise always available in urbanised area, prohibited to provide reliable data for the intended aim.

c) Condition of present environment

Selection of the locations of test pits were greatly affected when it was agreed that the effect on traffic, vegetation, and existing underground infrastructure must be minimised. Shapes and size of test pits, as well as their locations, were altered in actual implementation.

Locations of a total of 30 test pits were selected, and two more test pits were added later. The selected locations of the test pits are diagrammed in Fig 1.

2-2 Test Pit configurations and Excavation Procedure

Dimensions of each test pits were initially considered to be 3m wide by 5 m long and 3m in depth, however, in practicality, each test pit resulted to have various dimensions.

Excavation was performed to follow the following procedures:

- a) The topsoil and recent refill soil, including paving, as well as buried rubble or debris are removed. This work shall be done by mechanical means, only when there is absolutely no possibility of damaging BCPs; otherwise, it shall be done manually. When the original soil surface and/or the soil layer with possible inclusion of BCP is exposed and is cleaned, the situation is to be recorded by means of photograph and plan drawing with measurements of elevation.
- b) The soil layer with possible inclusion of BCP is removed portion by portion at 50cm depth intervals. Initial manual probe digging on several spots must be done, and if no trace of BCP is confirmed, the rest of the soil may be removed mechanically.
- c) If any trace of BCP, or the possibility of its presence is assumed, the soil is carefully removed manually using a trowel, wooden spatula, brush and other tools until the BCP is fully exposed.
- d) The BCP(s) are recorded by photograph, scale drawing(s) and observation notes.
- e) All concerned personnel must be immediately called, and the following evaluations must be done.
 - 1) Is (are) the excavated object(s) considered BCP(s)?

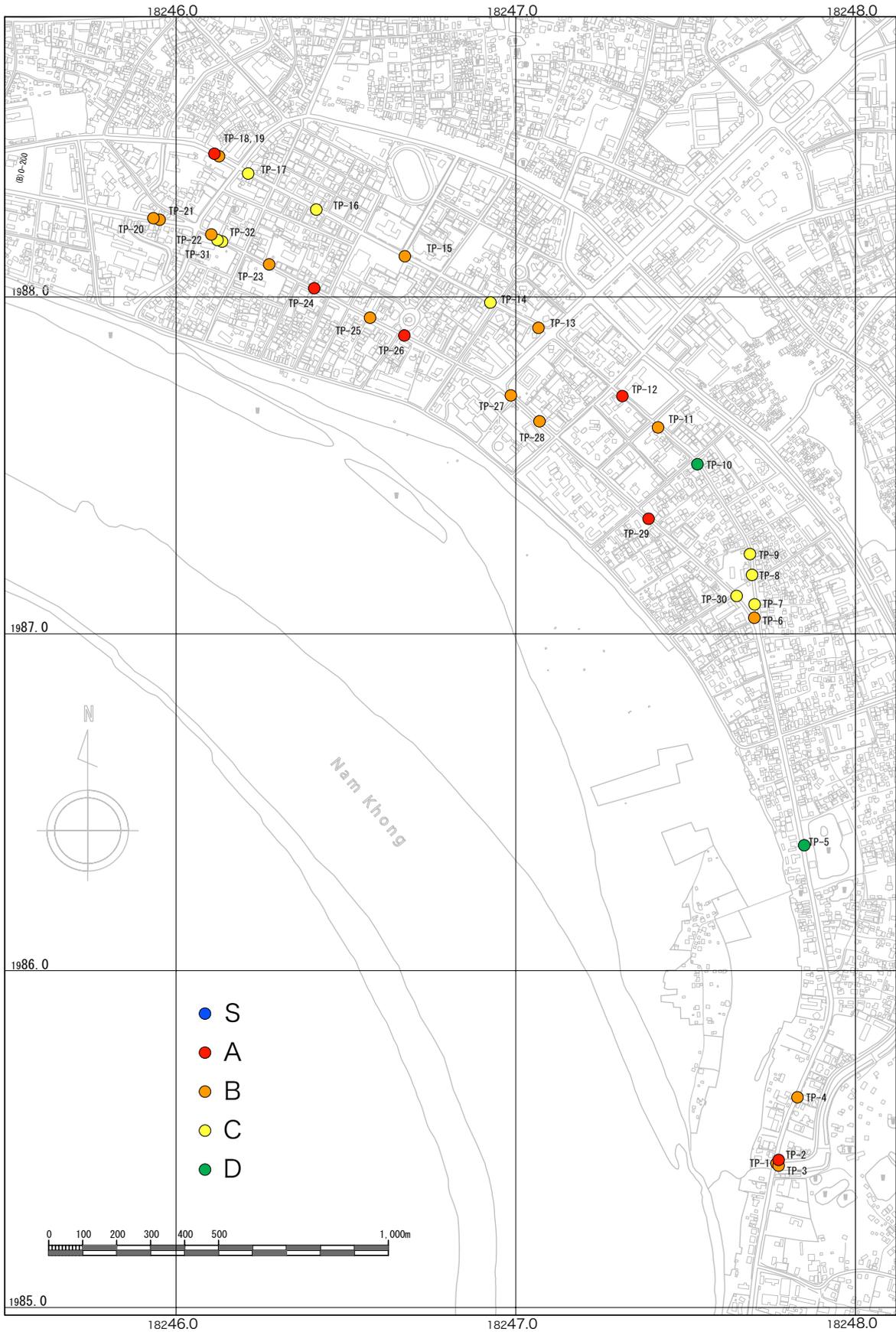


Fig. 1 Locations of Test Pits and their evaluations

- 2) Is it possible to continue further digging after everything is recorded and the BCPs recovered?
- 3) If the BCP is not recommended to be removed, is it necessary to re-bury it immediately and if so, how?

If the situation prohibits immediate convocation of concerned personnel, an appropriate date and time must be fixed, and all possible measures to protect the concerned area must be taken by use of tarpaulins, sandbags, fences and others.

f) If no BCP is found, or if all BCPs are recorded and recovered, the same routine is to be continued until the underground water level, or base level is reached. The excavation depth is limited to the water level to avoid risk of collapse. The decision to continue excavation work will be made by a Lao person in charge. However, in some cases a Japanese research advisor may halt the work on his own initiative.

g) When excavation is completed, one face of the wall is cleaned to record the soil stratigraphy by photograph, soil section drawing, and observation notes (including soil color, granularity, viscosity and other conditions). When necessary, soil samples 5x10x10cm in size may be collected vertically on the soil section. Samples are to be kept in sealed containers and appropriately labeled.

h) After the excavation is completed and all records reconfirmed, the test pit is appropriately filled in and restored to its original state.

i) Any matters of concern will be solved in conjunction with the Lao counterpart.

j) The situation of artifacts must be recorded including the coordinates of the point where the object was exposed, in situ photographs and observations. Artifacts are to be recovered from the site when it is necessary. They should be numbered, marked with coordinates, secured in plastic bag, and labeled. Labels should be made of waterproof material, and information including the artifact number, test pit number and date must be written on it using a waterproof marker. Artifacts must be contained in a secure case and immediately moved to a storeroom.

k) Artifacts from each test pit are stored and processed accordingly:

- If any artifact is missing during the post-excavation processes, all efforts must be made to search and find the lost item.
- All artifacts are cleaned and dried.
- Labels must not be lost during the procedure.
- The artifact number is to be marked on the artifact using water-soluble white paint.
- After the paint is dry, an overcoat of transparent varnish must be applied.
- Artifacts are classified according to different parameters, which are decided by an expert.
- The parameters are entered into the artifact ledger.
- Classified artifacts are stored in an appropriate container.
- Containers must be labeled.
- Artifact containers are stored in a long-term storeroom.
- Copies of drawings and photographs as well as other data are to be stored with the artifacts.
- Records must be kept of all those who enter the storeroom and if necessary, guards must be stationed at the door.
- Some artifacts are to be selected for the site report and photographed. If necessary, scale drawings of them will also be made.
- Observations, comments, and opinions are to be listed in the artifact ledger.
- Finally, the manuscript for the report is written by the expert.
- Artifacts of maximum importance may be exhibited at the national museum.

3 Results

3-1 Stratigraphy

The topography of the surveyed area was quite flat, within the range of somewhere around 170m above sea level.

The basic stratigraphy was somewhat similar among the test pit locations:

I: Asphalt layer: The existing road surface.

II: Sub-base layer: Mixture of pebble and laterite soil. Sometimes the older paving surface and their sub-bases were preserved, showing laminated configuration.

III: Dark grey silty-clay layer: Quite uniform soil where most artifacts were included. Occasionally, the underground water level could be as high as this layer on a rainy day.

IV: Grey silty-clay layer: Uniform layer with very few inclusion.

V: Grey clay layer: Uniform layer with very few inclusions. Color may vary from sand-yellow to green-grey, but mostly light grey.

VI: Base gravel bed: Found at around a depth of three meters from the surface. Deposits and stains of oxidized iron were observed.

3-2 Artifacts

From the test pits, which cover 1% of the area affected by road project, an extraordinarily large number counting a total of 13779 artifacts were collected, a quantity which immensely exceeds the prior estimate. (Table 1)

The majority of pot shards belong to locally produced stoneware from the Lane Xang period, but numerous imported ceramic pieces were also found. Another group of interesting artifacts includes bronze fragments of Buddhist sculptures, prehistoric pot shards with stamped patterns and various stone tools (including the suspicious pieces).

Test Pit No.	Stoneware	Earthenware	Import Ceramic	Metal Objects	Stone Implement	Glass Artifact	Wooden Artifact	Miscellaneous Artifact	Roof Tile	Architectural Decoration	Brick	Lithic Component	Stucco	Faunal Remain	Stone	Total
TP01	9	0	0	0	1	0	3	1	0	0	56	0	0	0	1	71
TP02	1093	172	54	7	2	0	0	6	0	0	27	0	0	15	21	1397
TP03	72	6	7	1	1	0	0	0	4	0	9	0	0	0	2	102
TP04	102	5	13	0	1	0	0	0	1	0	6	0	0	1	2	131
TP05	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TP06	21	6	2	3	0	3	16	0	96	0	76	11	10	3	2	249
TP07	2	1	11	1	0	1	1	0	4	0	0	0	0	0	2	23
TP08	8	10	14	0	0	2	0	1	2	0	7	0	0	0	1	45
TP09	17	13	5	1	0	0	0	0	5	0	14	0	0	0	3	58
TP10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TP11	112	146	37	3	1	0	0	0	4	1	13	0	0	1	8	326
TP12	43	10	11	103	1	3	0	3	280	4	55	0	97	1	17	628
TP13	55	48	19	2	2	0	0	0	23	0	12	0	1	50	11	223
TP14	13	6	5	7	0	0	0	0	0	0	4	0	0	2	0	37
TP15	116	29	10	0	0	0	0	0	179	0	54	1	9	0	1	399
TP16	23	22	10	0	0	1	0	0	11	0	31	0	3	4	2	107
TP17	97	82	39	0	0	5	2	0	8	0	24	0	0	30	2	289
TP18	44	927	33	14	0	5	1	0	16	0	18	0	7	6	3	1074
TP19	27	5	24	21	0	47	0	0	2	0	194	0	49	32	2	403
TP20	2	3	2	2	0	2	0	0	1	0	152	0	1	45	0	210
TP21	3	6	23	6	0	13	0	1	8	0	43	0	6	24	0	133
TP22	7	1	7	23	1	0	0	0	118	0	51	0	14	0	2	224
TP23	298	216	84	30	3	0	0	0	30	0	68	0	8	98	16	851
TP24	100	77	37	16	5	0	0	0	769	0	78	0	27	74	89	1272
TP25	253	78	73	3	2	0	0	0	3	0	21	0	0	114	7	554
TP26	414	344	175	14	0	0	0	0	305	0	53	0	14	69	16	1404
TP27	156	79	17	7	4	0	1	0	357	3	59	0	2	0	6	691
TP28	373	267	105	12	4	0	0	0	142	0	33	0	9	28	17	990
TP29	167	87	49	23	5	0	0	0	645	0	20	0	3	5	14	1018
TP30	138	74	84	1	0	0	0	0	14	0	5	0	0	14	9	339
TP31	14	4	4	3	0	0	0	0	133	0	16	5	18	1	2	200
TP32	14	1	7	3	0	0	0	0	244	0	54	0	5	0	3	331
Total	3793	2725	961	306	33	82	24	12	3404	8	1253	17	283	617	261	13779

Table 1 Quantity of excavated artifacts by Test Pit and by type

TEST PIT 01

Location: Khou Vieng/Thadeua Junction.

Excavation Date: July 7th, 2004

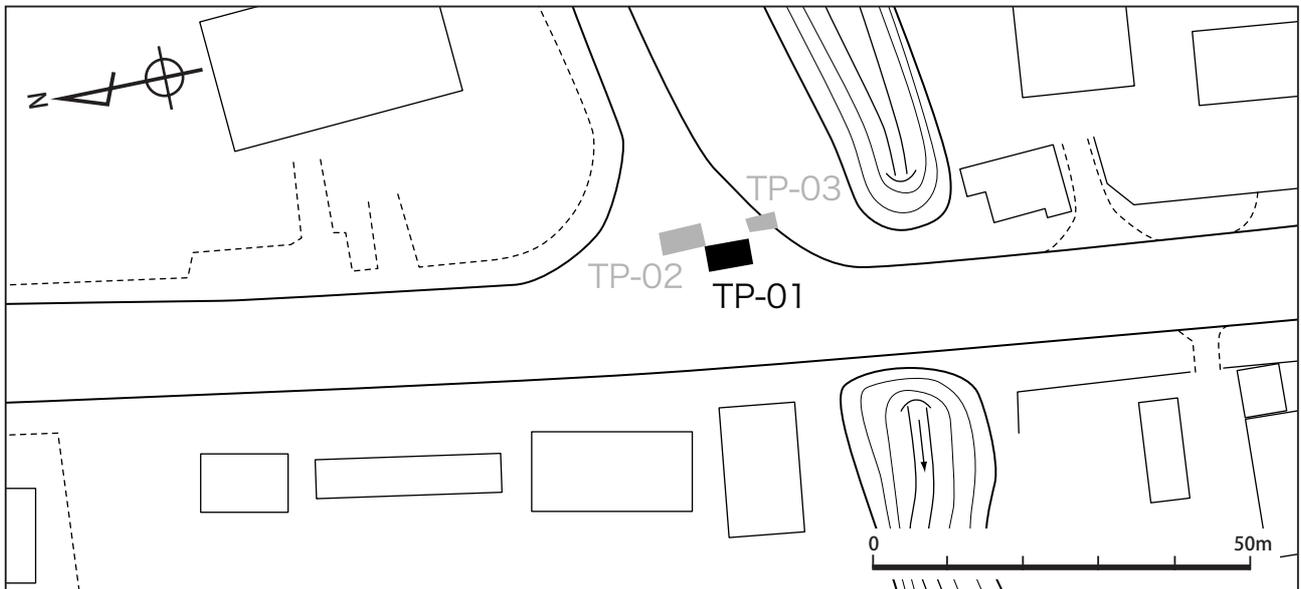
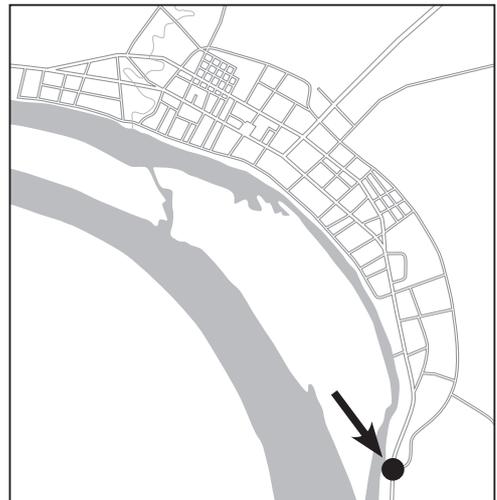
Identified Working Infrastructure(s): Water pipes: 2

Identified Archaeological Feature(s): None

Recovered Artifacts: 69

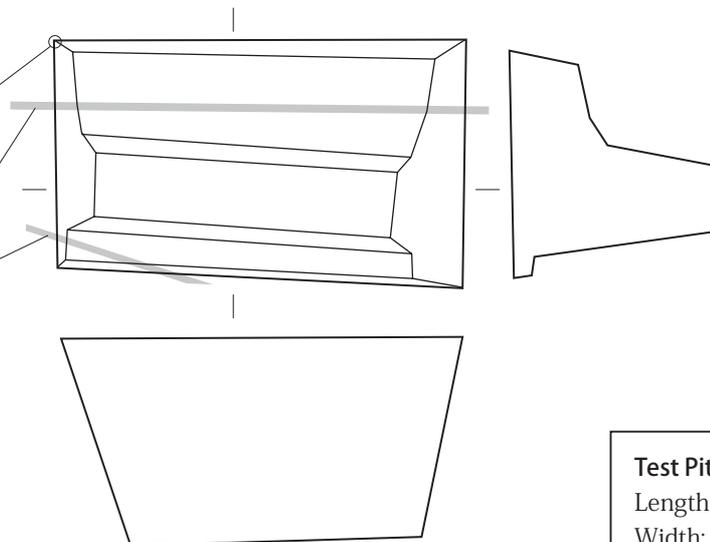
Stoneware: 9, Stone Tool: 1, Stone: 1, Brick: 56, Wooden Object: 3

Note: Remain of the inner city wall was expected to be found but no evidence of any structure was unearthed. Bricks mixed into the sub-base filling could have been of those once composed the wall.



Point E1-1
Coordinates:
X=85,433.308
Y=47,770.909
EL=171.23m

Waterpipes



0 5m

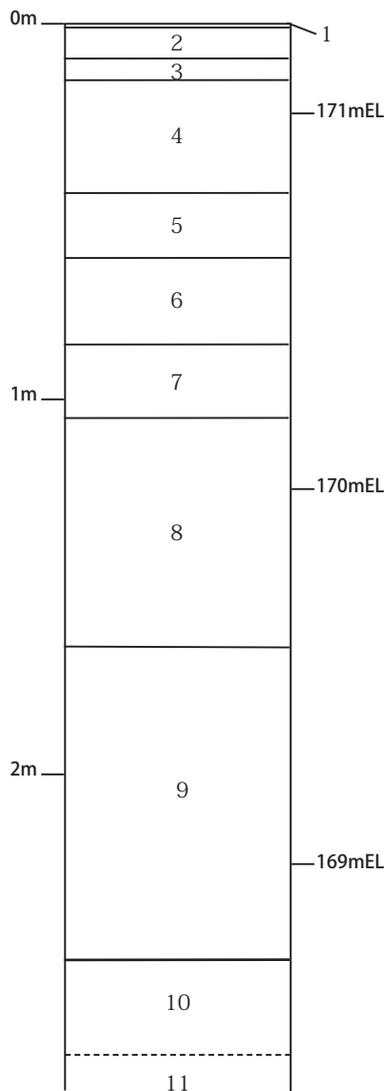
Test Pit Dimentions (max.)

Length: 5.41m

Width: 3.33m

Depth: 2.76m

Surface Area: 18.02m²



Explanation of Soil Layers	
1	Asphalt: Present road surface.
2	Pebble/Laterite soil: The sub-base layer for the present road surface.
3	Asphalt: Former road surface.
4	Pebble/Laterite soil: The sub-base layer for the former road surface.
5	Mixture of bricks, pebbles and soil. Part of the sub-base for former road.
6	Dark grey silty clay. Bricks, stones and some chunks of charcoal was found. Part of the sub-base of former road.
7	Dark grey silty clay. Bottom part of the sub-base layer. Occasionally dug into the lower layer.
8	Light grey silty clay. Artifacts found from the upper part of this layer.
9	Light yellow grey silty clay: Sporadic light grey mottle.
10	Light grey clay: Small pebbles stained by oxide of iron as well as particles and blocks of charcoal were observed.
11	Gravel: Ancient Mekong riverbed?



General

As the first of the excavation, Test Pit No.1, was selected to be an experimental case, and the purpose was to find, 1) the general soil condition and stratum of the Vientiane city area, 2) the depth of base gravel layer of the Mekong and underground water level, and 3) condition of the ancient inner city wall. Also, general methods of excavation and were to be tested, as well as implementation of traffic control, effectiveness of security measures, material adequacy of the post-excavation filling, endurance of the temporal re-paving, were to be tested.



Khou Vieng/Thadeua Junction before excavation of Test Pit 01



Excavation in procession

Artifacts

Bricks

1 piece of brick, which keeps the original length, width, and thickness, and 55 broken blocks were unearthed. Each of 19 blocks of them keeps its width and thickness only (see the table below). These bricks may be components of the inner city wall of Vientiane.

1 block of white color brick has the carved lines coloured black on at least two sides (TP01-B1a, b). Its original position or function is unidentified.

Length	Width	Thickness
	92	35
	105	40
210	107	47
	108	31
	108	48
	109	39
	110	40
	110	47
	112	47
	112	53
	115	37
	115	40
	117	46
	117	55
	117	56
	118	60
	120	47
	122	46
	132	55
	135	57

Stoneware

There were not so many artifacts unearthed from TP01, which count only 9 small shards of stoneware. Among the recovered shards of stoneware, 2 pieces are body parts of mortars. Other specimens seem to be body parts of large jar typed wares. All the stoneware shards are so fragmentary and heavily worn-out that it is difficult to reconstruct each original complete shape or to make fine-grained classification.

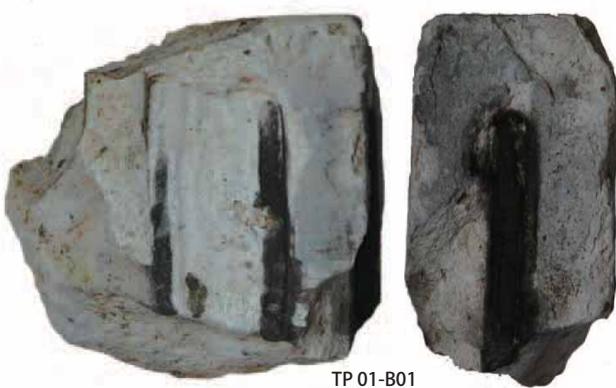
Wooden objects

3 broken parts of decayed timbers were unearthed. Each of them has the oval-shaped hole (TP01-W1 to W3). The longest one is approximately 123 cm. It is possible that these parts are components of house buildings.

Stone tool?

A chert pebble with bifacial notch-like fracture, which may not have been shaped naturally, was found (TP01-T1).

Measurements of bricks from TP01 (mm)



TEST PIT 02

Location: Khou Vieng/Thadeua Junction.

Excavation Date: July 9th to 13th, 2004

Identified Working Infrastructure(s): Water pipe: 1

Identified Archaeological Feature(s): Underground kiln: 1

Recovered Artifacts: 1397

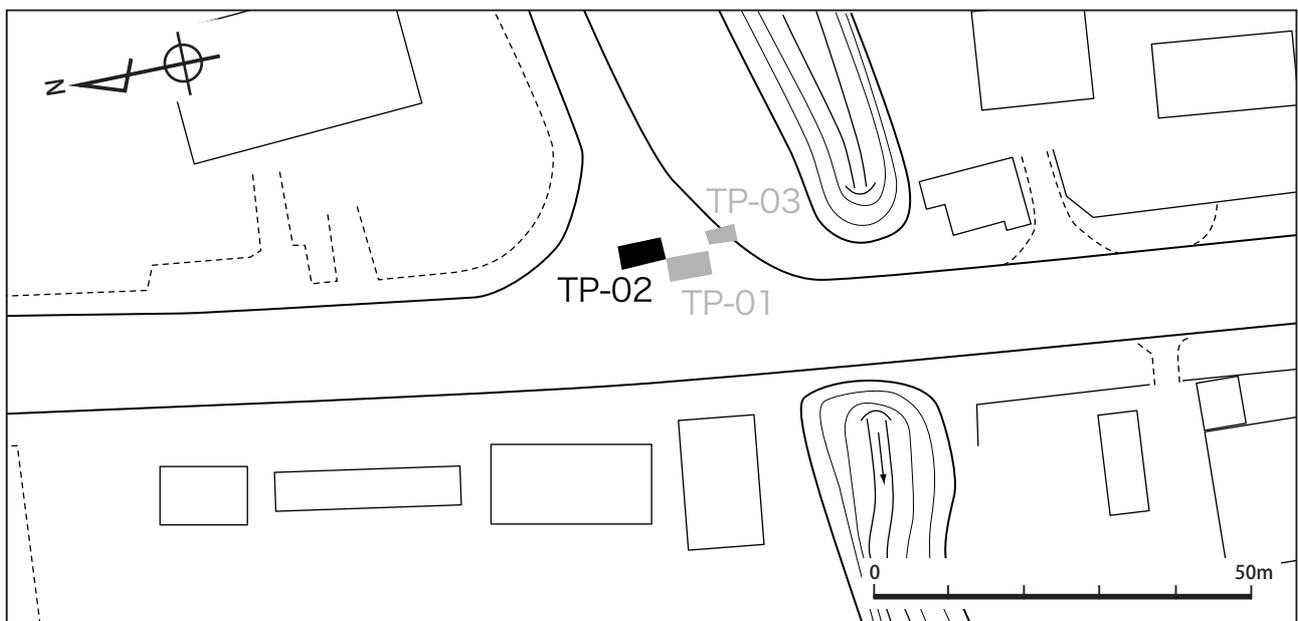
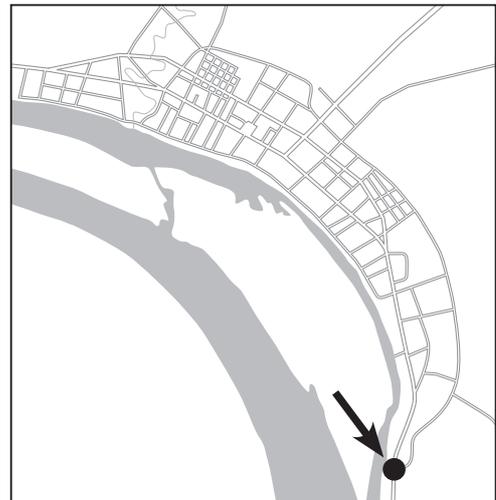
Stoneware:1093, Earthenware:172, Imported ceramics:54,

Bone:15, Others:6, Stone Tool:2, Stone:21, Brick:27,

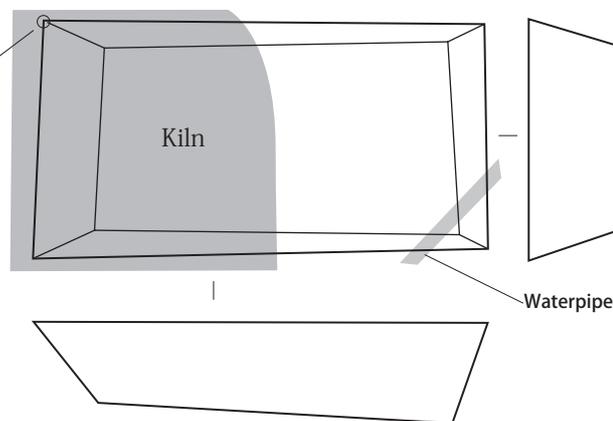
Metal Object:7

Note: Remain of the inner city wall was expected to be found but no evidence of it was unearthed. Bricks mixed into the roadbed filling could have been those once composed the wall.

An underground kiln for stoneware production was found and further excavation during this survey was discontinued. The floor has been covered by plastic tarpauline and refilled for future detailed excavation.



Point E2-3
Coordinates:
X=85,438.561
Y=47,774.058
EL=171.29m



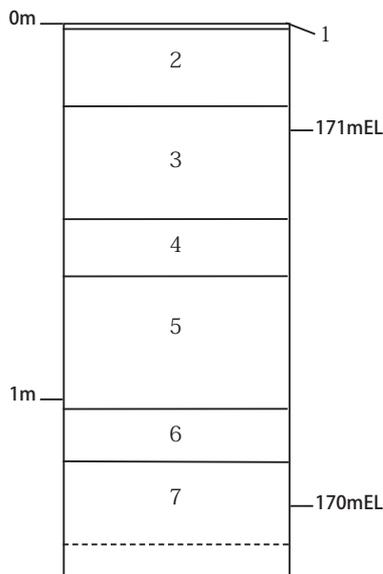
Test Pit Dimention (max.)

Length: 6.08m

Width: 3.21m

Depth: 1.35m

Surface Area: 19.52m²



Explanation of Soil Layers

- 1 Asphalt: Present road surface.
- 2 Pebble/Grey soil: The sub-base layer for the present road surface.
- 3 Pebble/Laterite soil: The sub-base layer for the former road surface?
- 4 Mixture of bricks, pebbles and soil. Part of the sub-base for former road.
- 5 Dark grey silty clay. Artifacts found from this layer.
- 6 Grey silty clay. Artifacts found from the upper part.



General

The second test pit was located right next to the Test Pit No.1 in order to continue the search for the remnant of the city wall. However, what actually showed up was the remain of ancient kiln, or the production facility for ceramics. A total of 1411 artifacts was recovered.

The excavation was terminated when the existence of kiln was confirmed, and because there was a limited time to be spent on individual test pit, it was decided to preserve the kiln by covering it with plastic tarpauline and filling back with sand for future more detailed excavation.



Khou Vieng/Thadeua Junction before excavation of Test Pit 02



Discovered part of the kiln



Preservation of kiln by tarpauline



Situation after the re-paving

Feature

Part of an underground kiln was unearthed. Dimensions are unknown.

Artifacts

Bricks

1 piece of brick, which keeps the original length, width, and thickness, and 26 broken blocks were unearthed. Each of 5 blocks of them keeps its width and thickness only (see table at the right). These bricks may be components of the inner city wall of Vientiane.

Length	Width	Thickness
	95	35
	115	48
	117	45
	123	43
	132	55
254	135	53

Measurements of bricks from TP02 (mm)

Stoneware

From the excavation at TP02 which was probably located at a part of ancient kiln as reported above chapter, enormous amounts of stoneware shards counted 1093 pieces in total were unearthed. Unfortunately, most of recovered specimens are small fragments, and also time for analysis is not enough, it is very difficult to estimate original complete shape for each shard and to categorize (classify) all the specimens by their characteristics, such as manufacturing techniques, used pastes, firing, glazes, decorations and also typologies. The unearthed stone wares displayed wide variations especially in typologies of shape classes. As a result of rough or trial classification by typology, there are confirmed jars, bowls and mortars; each of these three wares includes several minor sub-classes mainly depends on the variations of shapes in rim and/or bottom proportions, globular jars with covers, small bottles, oil lamps, smoking pipes, fishnet weights, and other miscellaneous or unidentified objects.

Concerning about paste or its types, there are not remarkable variations. The paste used in most of the specimens have common characteristics, which is relatively coarse grained; small white particles (feldspar?) are observed, while mica particles can not be observed; light gray to dark gray in major color, while grayish brown to dark purple brown color in some specimens. Additionally, some pores are profuse in paste clay, broken edges are bumpy. Both well-fired and ill-fired (under-fired) specimens are equally present. It is not confirmed yet that to use the term "stone ware" is suitable or not, however, the paste characteristics, as a whole, are similar to those of ancient ceramics in Japan -Sue ware or those of the Middle Age ceramics fired at Suzu Atsumi or some other kilns in Japan.

The quantity of artificial glazed stoneware found in the Test Pit was quite small. Most of the unearthed specimens have no apparent artificial glaze, though many of the wares had a dark green to black colored natural glaze effect on some surfaces, from fly-ash deposited during firing.

Detailed results of archaeological analysis such as typology, proportional composition and some interpretations about the recovered stone wares shall be reported in near future.

On the photo plates, there are presented typical shape classes of rim and base parts. Some odd wares with peculiar shapes are also introduced on the plate.

TP02-S1~S21 demonstrate the temporary typology of rim shapes. The specimens have wide variations, basically considering, however, they can be divided simply into two categories; bowl typed classes and jar typed classes. S01~S03, S11~S19 and S21 can be classified as rim parts of bowl or mortar typed wares which are in terms of the vessels with outward-curving body wall and the wider mouth-rim compared with body and base parts in diameter. While S04~S10 and S20 are identified to be rim parts of jar typed wares which exist their upper body curving inwards. TP02-S22~S31 show the variations in base parts. It should be noted that the classification in accordance with shape classes of base parts is rather difficult as most specimens remain only in base parts. S24~S27 and S29~S31 are possibly to be bases for bowl or mortar typed wares. While S22, S23 and S28 should be attached to jar typed wares. TP02-S32 is a small bowl or tumbler shaped ware with untrimmed flat base. Its sizes measure around 10.4cm in diameter at the mouth-rim, 8.1cm in diameter at the bottom end and 6.6cm in height. There is black coloured natural glaze effect partially, from fly-ash deposited during firing.

TP02-S33 is a small bottle shaped ware. It has lost only its top end of the mouth-rim. It sizes measure 6.2cm in diameter at the bottom end and 8.8cm in outer diameter at the widest point on the body. The paste are nearly black in colour, comparatively coarse but solid. There is light greyish coloured natural glaze effect or fly-ash on its shoulder

part.

TP02-S34 are shards to be possibly regarded as oil lamps which consist of dish or saucer part at the base and post part standing on the center of the interior bottom of saucer. The specimens shown in the photo plate are one saucer part and one central post perforated on its top, which are not a unit of one object but different parts of two objects. The complete forms of these oil lamps are to be confirmed at findings from other test pits mentioned below.

TP02-S35 is a solid handmade cylindrical lumps of clay with holes along its axis. The specimen has lost its end at one side. Its sizes measure around 3.8cm in diameter at the widest part of body and 1.2cm in diameter at the exit of hole. Generally speaking, these objects with same shape as the specimen are assumed to be used as weights for fish-net. There are several pieces of same shaped objects of stoneware and also earthenware recovered at other test pits.

Imported ceramics

Imported ceramics recovered from TP02 which count 54 pieces in total, demonstrates relatively wide variations. The specimens are to be classified first by their origins (production kilns or areas), then also by their textures (such as porcelain, stoneware or others) and typologies of shape classes. Outline of the components, characteristics or dating about the recovered specimens are reported briefly as follows.

Chinese ware counts 19 pieces. Among them, there are eight pieces of blue and white porcelain consisting of two pieces of bowl, five pieces of dish or plate, and one piece of bottle. Each specimen of Chinese blue and white porcelain is so small and fragmentally that it is difficult to identify its production kiln and date, however, these were probably produced at Jindezhen kilns in Jiangxi province during late Ming and early Qing dynasty (16th to 17th centuries).

TP02-I1 and TP02-I2 are shards of large plates or basins of Chinese blue and white porcelain made in probably Jindezhen kiln in late Ming to early Qing dynasty. Both shards have under-glaze painted decoration of flowers and circles motives in indigo blue color, and also molded relief of lotus petals motives on the exterior. TP02-I3 is also a shard of bowls of Chinese blue and white porcelain, this is a newer type dating around middle or the latter half of Qing dynasty (18th~19th centuries).

Chinese Celadon counts only one piece of bowl, white porcelain also counts one piece of bowl. Six pieces are shards of porcelain with over glazed red and green enamel painted. Five pieces are parts of bowls, while one piece is a part of plate or dish. These specimens are also very fragmentary for precise identification and dating, roughly considering, however they might be manufactured in Jindezhen kilns in 16th century, Ming dynasty. Other three specimens are jar or bottle shards of Chinese brown (iron) glazed stone ware, which texture of paste and glaze differs clearly from other brown glazed stoneware made in Thai or Laos. These were probably produced in Guangdong or Fujien province in Southern China during Ming dynasty (15th to 16th centuries).

The other imported ceramics except for Chinese products, there are counted 33 pieces of Thai ware and two pieces of Vietnam wares. The shards of Thai ware could be classified into 19 pieces of Celadon (or celadon glazed stoneware with incised decoration) which consists of bowls and plates, three pieces of underglaze iron painted bowls, six shards of brown glazed stoneware jars and the rest five pieces of transparent (ash?) glazed stoneware.

TP02-I4 is a rim part of celadon glazed bowl. Its paste is grayish colour, relatively solid but coarse. The glaze is transparent with grayish green or light olive colour. Many large cracks are running in glaze. It is still shiny on the surface. No decoration is observed at the remained part. Thai ware is not reliably dates and also it remains difficult for each fragmentary specimen to identify production kiln with precise. Generally speaking, however, if above-mentioned specimens of celadon ware were produced at kilns around Sawankhalok, they probably dated early 15th century (the late 14th to the 15th centuries).

TP02-I5 is a shard of glazed pottery, bottom part of bowl with underglaze iron decorated. The paste is light cream yellow coloured, relatively fine but crumbly including very small black particles. No slip is observed on the surface of paste or under the glaze. The dark brown coloured underglaze is remained only in the circular decors running horizontally around outside of foot-ring and interior bottom. The over glaze is yellowish milky white and opaque with many bubbles and cracks in glaze. No shine remains on its surface. It is understood that the underglaze iron (black or brown colour) painted ware was manufactured at kilns around Sawankhalok and Sukhothai in Central Thai during circa 14th to 15th centuries, or Kalong and other kilns in Northern Thai during 15th to mid 16th centuries. For brown

glazed stoneware jars and transparent glazed specimens were supposed to be manufactured at several kilns in Northern Thai, but each kiln and also dating are not specified. Furthermore, it should be considered about some possibilities that these wares were once produced in local, that is, in the vicinity of Vientiane .

Only two shards of blue and white ware are identified as Vietnamese. Both (TP02-I6 and TP02-I7) are parts of bowls. The texture of paste used for these specimens is sandy and relatively coarse grained. Black particles are noticeable, but kaolin seems not to be included, therefore these are considered not porcelain but pottery. I6 is a rim part of small bowl with under-glazed dark grayish-blue decorations drawing flowers and other decor in vague (running) touch on both sides. According to the characteristics of paste, glaze and decorations, its production date could be dated from late 15th century to 16th century. I7 is a bottom part of bowl with under-glaze blue wash decoration on the interior bottom, and with so-called "chocolate base" - that is quite distinctive decoration in Vietnamese wares; the whole circle of exterior bottom inside foot-ring was painted by dark brown coloured iron glaze. The specimen was probably manufactured in 16th century.

Earthenware

There are 172 pieces of earthenware recovered at the Test Pit 02, which is not including a complete form. The shards of rim parts counting 28 pieces present slightly outward angled shape with small protruded edge. On the photo plates, there are shown several specimens of rim parts presenting typical proportions and the fragment of jar typed ware with impressed decorations. These decorations exist characteristic patterns, indicating that the specimen should be dated the comparatively older period than other findings.

Metal objects

Seven small pieces of melted slugs, which may have a close relation to the detected kiln in this trench, were unearthed.

Stone tools

Two pieces of chert objects were found with the other ceramics. One of them (TP01-T1; length:86mm, width: 75mm, thickness: 36mm, weight: 15 grams) is a scraper-like object, worked bifacially by flaking and chipping. Another piece (TP01-T2; length:37mm, width: 22mm, thickness: 9mm, weight: 5 grams) is a notch-like object which is worked monofacially.



10cm



TP02-S21



TP02-S22



TP02-S23



TP02-S24



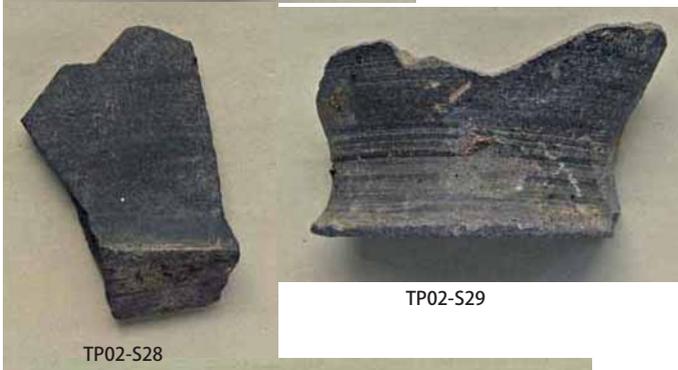
TP02-S25



TP02-S26



TP02-S27



TP02-S28

TP02-S29



TP02-S30



TP02-S31



TP02-S32



TP02-S33



TP02-S35



TP02-S34





Earthenware pieces from TP02

10cm



TEST PIT 03

Location: Khou Vieng/Thadeua Junction.

Excavation Date: July 15th, 2004

Identified Working Infrastructure(s): Water pipe: 1

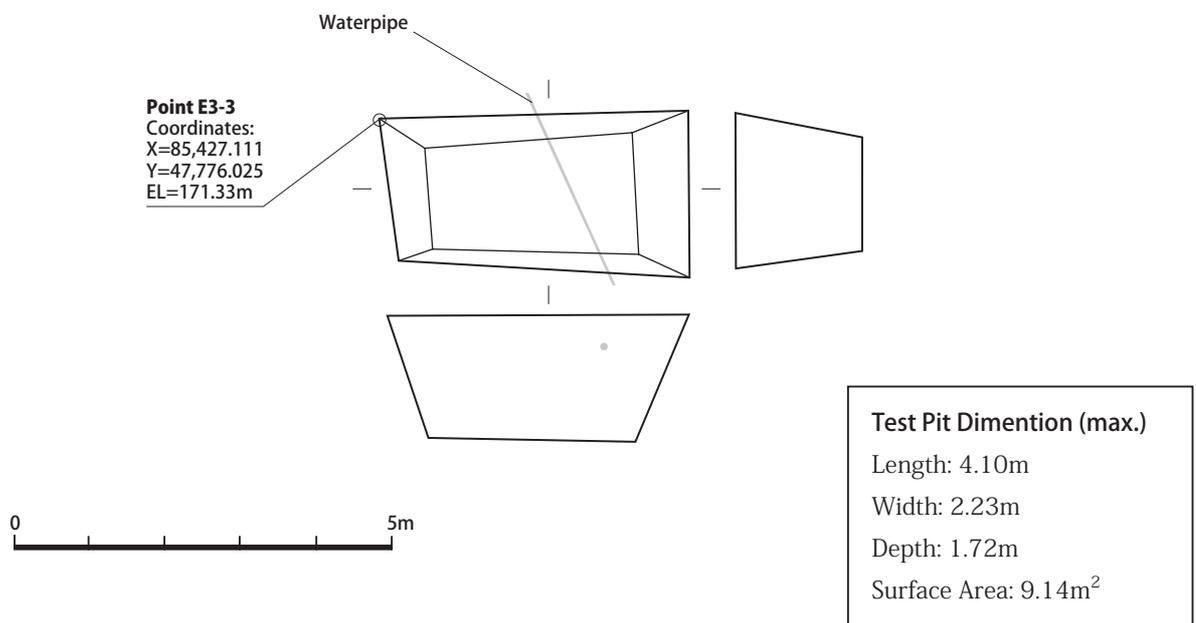
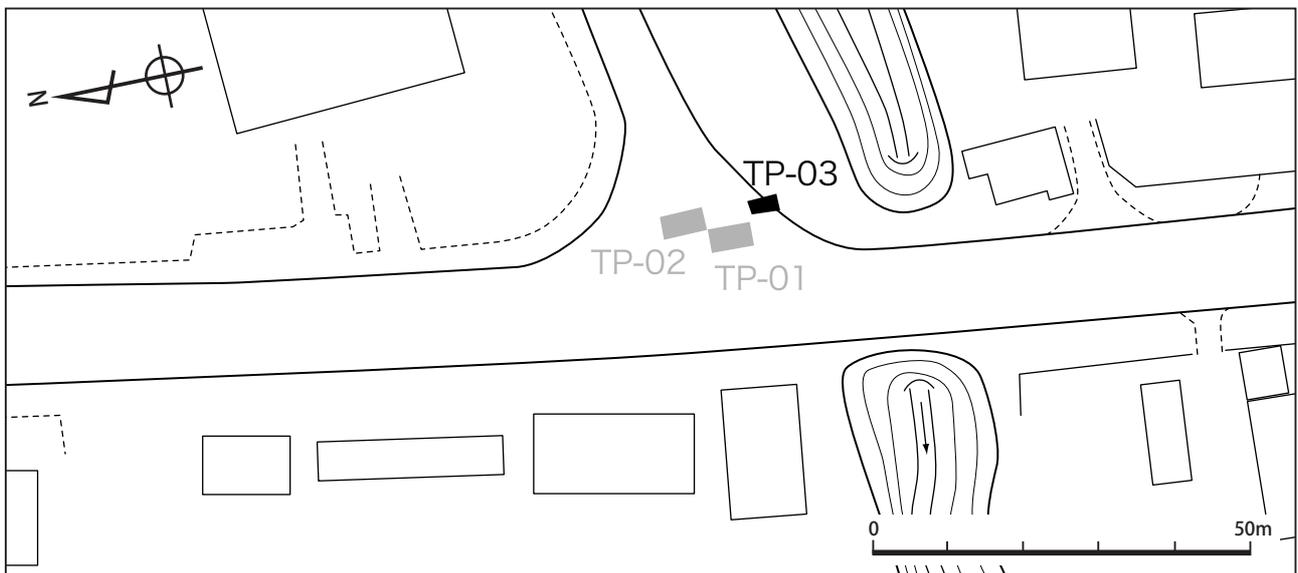
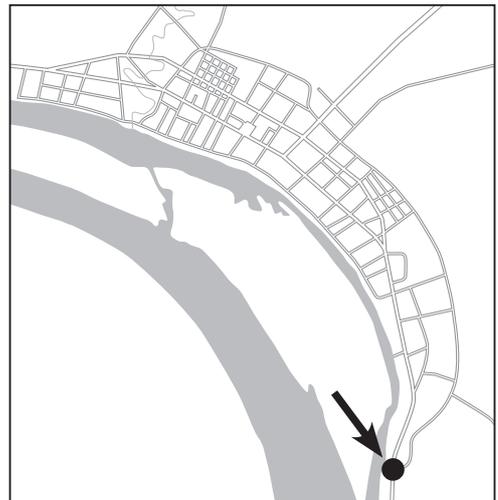
Identified Archaeological Feature(s): None

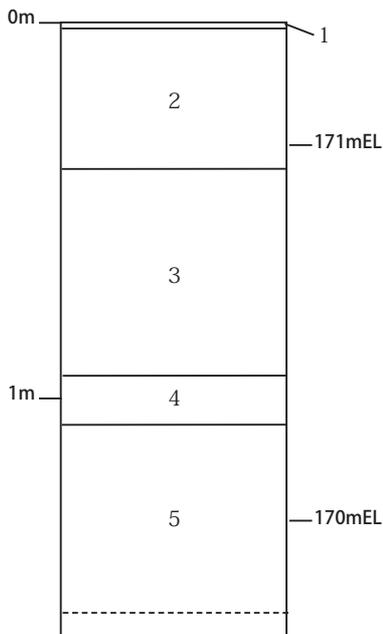
Recovered Artifacts: 102

Stoneware: 72, Earthenware: 6, Imported ceramics: 7,

Stone Tool: 1, Stone: 2, Brick: 9, Metal Object: 1, Roof Tiles: 4

Note: This test pit was opened in an attempt to find the remain of the inner city wall, however, no trace of it was identified. Bricks mixed into the roadbed filling could have been those once composed the wall.





Explanation of Soil Layers

- 1 Asphalt: Present road surface.
- 2 Pebble/Laterite soil: The sub-base layer for the present road surface.
- 3 Mixture of bricks, pebbles and soil. Part of the sub-base for former road. Probably the bricks are from old city wall.
- 4 Grey silty clay. Artifacts found from the upper part of this layer.
- 5 Light yellow grey silty clay: Sporadic light grey mottle can be seen.



General

The **location of this test pit** was chosen to be an extension of TP01 in an attempt to find the inner city wall, however, only the fragments of the bricks were found from the sub-base layer of the road. These were probably re-used as part of the filling for the road.

Artifacts

Roof tiles

Four shards of thin flat roof tiles were unearthed.

Bricks

One piece of brick, which keeps the original length, width, and thickness, and 8 broken blocks were unearthed. Each of 4 blocks of them keeps its width and thickness only (see the table at the right). These bricks may be components of the inner city wall of Vientiane.

Length	Width	Thickness
	108	42
223	108	50
	112	48
	118	57
	120	59

Measurements of bricks from TP03 (mm)



Khou Vieng/Thadeua Junction before excavation of Test Pit 03



Situation after excavation

Stoneware

As reported above, TP03 is located at the vicinity of the kiln which was detected and investigated by the excavation of TP02. From the TP03, however, there were not so many stoneware shards recovered, which count 72 pieces. All the findings are small fragments, there is no specimen with complete shape recovered.

Most stoneware shards could be categorized temporarily into two shape classes; bowl or mortar type wares and jar or bottle type wares. The bowl types count 22 pieces in total, consisting of 6 shards of rim parts and 16 shards of body parts. The jar types count 49 pieces in total, consisting of 4 shards of base parts, 32 shards of body parts and 13 shards of shoulder to neck parts. One specimen (TP03-S1 shown in the photo plate) among the jar type shards shows peculiar proportion especially for its extraordinary thickness of body, in comparison with the standard shape and thickness of jar type wares. The specimen loses its rim and bottom parts, only the half of body part is remained. Referring to the findings of TP02, however, it is possible to estimate its original shape as to be a small baluster jar with flared mouth. The paste is sandy and coarse. There are remained a lute "button" applied on its shoulder and three sets of wheel-cut, incised circumferential lines running on the shoulder. Its height of the remained part measures 17.4 cm in maximum. It should be relatively smaller sized shape in standard of this type of jar. The standard jars of same type as the specimen measure around 0.7~1.2cm in the average thickness of body. However, the specimen measures around 2.5cm in thickness. Generally considering, this is too thick as a usual jar or a usual kiln product. It is also supposed that this object should be broken for occurred cracks because of uneven temperature during firing. As a result, this specimen might be an unsuccessful product. Since the test pit is located beside of the kiln site, there should be many a sub-standard article not for output or production waste.

TP03-S2 is a top part of smoking pipe. As mentioned below, there are recovered many pieces of same shaped smoking pipes from other test pits. It is understood that these pipes were manufactured in local and had been used widely once upon a time. The specimen remains its top rim or neck to bowl part. Diameter in the largest point at the bowl part measures 3.2cm. There is remained molded decor of single spur around the exterior of neck. Its texture of paste is slightly sandy or coarse, and seems common to other stoneware products, however, the surface colour shows light grey to light greyish beige because of ill-firing (under-firing). There is a possibility that the specimen was an unsuccessful or sub standard product as same as the above-mentioned object (TP03-S1) and it was deposited at the test pit area in the vicinity of the kiln.

Imported ceramics

There are only seven pieces of imported ceramics unearthed at TP03. The findings consist of three shards of Chinese blue and white bowls, two pieces of brown glazed stone ware jars probably manufactured in Southern China, one piece of Thai celadon plate and one shard of Vietnamese plate.

TP03-I1 is a body part of large bowl of Chinese blue and white porcelain. The specimen has underglaze painted decoration of arabesque motives with light blue coloured clear brush on its exterior. The paste is fine and solid, but includes many black particles. The glaze is pale white, slightly opaque with many small bubbles inside. According to these characteristics, the specimen is identified to be a product of Jindezhen kiln groups of Jiangxi province during Ming dynasty (15th to 16th centuries).

TP03-I2 is possibly a part of Chinese brown glazed stoneware jar, which is quite similar to the finding at TP02 reported above, especially in its texture of paste and glaze. The paste is dark gray to purple black coloured, very fine and solid. Its thickness of body in remained part measures 4 to 5mm, it is much thinner than the thickness of standard glazed stoneware jars made in Thai or Laos local. The colour of glaze on exterior is, exactly speaking, not brown but black or greenish dark grey. There is also glazed shine on its interior. The specimen is too small and fragmentary to identify its production kiln precisely, but its origin could be regarded as some kiln in Guangdong or Fujien provinces, Southern China, according to the recent studies in Japan about Chinese trade ceramics exported to East and Southeast Asia.

TP03-I3 is a rim part of Vietnamese plate with overglaze enamel painted decoration. The paste is relatively coarse grained and crumbly. It is not solid and probably not including kaolin. The glaze is milky white coloured, it is quite thin layer but many large cracks are occurred. It has lost shine on the surface. The overglaze decoration paints some vertical

lines, oblique cross stripes and dots motives with red, yellow and green coloured enamels on the remained part. These decorations also has lost their shine and fadeout partially. The specimen could be dated late 15th to 16th centuries.

Metal object

One rusted cut nail was found.

Earthenware

There are only six pieces of earthenware recovered at the Test Pit 03. On the photo plates, there are shown one shard of inward angled rim part of large bowl or mortar shaped ware and one shard of base part which has fine grained paste.

Stone tool(?)

A large nodule of chert was isolatedly found from the artifact layer. It measures 206mm in length, 105mm in width, 84mm in thickness and weighs 3050 grams.



Earthenware from TP03



TEST PIT 04

Location: Thadeua Road. Near Diplomatic Service Bureau and Commission for Drug Control.

Excavation Date: July 13th, 2004

Identified Working Infrastructure(s): None

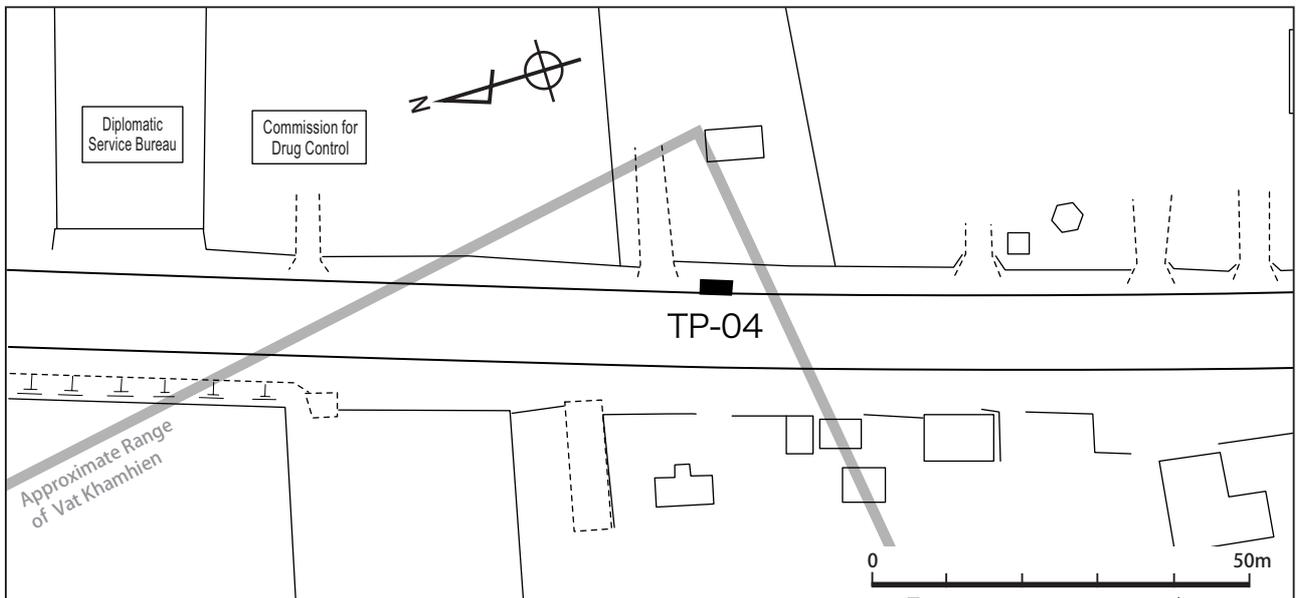
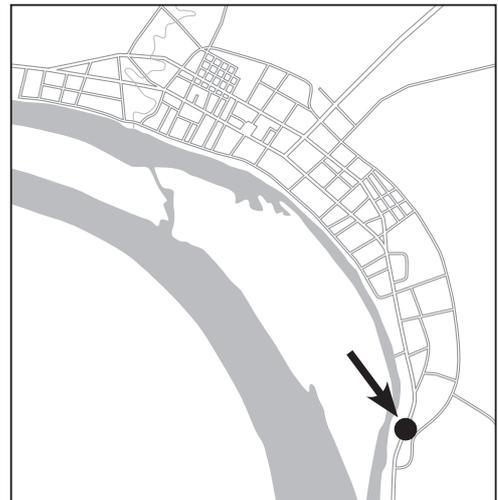
Identified Archaeological Feature(s): None

Recovered Artifacts: 131

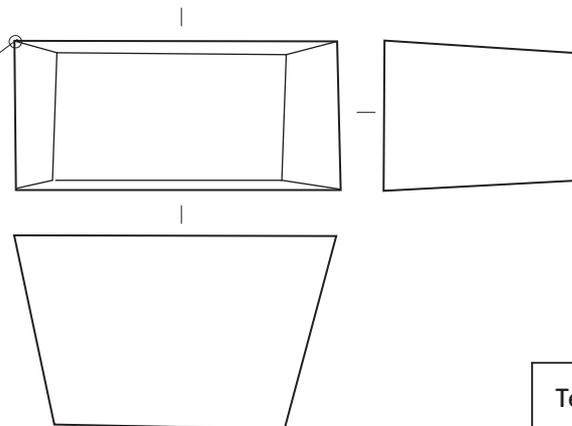
Stoneware: 102, Earthenware: 5, Imported ceramics: 13, Bone: 1,

Stone Tool: 1, Stone: 2, Brick: 6, Roof Tile: 1

Note: Within the range of presently non-existent Vat Khamhien.



Point E4-2
Coordinates:
X=85,624.602
Y=47,834.018
EL=170.92m



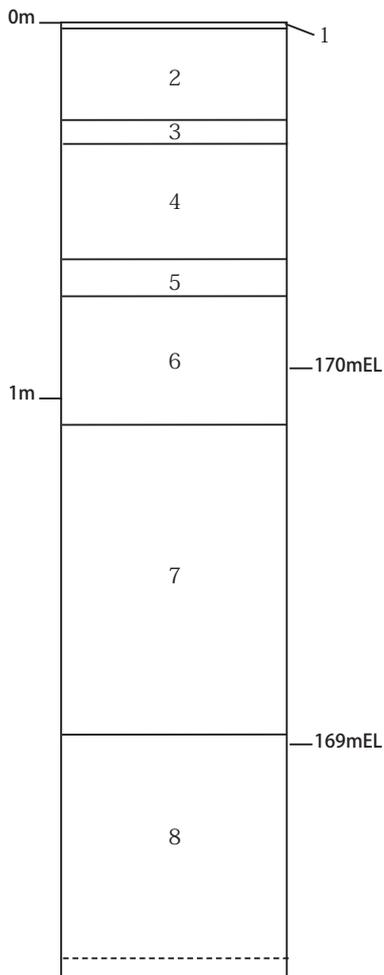
Test Pit Dimention (max.)

Length: 4.33m

Width: 2.01m

Depth: 2.58m

Surface Area: 8.7m²



Explanation of Soil Layers

- 1 Asphalt: Present road surface.
- 2 Pebble/Laterite soil: The sub-base layer for the present road surface.
- 3 Asphalt: Former road surface.
- 4 Pebble/Laterite soil: The sub-base layer for the former road surface.
- 5 Mixture of bricks, pebbles and soil. Part of the sub-base for former road.
- 6 Dark grey silty clay. Artifacts found from the upper part of this layer.
- 7 Light grey silty clay: Very uniform in texture.
- 8 Light grey clay: Very uniform in texture. Easy to collapse when exposed.



Artifacts

Roof tiles

Only 1 shard of thin flat roof tile was unearthed.

Bricks

6 broken blocks of bricks were unearthed. Each of 3 blocks of them keeps its width and thickness (see table at the right).

Width	Thickness
116	45
118	48
118	50

Measurements of bricks from TP04 (mm)

Stoneware

From the Test Pit No.04, 102 pieces of stoneware shards were recovered in total. There are considerable variations in their detailed shape classifications, however, most findings could be categorized in jar type wares. Classification and



Situation before excavation



Excavation in progress

numbers of shards counted in each category are as follows; jar types count 94 pieces consisting of 7 pieces of base part, 49 pieces of body part, 32 pieces of shoulder to neck part, five pieces of rim part and one piece of complete form. Except for the jar types, there are six pieces of bowl or mortar types consisting of 2 pieces of body part and 4 pieces of bottom part, one piece of stem bowl (a bowl with a tall base), and one piece of special object (a tool for sericulture). It seems characteristic and unique that the shape classes of findings are almost limited to jar types only, while they have minor but wide variations in the category of jars.

Furthermore, excluding stoneware, there are quite less amount of artifacts recovered from TP04; five pieces of earthenware, 13 pieces of imported ceramics, four fragmentary pieces of bricks and one small piece of roof-tiles only. These amounts and compositions of unearthened artifacts seems quite different from the tendencies of composition at other test pits. Considering from the context of unearthened artifacts that is, simply speaking, lack of ceramic wares for ordinal living, the area around TP04 is unlikely to be normal town area. The test pit is located around 200m west from TP02 where the kiln site was detected. On the other hand, 15 pieces among all stoneware shards are ill-fired in lower temperature (under-fired) specimens. Therefore, it is not impossible to suppose that the area of T.P04 is also located around kilns manufacturing stoneware.

Among above-mentioned stoneware findings, some pieces of significant specimens are as follows.

TP04-S1 is a small flared mouth jar or vase which remains in complete form. It sizes 17.2cm in full height, the diameter at top end of the rim measures 12.3cm and the diameter of the base measures 8.1cm. The texture of paste and its body shape are common in local made stoneware. On the other hand, its thickness of lower body to bottom is quite thicker than usual, and also the exterior base is not flat or trimmed. The striation trace or cord-cut mark which usually occurs at cutting the ware from the potter's wheel with string is not remained. It seems that there is some mistakes happened during making its shape on the wheel.

TP04-S2 is a base (stem) part of probably bowl type ware with a tall base, while its complete shape is not confirmed as the upper part was lost. It sizes 8.6cm in diameter at bottom end of the exterior. The specimen has artificial ash glaze on exterior. The glaze is light grayish green coloured, transparent, and partially shiny. Its interior is not glazed, but there remains dark red coloured pigment (?) painted thinly. The texture of clay paste is relatively fine grained but crumbly, not solid.

TP04-S3 are shoulder part shards of a large flared mouth jar. The texture of paste is relatively fine and solid, it includes small black particles. The specimen seems to be fired well, and it has no glaze or no natural fly-ash deposited during firing. Its thickness of body wall measures 5.0 to 6.5mm. On the exterior, there are characteristic incised decoration of three (or more?) set patterns of horizontal straight lines and wave lines.

TP04-S4 is a unique and curious object of stoneware. The base part of shallow bowl like shape is attached to the stem part of tapered cylinder, and the appearance of whole shape looks like a Mexican hat, while the specimen loses its top part. The paste is slightly coarse or sandy, but solid. Its texture may be common to normal stone wares made in local. Around its exterior rim of base part, there are stamped decoration of a horizontal row of tiny circles motive and a segmented rib or fringe like decor. The repeated pattern of same motives -rows of tiny circles also covers whole around the stem part of the specimen. This motif of tiny circle might be made by pressing a fine tube shaped tool such as a piece of young bamboo stem against ware's body wall. This is one of popular decorations for not only stoneware but also earthen ware made in local. According to Mr. Viengkeo Souksavady ' s advice, the specimen is understood to be a foot part of shelves to raise silk worms. The bowl of its base reserves water inside, and protects silk worms from ants.

Imported ceramics

Imported ceramics unearthened from TP04 counts only 13 pieces in total. Eleven shards of them are Chinese blue and white porcelain, which consist of seven shards of bowls, one shard of small dish, one shard of plate and two shards of bottle. Excluding Chinese ware, there are one piece of Thai celadon bowl and one piece of Vietnamese blue and white which may be a part of bowl. Among these ceramics, there are mixed older products and the newer in several kilns, but it is difficult to identify and date precisely for each, because all the specimens are so small and fragmentary. Generally speaking, the contents or tendency of findings do not differ from other test pits, while there is no significant specimen to be selected and reported individually .

Earthenware

There are quite few, only five pieces of earthenware recovered at the Test Pit 04. All the shards are small and fragmentary, there is no significant specimen to be reported with photos.

Stone tool

A grinding stone made of sandstone was found. Dimensions are 145 x 107 x 86mm, and weighs 1940 grams.



10cm

TEST PIT 05

Location: Thadeua Road. Near Beung Kayong Pond

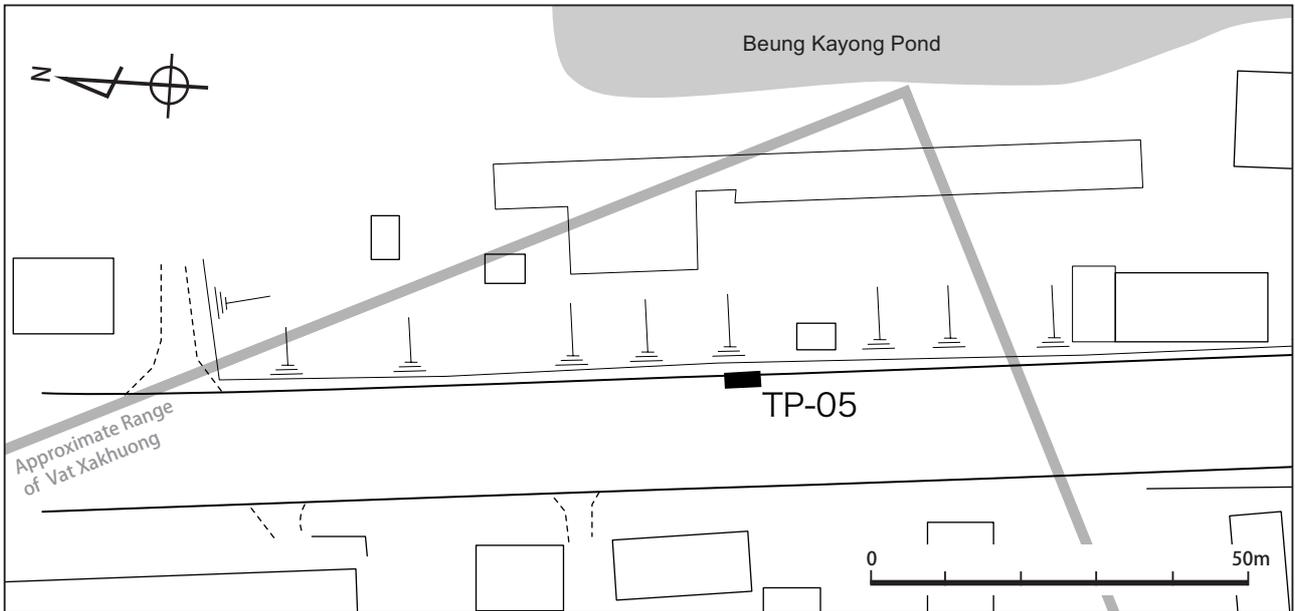
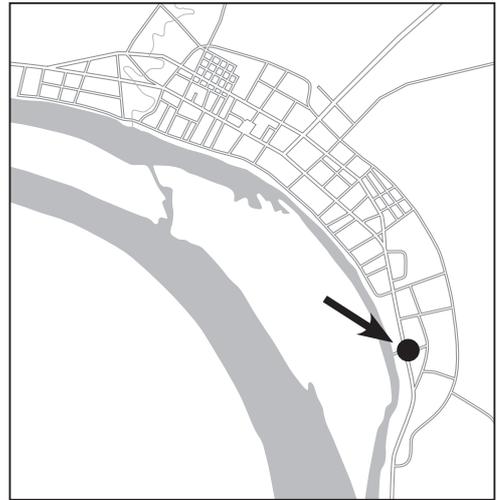
Excavation Date: July 14th, 2004

Identified Working Infrastructure(s): None

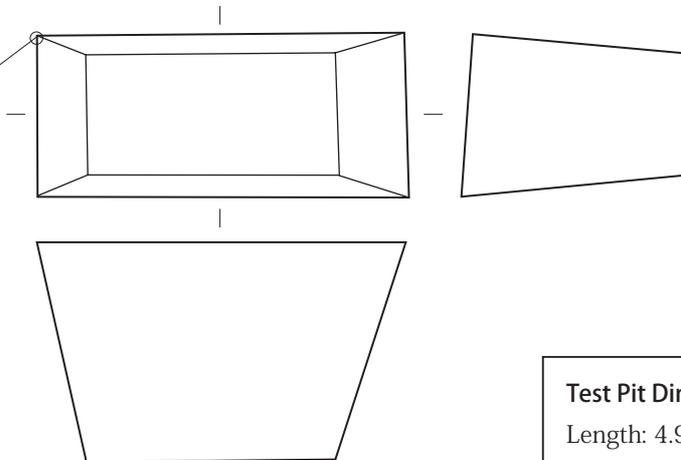
Identified Archaeological Feature(s): None

Recovered Artifacts: None

Note: Within the range of presently non-existent Vat Xakhuong.
Underground soil was made entirely of road filling down to the bottom.



Point E5-2
Coordinates:
X=86,374.077
Y=47,850.931
EL=171.00m



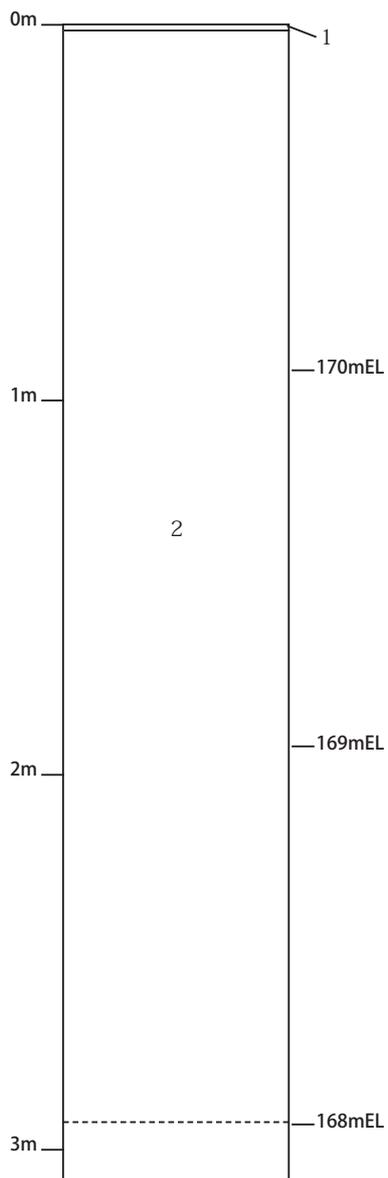
Test Pit Dimention (max.)

Length: 4.93m

Width: 2.21m

Depth: 2.96m

Area: 10.89m²



Explanation of Soil Layers

- 1 Asphalt: Present road surface.
- 2 Pebble/Laterite soil: The sub-base layer for the present road surface.



Situation before excavation of Test Pit 05



Excavation by machine in procession

TEST PIT 06

Location: Simuang Junction

Excavation Date: July 16th, 2004

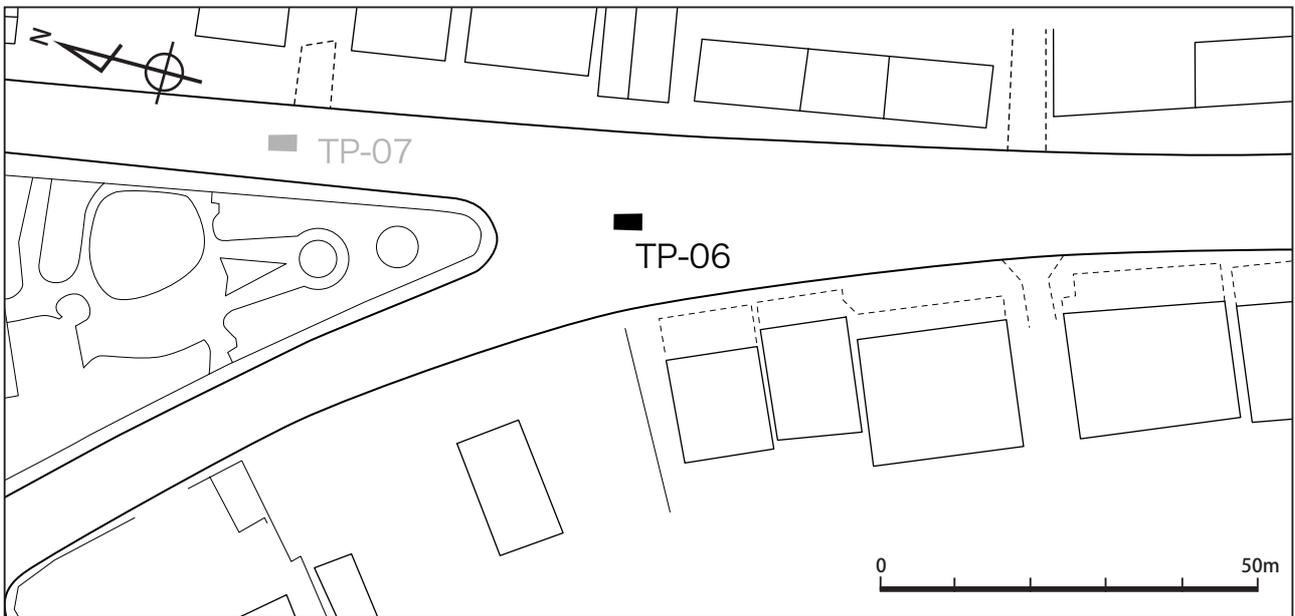
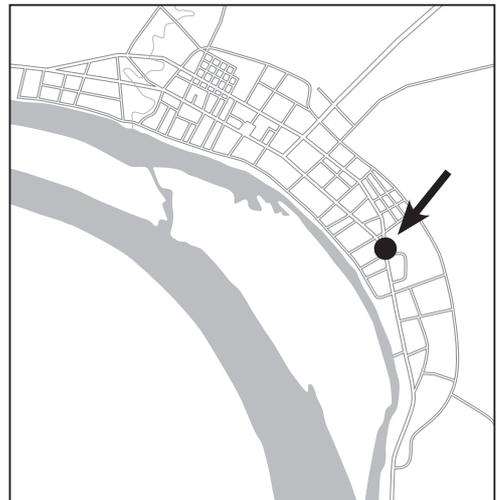
Identified Working Infrastructure(s): None

Identified Archaeological Feature(s): None

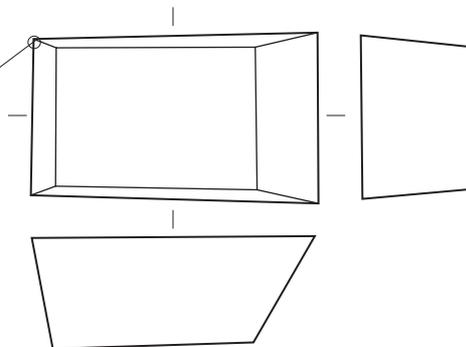
Recovered Artifacts: 249

Stoneware: 21, Earthenware: 6, Imported ceramics: 2, Bone: 3,
 Glass: 3, Stone: 2, Brick: 76, Laterite Block: 11, Metal Object: 3,
 Stucco/Mortar: 10, Wooden Object: 16, Roof Tile: 96

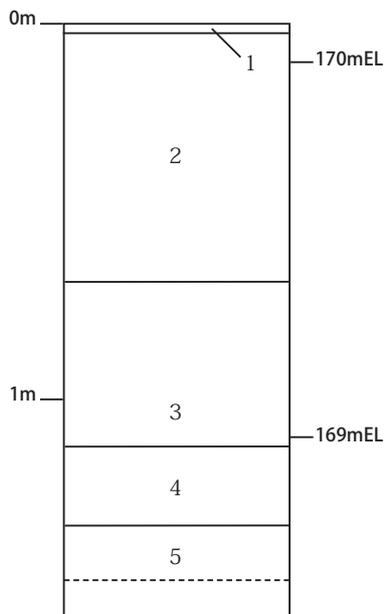
Note:



Point E6-6
 Coordinates:
 X=87,049.472
 Y=47,704.829
 EL=170.12m



Test Pit Dimention (max.)
Length: 3.81m
Width: 2.27m
Depth: 1.51m
Surface Area: 8.65m ²



Explanation of Soil Layers

- 1 Asphalt: Present road surface.
- 2 Pebble/Laterite soil: The sub-base layer for the present road surface.
- 3 Dark grey silty clay. Artifacts found from this layer.
- 4 Light yellow grey silty clay: Uniform and with no inclusion.
- 5 Light grey clay: Uniform and with no inclusion.



Artifacts

Roof tiles

96 shards of thin flat roof tiles were unearthed. 1 of them is different from other normal ones because of the position and shape of the stopper (R1. TP 06-R1).

Bricks

1 piece of brick, which keeps the original length, width, and thickness, and 75 broken blocks were unearthed. Each of 23 blocks of them keeps its width and thickness only (see the list below), and another 1 block may be a broken part of component of the octagonal pillar (R1. TP 06-B1).

Metal objects

1 rusted cut nail (R1. TP 06-M1), 1 rusted fitting, and 1 rusted fragment of plate were unearthed.

Length	Width	Thickness
	98	37
	100	34
	100	41
	102	38
	102	45
	102	47
	102	50
	102	62
	105	50
235	107	57
	110	38
	110	38
	110	38
	110	45
	112	34
	112	40
	117	52
	118	45
	120	45
	122	43
	122	50
	125	35
	128	54
	132	60

Measurements of bricks from TP06 (mm)



View of the excavation site



Excavation under progress

Wooden objects

16 artificial parts were unearthed. The shapes of those parts include triangle and column, but the original functions of those parts are unknown.

Laterite

11 blocks of laterite were unearthed. The artificial process is not observable, but the relation to Vat Si Muang, where laterite structure is located, should not be ignored.

Stoneware

There are not so many ceramics unearthed from the excavation at TP06.

Stone ware counts 21 shards in total. All the specimens are no glazed wares. They can be classified roughly as follows: one piece of an outward angled rim bowl, four shards of body parts of mortars, one piece of wide mouth jar, 13 shards of several shaped jars (consisting of four pieces of base parts, seven pieces of body parts and two pieces of rim parts) and three pieces of smoking pipes.

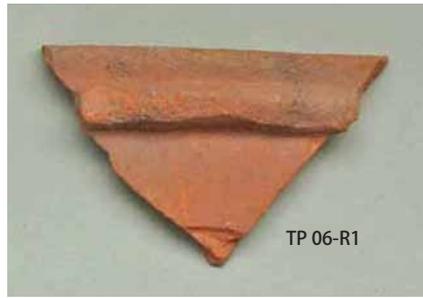
TP06-S01 is the upper end part (neck to bowl part) of the pipe. The specimen sizes 3.2 cm in diameter at its widest end of rim. The texture of paste is relatively fine grained and solid. Its colour varies grayish white to dark gray, since the firing is uneven and lower temperature. There are typical impressed decoration of geometric triangle and chevron design on to of the bowl. TP06-S02 is the stem part of the other pipe. The full length of remained part measures 3.4 cm, and the widest point of rim measures 1.6 cm in diameter. The texture of paste is fine grained and solid. Its colour is light gray to dark gray. The specimen seems to be broken just at the junction to be luted with body part. There is impressed (or incised?) decoration of fine parallel lines or spiral motif.

Imported ceramics

Only two small pieces of imported ceramics were recovered at TP06. One shard is a rim part of bowl. It may be Chinese white porcelain or Chinese underglazed blue and white, which can not be defined, while its remained part has no under-glaze blue and white decoration. Another is a rim part of Vietnamese underglazed blue and white bowl, which transparent glaze was wiped off at the top rim part, and instead, light brown coloured iron glaze brushed on the part.

Earthenware

Only six pieces of earthenware were recovered at the Test Pit 06. There are two shards of jar typed ware with impressed decorations of a series of short oblique lines or herringbone-like motifs as shown in the photo plate. As same as the finding from TP02, these specimens with the characteristic decorations are considered to be the comparatively



10cm

TEST PIT 07

Location: Near Simuang Junction

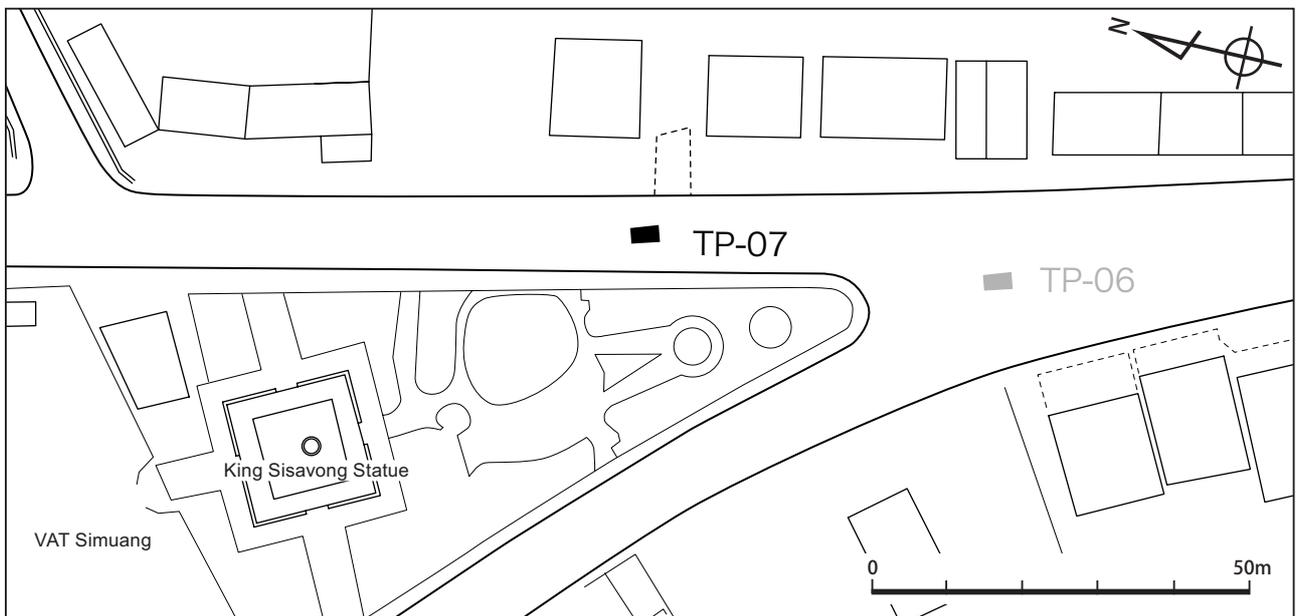
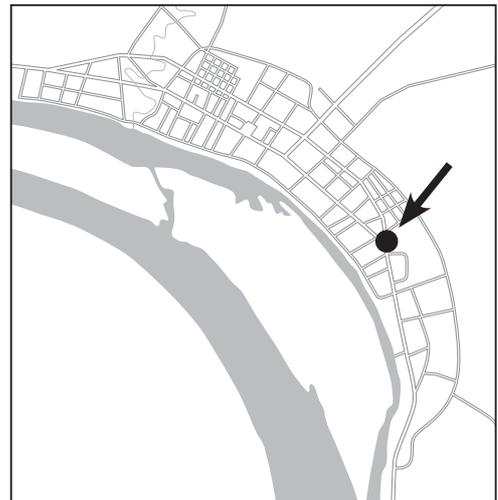
Excavation Date: July 19th, 2004

Identified Working Infrastructure(s): None

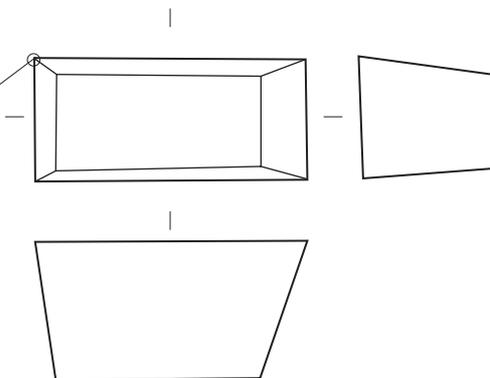
Identified Archaeological Feature(s): None

Recovered Artifacts: 23

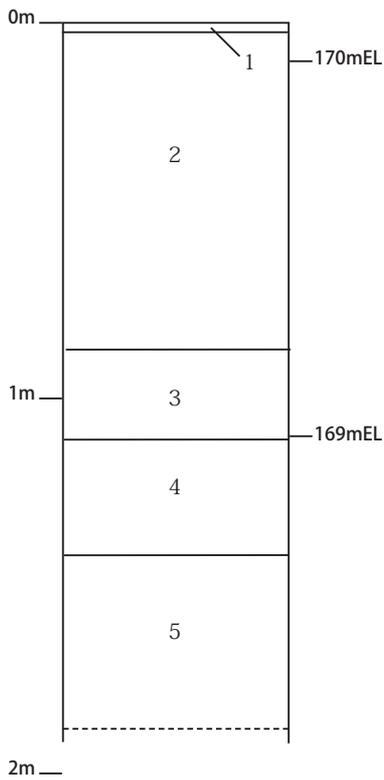
Stoneware: 2, Earthenware: 1, Imported ceramics: 11, Glass: 1,
Stone: 2, Metal Object: 1, Wooden Object: 1, Roof Tile: 4



Point E7-2
Coordinates:
X=87,087.331
Y=47,705.469
EL=170.09m



Test Pit Dimention (max.)
Length: 3.62m
Width: 1.67m
Depth: 1.88m
Surface Area: 6.05m ²



Explanation of Soil Layers

- 1 Asphalt: Present road surface.
- 2 Pebble/Laterite soil: The sub-base layer for the present road surface.
- 3 Dark grey silty clay. Artifacts found from this layer.
- 4 Light yellow grey silty clay: Uniform and with no inclusion.
- 5 Light grey clay: Uniform and with no inclusion.



Artifacts

Roof tiles

4 shards of thin flat roof tiles were unearthed.

Metal objects

1 small piece of melted slug was unearthed.

Wooden objects

1 broken part of decayed timber was unearthed. The length of it is approximately 35 cm.

Stoneware

There are very small amounts of ceramics unearthed from the excavation at TP07 in comparison with other test pits. Stoneware counts only two small shards. One is a body part of bowl or mortar type ware and another is a body part of



Khou Vieng/Thadeua Junction before excavation of Test Pit 03



Situation after excavation

jar type ware.

Imported ceramics

Imported ceramics count 11 pieces in total. They can be classified roughly as follows;

one piece of small bottle which might be Chinese celadon or bluish white porcelain (so called "Qing-pai" ware), two pieces of Chinese blue and white bowls, three pieces of bowls of Chinese white porcelain with overglaze enamel painted, one piece of brown glazed stoneware jar which are probably made in Thai, two pieces of Vietnamese blue and white bowl and two pieces of Vietnamese bowl with overglaze enamel painted which decorations have actually faded out. Most of these ceramic specimens are so small fragments that their precise identification and dating are quite difficult. Generally speaking, among above-mentioned specimens, Chinese and Vietnamese wares with overglaze enamel decorations seem to be relatively newer products which date after 18th century, while one piece of Chinese small jar might be manufactured during Ming dynasty and Thai's brown glaze jar also should be dated 15th to 16th centuries.

TP07-I01 is a bowl with underglaze blue and white decoration on exterior and interior bottom. Its paste is grayish white colour, the texture of paste is solid but rather coarse, including many small black particles. Underglazed decorations paint some abstract designs such as inclined cross strips, large dots and so on, by rough and simple touch in light grayish blue colour. The glaze is bluish milky white and slightly opaque. Its shine remains well on the surface. There are not glazed in wide circulate ring around the interior bottom and around the end of foot ring, while the whole exterior base inside foot ring is glazed. The specimen is not clarified about its origin and dating, however there is a possibility that it was manufactured in Southern China during the late Ming dynasty.

Earthenware

There is only one piece of earthenware recovered at the Test Pit 07. The finding is probably body part of jar typed ware, which is very small and fragmentary.



TP 02-11

10cm

TEST PIT 08

Location: Near Vat Simuang

Excavation Date: July 19th, 2004

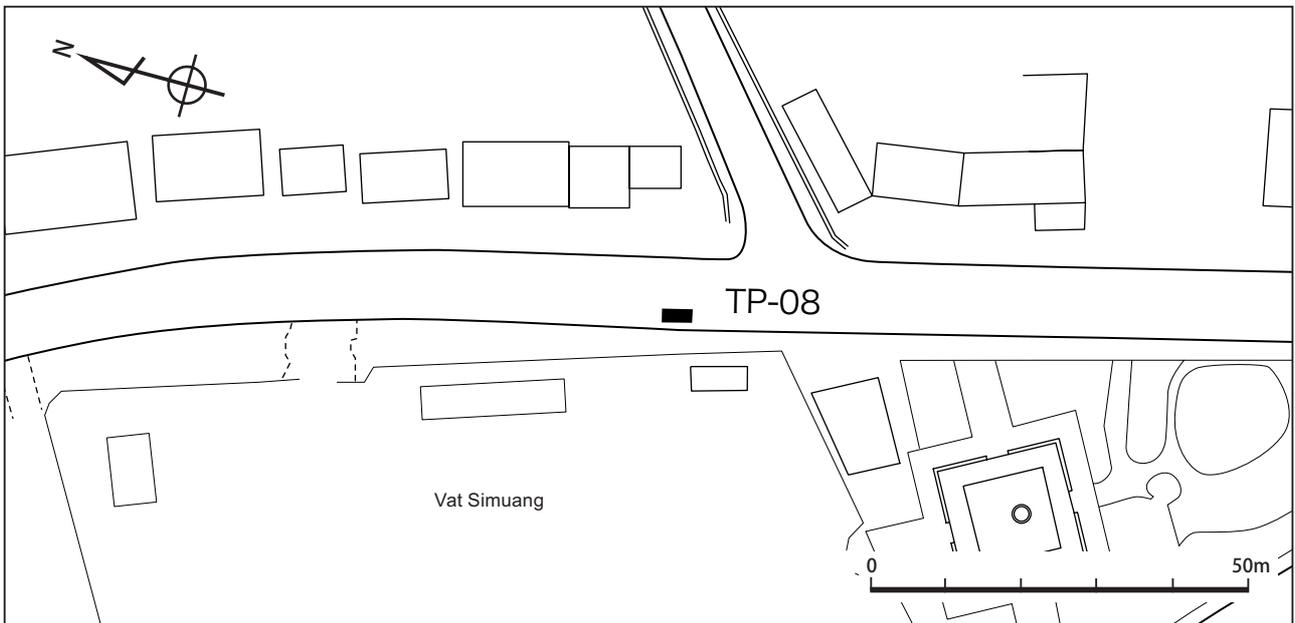
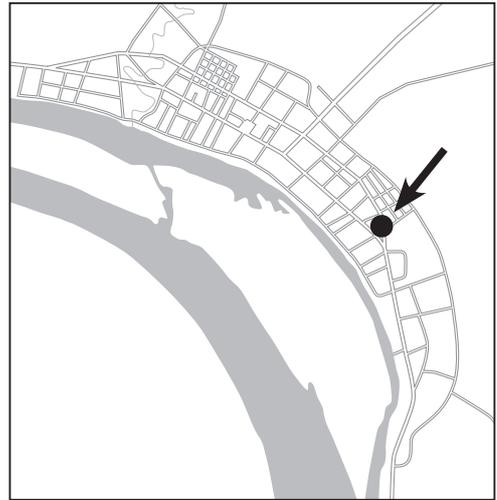
Identified Working Infrastructure(s): Water pipe: 1

Identified Archaeological Feature(s): None

Recovered Artifacts: 45

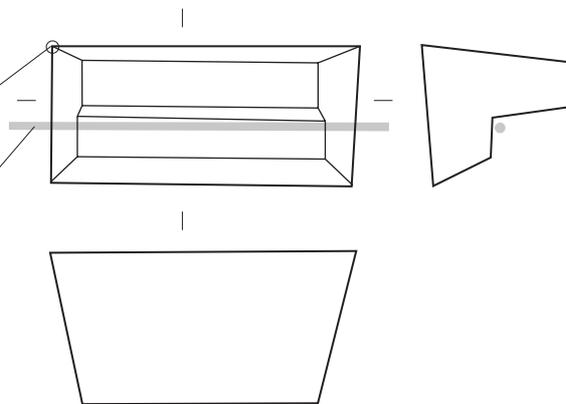
Stoneware: 8, Earthenware: 10, Imported ceramics: 14,

Glass: 2, Stone: 1, Brick: 7, Roof Tile: 2, Others: 1



Point E8-11
Coordinates:
X=87,176.968
Y=47,697.342
EL=169.86m

Waterpipes



Test Pit Dimention (max.)

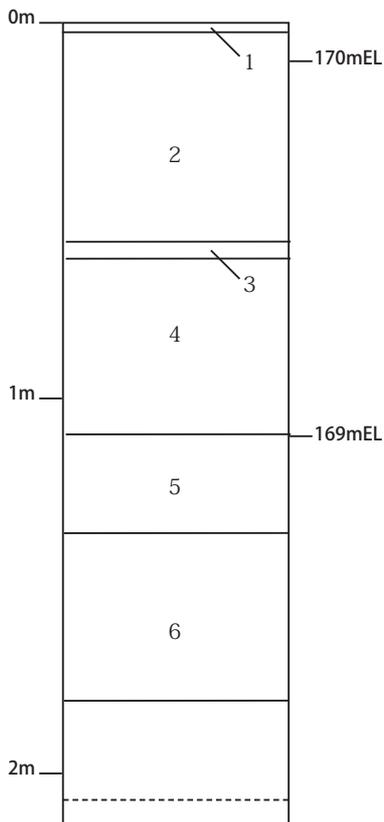
Length: 4.10m

Width: 1.90m

Depth: 2.08m

Surface Area: 7.79m²





Explanation of Soil Layers

- 1 Asphalt: Present road surface.
- 2 Pebble/Laterite soil: The sub-base layer for the present road surface.
- 3 Pebble: The pavement of the earlier road surface?
- 3 Grey silt. Include modern pieces of rubbish. Probably the sub-base layer for the earlier road surface?
- 4 Dark grey silty clay. Artifacts found from this layer.
- 5 Light yellow grey silty clay: Uniform and with no inclusion.
- 6 Light grey clay: Uniform and with no inclusion.



Artifacts

Roof tiles

Only two shards of thin flat roof tiles were unearthed.

Width	Thickness
105	54
107	41

Measurements of bricks from TP08 (mm)

Bricks

Seven broken bricks were unearthed. Each of two blocks of them keeps its width and thickness (see table above). Another 1 block is a broken part of block in the shape of trapezoid or triangle, but the original function of this block is unknown (TP08-B1).

Earthenware

There are 10 pieces of earthenware recovered at the Test Pit 08. The shards of rim parts count four pieces, which present almost straight standing shapes, while their edges get thicker to outward. On the photo plates, there is shown one typical specimen.



Removing asphalt at Test Pit 08



Deeper excavation by mechanical shovel

Stoneware

The stoneware unearthed at Test Pit 8 counts only eight pieces. They are all body parts and classified as follows: one piece of bowl with grater, three pieces of mortar, three pieces of jar and one piece of ash glazed bowl. The last specimen, the glazed bowl has slightly finer and more white coloured paste. The glaze covers whole surface on interior and exterior of the remained part. It is grayish green coloured, partially opaque and shiny. It should be defined as artificial glaze, not natural fly-ash. Similar specimens with artificial ash glaze were confirmed at several other test pits, especially there is a considerable number of these typed wares recovered at TPO26, as mentioned below. It can be understood that these ash glazed stonewares are also manufactured in local, in and around present Vientiane city.

Imported ceramics

Imported ceramics counts 11 pieces of fragments in total. Actually, however, the six shards among them belong to one same ware, the other two shards belong to another one ware, the more different two shards were joint with each other to be also another one ware. Therefore, as a number of wares, there are seven pieces of specimens. These specimens can be classified as follows; four pieces of Chinese underglaze blue and white bowls (one piece of the bottom and three pieces of rims), one rim piece of a dish of Chinese white porcelain, one bottom piece of Vietnamese underglaze blue and white bowl and one piece of the cover of glazed stoneware which origin is unidentified.

TP08-I01 is a base part of Chinese underglaze blue and white bowl. It sizes 5.8cm in diameter at the bottom end of foot ring. The paste is light gray, solid, but slightly coarser to compare with the standard of Chinese porcelain. The clay includes many small black particles which is common to the standard texture of Chinese blue and white ware produced mainly at Jindezhen kilns group. There is remained underglazed decoration of horizontal lines in light indigo blue running around lower part of the exterior wall. The glaze is grayish pale white colour, completely opaque and it almost lost shine on the surface. There is no glaze in the circulate ring around interior bottom and the bottom end of foot-ring. The specimen probably dates in Ming dynasty.

TP08-I02 is a rim part of small bowl or dish of Chinese white porcelain. There is no decoration on the remained part. The paste is light grayish white, very fine and solid. The glaze is pale milky white coloured, slightly opaque but shiny on the surface. The glaze around top end of the rim is wiped off. The same typed wares as this specimen are considerably recovered at most archaeological sites of the early Middle Age period in Japan. According to the Chinese trade ceramics studies in Japan, the specimen can be dated between 12th and the middle of 14th centuries.

TP08-I03 is rim to body parts of Chinese bowl with underglaze blue and white decoration. The six pieces of unearthed shards belong to the specimen. Its paste light grayish white, slightly coarse and includes many black particles. The underglaze decoration of a pattern of series of a mark -symbolized (designed) Chinese character (?) is made by imprint in greenish gray colour. There are also painted horizontal lines running around the exterior and interior wall in bluish light gray. The glaze is pale grayish white and slightly opaque. It is not clarified about its manufactured period and kiln.

TP08-I04 is a body part of large bowl with underglaze blue and white decor. It sizes 7.4cm in diameter at the bottom end of foot-ring. The specimen has rather thick base and foot-ring. Its paste is almost pure white coloured, includes a few small black particles. It seems relatively coarse for texture of porcelain. The underglazed decoration of flowers and some motives in rough or running touch is painted on the exterior with indigo blue colour. The glaze is pale white, transparent and shiny. There is no glaze at the exterior and interior bottom. It is difficult to identify the origin of specimen. The texture of paste and glaze are similar to the products in Southern China, while the design of blue and white decoration seems like Vietnamese rather than Chinese.



10cm



Earthenware from TP 08

10cm

TEST PIT 09

Location: Near Vat Simuang

Excavation Date: July 20th, 2004

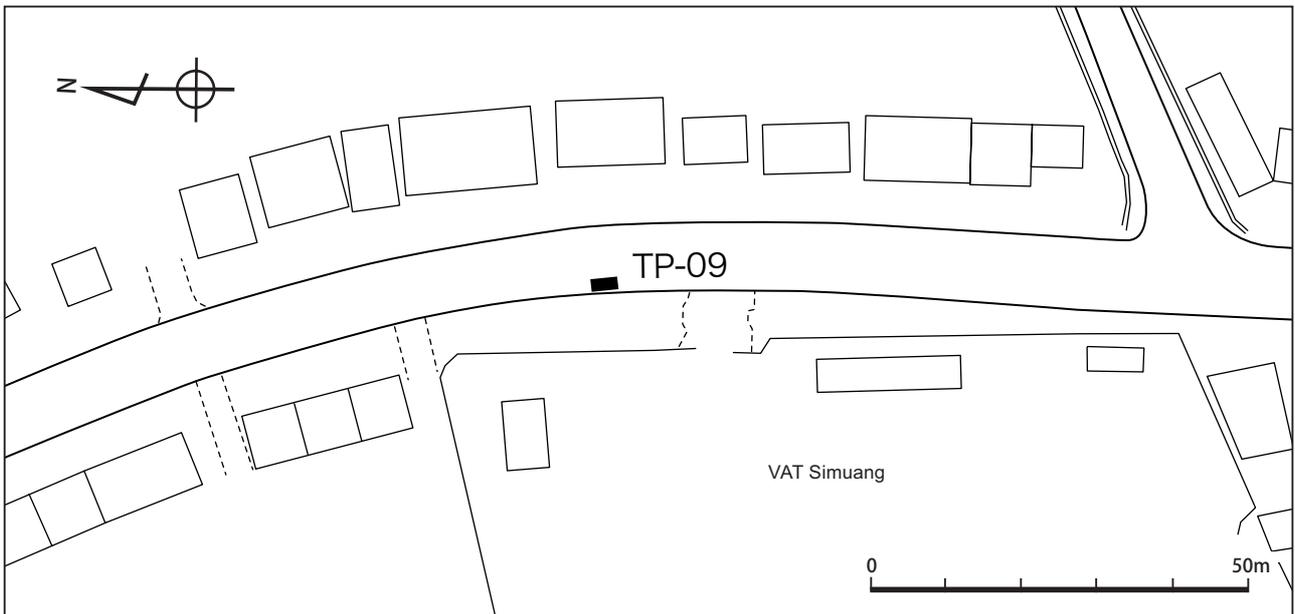
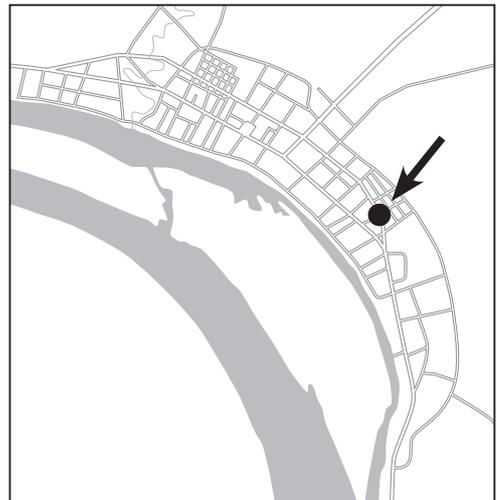
Identified Working Infrastructure(s): Metal water pipe: 1

Identified Archaeological Feature(s): None

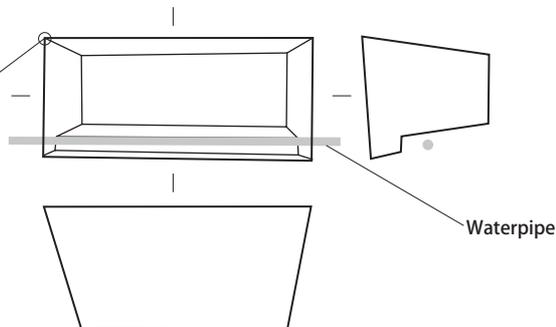
Recovered Artifacts: 58

Stoneware: 17, Earthenware: 13, Imported ceramics: 5, Stone: 3,

Brick: 14, Metal Object: 1, Roof Tile: 5



Point E9-22
Coordinates:
X=87,238.410
Y=47,689.405
EL=169.72m



Test Pit Dimention (max.)

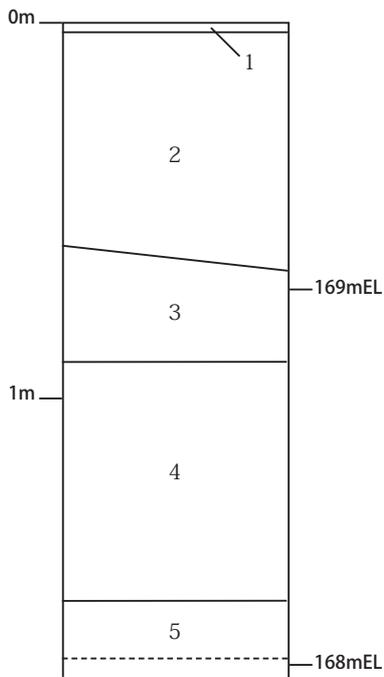
Length: 3.57m

Width: 1.66m

Depth: 1.68m

Surface Area: 5.93m²





Explanation of Soil Layers

- 1 Asphalt: Present road surface.
- 2 Pebble/Laterite soil: The sub-base layer for the present road surface.
- 3 Dark grey silty clay. Artifacts found from this layer.
- 4 Light yellow grey silty clay: Uniform and with no inclusion.
- 5 Light grey clay: Uniform and with no inclusion.



Artifacts

Roof tiles

5 shards of thin flat roof tiles were unearthed.

Bricks

14 broken blocks of bricks were unearthed.

Metal objects

1 rusted blade was unearthed. It is probably one kind of farming implements or tools .

Stoneware

There are not so many ceramics unearthed from TP09. Stoneware counts 17 pieces in total, which consist of seven pieces of bowl or mortar type wares (four rim pieces and three body pieces) and ten pieces of jar type wares (one piece of rim part and nine pieces of body part). All the specimens are small and fragmentary, while shape classes of rim part shards are almost common to the proportional contents of stoneware recovered at Test Pit 02.



Situation around Test Pit 08



Recording the stratum

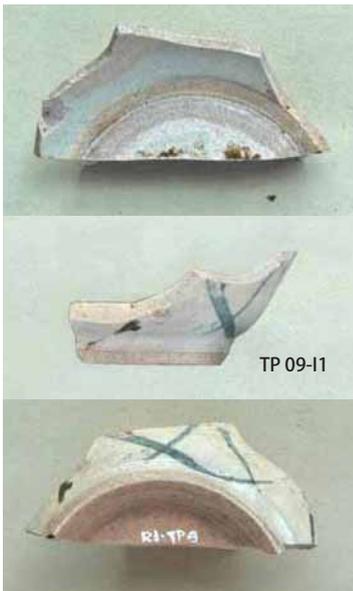
Imported ceramics

Imported ceramics counts only five pieces in total. They are classified as follows; two pieces of small bowls of Chinese underglazed blue and white, one piece of bowl of Chinese white porcelain with no blue and white decoration at the remained part, one piece of brown glazed stoneware jar probably made in Thai and one piece of Vietnamese blue and white bowl.

TP09-I1 is a base part of Vietnamese bowl with underglazed blue and white decoration. Its estimated size measures 6.6cm in diameter at the bottom end of foot-ring. The paste is light brownish gray coloured, solid but relatively course. The underglazed decoration paints running mesh like motif on the exterior in dark blue colour. There is no decoration remained at the interior. The glaze is light grayish pale white coloured, opaque because of many white bubbles in glaze. There is no glaze on the interior bottom and the exterior base (inside of the foot-ring). It is supposed that the specimen was made in Vietnam during 16th century, according to its characteristic decor in blue and white.

Earthenware

There are 13 pieces of earthenware recovered at the Test Pit 09. One shard of base part has a foot-ring, which estimated size measures approximately 7.2cm in outer diameter at the bottom. It is difficult to suppose its complete form, while the specimen is likely to have been used as a kind of cooking pot set over a fireplace, because its surface exists charcoal black in colour which seems to have been fired in several times, as shown in the photo plate.



Earthenware from TP09

10cm

TEST PIT 10

Location: Near Piaowat secondary school

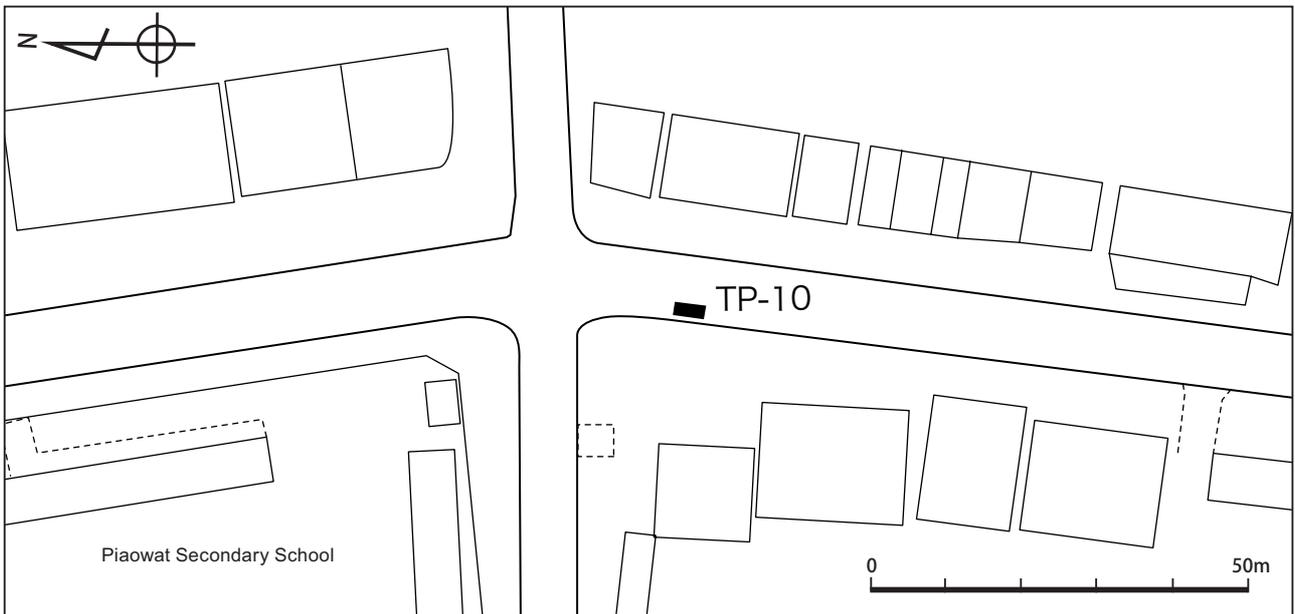
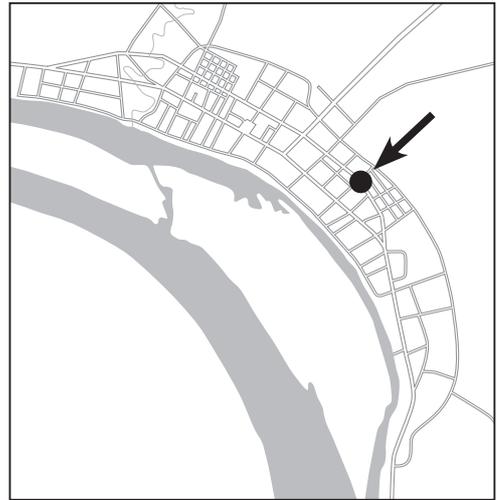
Excavation Date: July 21th, 2004

Identified Working Infrastructure(s): Concrete structure

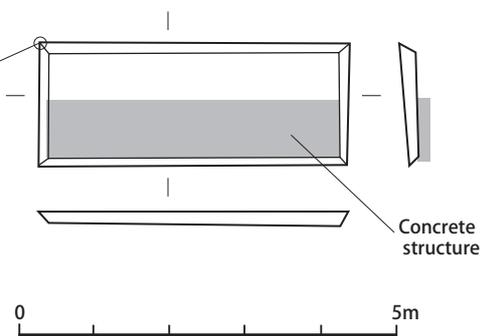
Identified Archaeological Feature(s): None

Recovered Artifacts: None

Note: Unable to perform deeper survey due to buried thick platform of concrete and disturbance surrounding it.



Point E10-1
 Coordinates:
 X=87,504.954
 Y=47,534.289
 EL=168.93m



Discovered concrete structure

Test Pit Dimention (max.)

Length: 4.16m

Width: 1.66m

Depth: 0.26m

Surface Area: 6.91m²