

GEOMORPHOLOGICAL INVESTIGATION AT PADANG CANDI SITE, KUANTAN SINGINGI REGENCY, RIAU PROVINCE

Kajian Geomorfologi di Situs Padang Candi Kabupaten Singingi Provinsi Riau

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Abstrak

Padang Candi terletak di Kabupaten Kuantan Singingi, Provinsi Riau, Sumatera; sekitar 19,3 km barat daya Taluk, dan sekitar 3 km timur laut Lubuk Jambi. Pada tahun 2000-an, beberapa peninggalan arkeologis telah ditemukan di Padang Candi, antara lain lempengan emas yang berisikan tulisan dan berbagai ukuran batu bata sebagai bahan baku untuk konstruksi bangunan, yang ditemukan di tiga lokasi yaitu Sektor-I, Sektor-II, dan Sektor-III. Tujuan makalah ini adalah untuk mendapatkan spektrum pemahaman tentang kumpulan batu bata sebagai bahan baku untuk konstruksi bangunan yang ditemukan di tiga lokasi tersebut berdasarkan studi geomorfologi. Penelitian ini melibatkan investigasi geomorfologi area pada skala 1:2000. Berdasarkan analisis geomorfologi, bentang alam di Padang Candi terdiri atas dua unit, yaitu Unit Dataran Banjir yang dibentuk oleh Satuan Aluvial Kuarter (Qal) dan Unit Perbukitan Rendah yang disusun oleh Satuan Tuf dari Formasi Telisa berumur Miosen (Tmtu). Sektor-I, Sektor-II, dan Sektor-III terletak di Unit Perbukitan Rendah. Hasil studi ini mendapatkan gambaran bahwa Sektor-I terletak di perbukitan terisolasi yang relatif lebih tinggi daripada Sektor-II dan Sektor-III, daerah di sebelah barat Sektor-II mungkin merupakan sisa-sisa permukiman kuno dan terdapat morfologi seperti parit yang ditemukan di sebelah timur Sektor-I. Sektor-I yang terletak di perbukitan terpencil dan adanya morfologi seperti parit, menimbulkan pertanyaan tentang fungsi bangunan dan fungsi parit tersebut. Hal-hal tersebut diusulkan menjadi bahan pertimbangan untuk ahli arkeologi ketika melakukan penggalian dan studi selanjutnya, termasuk daerah yang dianggap sebagai permukiman kuno

Kata kunci: *geomorfologi, Padang Candi, Sumatera, Kerajaan Sriwijaya*

Abstract

Padang Candi site in the Kuantan Singingi Regency of Riau Province, located about 19.3 km southwest of Taluk city, and about 3 km northeast of Lubuk Jambi. In the year 2000s, some archaeological stuff have been found at Padang Candi, among others, various sized of bricks as a raw material for building construction, and some gold plate with scrip. It is presumed those stuffs had a connection with the Sriwijaya Kingdom

between AD 800. The goal of the paper is to gain a spectrum of understanding about the assemblages of bricks as a raw material for building construction was found, on three sites that are at Sector-I (sec-I), and the others in small quantities were found at Sector-II (sec-II) and Sector-III (sec-III) on the basis of geomorphological study. This study involves the geomorphological investigation of the area at the scale of 1:2000. In terms of geomorphology, the landscape at Padang Candi consists of two units, namely, the Floodplain Unit formed by Quaternary river alluvium (Qal), and the Low Hilly Unit composed by Tuff Unit as a part of the Miocene Telisa Formation (Tmtu). Sector-I (sec-I) situated on the relatively higher isolated hilly than sec-II and sec-III. The area westward of sec-II might be remains of ancient settlement, and there is trench-like morphology found eastward of sec-I. In the matter of sec-I which is situated on isolated hilly, evoke a curiosity about the status of building construction at sec-I. The presence of the trench-like morphology also gives arises of curiosity about its function. Those matter should be a consideration by archaeologist when do next excavation and study, including the area which is supposed as an ancient settlement.

Keywords: geomorphology, Padang Candi, Sumatera, Sriwijaya Kingdom.

INTRODUCTION

Padang Candi site in the Kuantan Singingi Regency of Riau Province, located about 19.3 km southwest of Taluk city, and about 3 km northeast of Lubuk Jambi (Fig 1). It located at the upper reaches of Batang-kuantan (Batang means a river in local language). The head of the river is located at Lake Singkarak, flows into the Indragiri River in the Indragiri-hilir Regency, before finally discharging into the Strait of Malacca. Geologically, Padang Candi is situated in the Batanghari depression (also called the Sub-Barisan depression), which it divides the Barisan zone and Tikapuluh Mountain (Bemmelen, 1949:241, 699).

In the year 2000s, some archaeological stuff have been found at Padang Candi, among others, various sized of bricks as a raw material for building construction, some gold plate with script, imported ceramics, earthenware, and beads (Taim, et.al, 2012:2) It is presumed those stuffs had a connection with the Sriwijaya Kingdom between AD 800-1000. The

Sriwijaya Kingdom is considered to be the earliest major Kingdom in Indonesia. It was heavily influenced by Indian culture, particularly in the context of the Hindu-Buddhist religion (Zakharov, 2009:5)

Pertaining to gold plate with script, it was found in 2012 by a local inhabitant at Dusun IV Betung, on surrounding of Sector-I (sec-I); dated about the 8th to 9th centuries AD (AD 700-900) (Fig 2). The script is written in old Javanese (Kawi), consists of incantations to the Buddha, Mahayana. Therefore, it is assumed the religion in AD 700-900 at Padang Candi was Mahayana's Buddhism (Taim, et.al, 2012:28&43).

The assemblages of bricks as a raw material for building construction was found, particularly at Sector-I (sec-I), and the others in small quantities were found at Sector-II (sec-II) and Sector-III (sec-III). However, whether those sites are the remains of the holy building such as temple or other functional building? In the context of the existence of bricks at those sites, this paper will review whether there

is a link between the concept of the placing of building and the landscape, especially in the context of geomorphology at Padang Candi? So, the goal of the paper is to gain a spectrum of understanding about this.

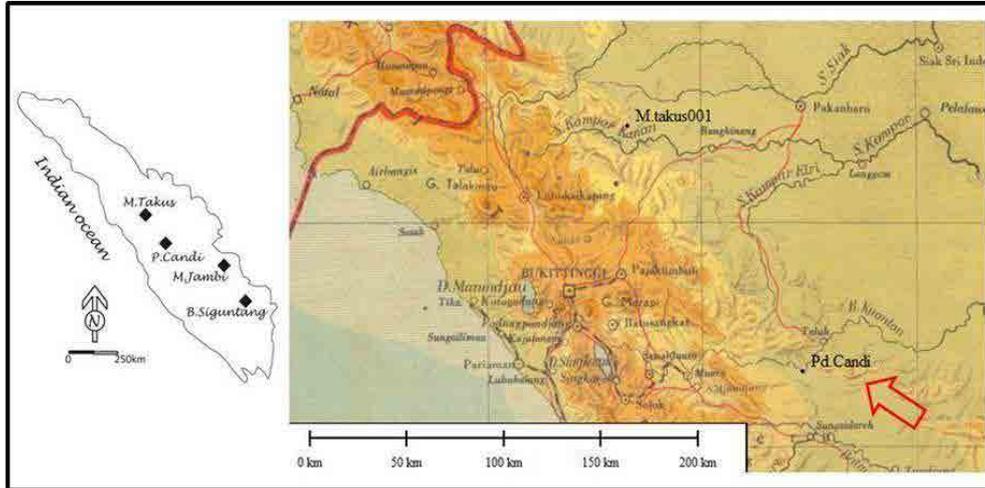


Figure 1. The location of Padang Candi in the Kuantan Singingi Regency of Riau Province. Three presumed locations of the Sriwijaya Kingdom's Center are Muara-takus, Muaro-jambi, and Bukit-siguntang (Schnitger, 1989:28 Map source: modified from Bos, 1954)



Figure 2. Two gold plates with inscriptions found at Dusun IV Betung (Source: Taim, et.al, 2012:42)

The Geomorphology as a Tool

Geomorphology is the study of earth forms. The aim is to interpret landforms and especially the causes that create and modify them. It concentrates primarily on Quaternary (Pleistocene and Holocene) features (Panizza, 1996: 1& 2).

For geomorphological investigation, it is important to seek a logical connection, an explanation, a cause and effect relationship between a particular outcrop and the surrounding landscape (Panizza, 1996: 2).

The Concept of the Placing of Temple

Temple is not only a place of worship but they act as a center for intellectual and artistic life. The temple complex housed schools, hospitals and courts for the community. The temple also owned cultivable land which was leased out and revenues were earned. Temple provided means of livelihood for a large number of persons and greatly influenced the economic life of the community. So, it can be mentioned, the temple is the center of all aspects of the life of the community and every member of the community contributed in the up keeping and building of temple (Vardia, 2008: 10, 11).

The temples were built with all types of raw materials depending upon the availability from region to region. The range of raw material varied from timber to mud, plaster, brick and stone. However, the raw material for temple building is usually stones or bricks. Although, the use of stone is more expensive than that of bricks and it depends on the physical power and economic resources of the ruler, but, the temples were constructed in the region where there was easy availability of brick and the availability of stones was limited (Vardia, 2008:10,16). Most of the ancient surviving temples were built on the mountain peaks or on top of hills, lush valleys, grooves, near the water body, etc. where the environment was considered to be suitable for the adobe of the gods. The existence of water is essential necessity, which can be present naturally or at least as a symbolic representation, because water is believed to keep one's life prosperous (*tirtha sanjiwani*), to maintain peace of

mind, and is a symbol of fertility, purity and holiness in the Hindu-Buddhism religious concept (Vardia, 2008:46;I.N. Duija, 2009:92; Sumadi, 2009:35; I.K. Wiradnyana, 2009:51).

METHOD

This study involves the geomorphological investigation of the area at the scale of 1:2000. The geomorphological investigation will be carried out on each points on surrounding Sector-I (sec-I), Sector-II and Sector-III, by using GPS, geological hammer and compass and other field tools. It includes the description of landscape and geology on surrounding.

RESULT & DISCUSSION

Based on a geological map of Solok (Silitonga & Kastowo, 1995), there are two lithological units can be recognised in the Padang Candi area, namely the Quaternary river alluvium (Qal) and a Tuff Unit as a part of Miocene Telisa Formation (Tmtu) (Fig 3).

The Quaternary river alluvium (Qal) consists of yellowish to light brown, fine sand; distributed on the northern and western parts of the area. This unit is built by sedimentary material from the rivers: Batang-kuantan, Batang-salo, Batang-ujang and Batang-sangau. Its soil is rich in nutrients ideal for paddy field (Fig 4). The Tuff Unit consists of andesitic tuff, reddish to light brown, and sometimes contains of iron oxide (FeO₂) nodules (Fig 5, Fig 6 & Fig 7). The various size of iron oxide (FeO₂) nodule which its form is similar to the spout of kettle, is a limonite cemented shell of sand which mostly found in Pleistocene sands (Pettijohn, 1975: 476).

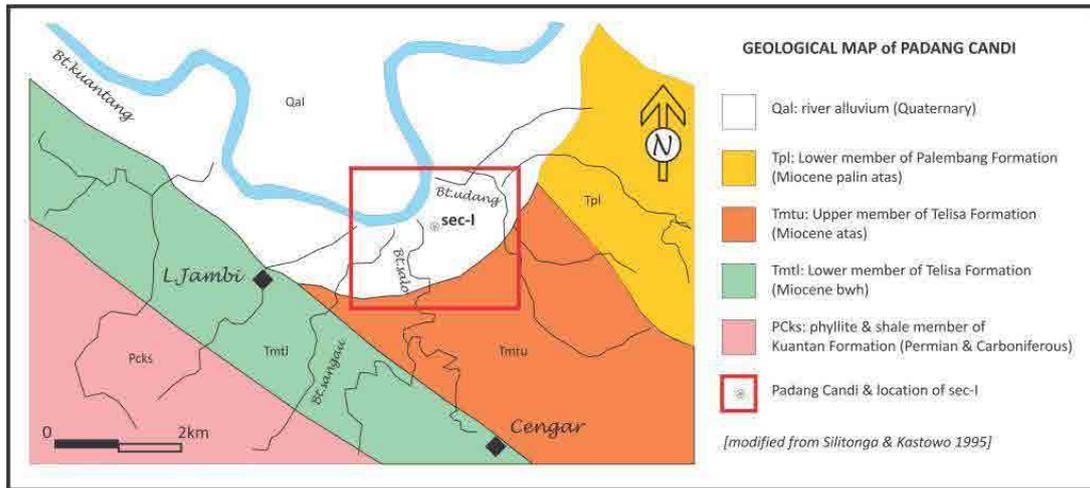


Figure 3. Geological map around Padang Candi (Source: Modified from Silitonga & Kastowo, 1995)

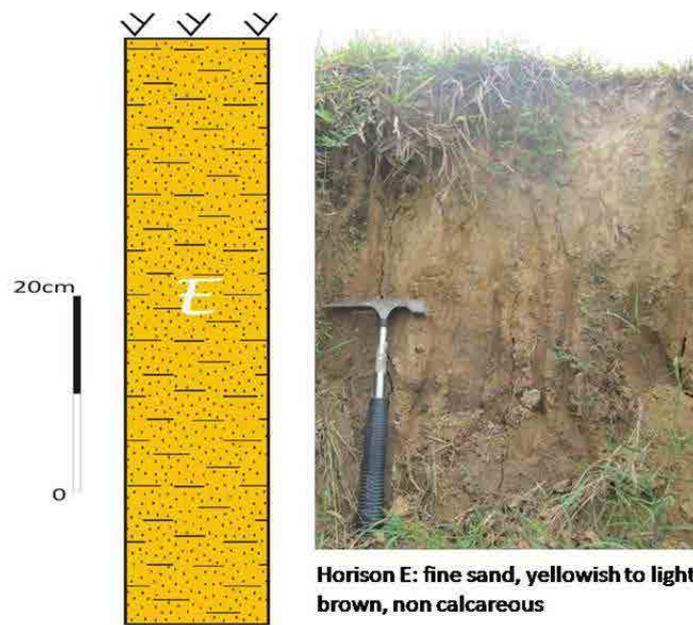


Figure 4. Soil profile of the Quaternary river alluvium (Qal) Unit at the 297 site

The soil profile of Alluvium unit at Padang Candi only expose the E-horizon and lacks of the overlying horizons (O & A horizons). Its colour is yellowish indicates this horizon has great amount of water, therefore, ideal for establishing paddy fields. While,

that of Tuff unit consists of A, E and B-horizons but excluded O-horizon. The colour of the A-horizon is reddish brown indicates the soil was formed in moist condition, the amount of water is low and the chemical nature of the iron compounds present in this soil is mostly ferric oxide (hematite).



Figure 5. Soil profile of Tuff Unit and iron oxide (FeO₂) nodule at 205 site.

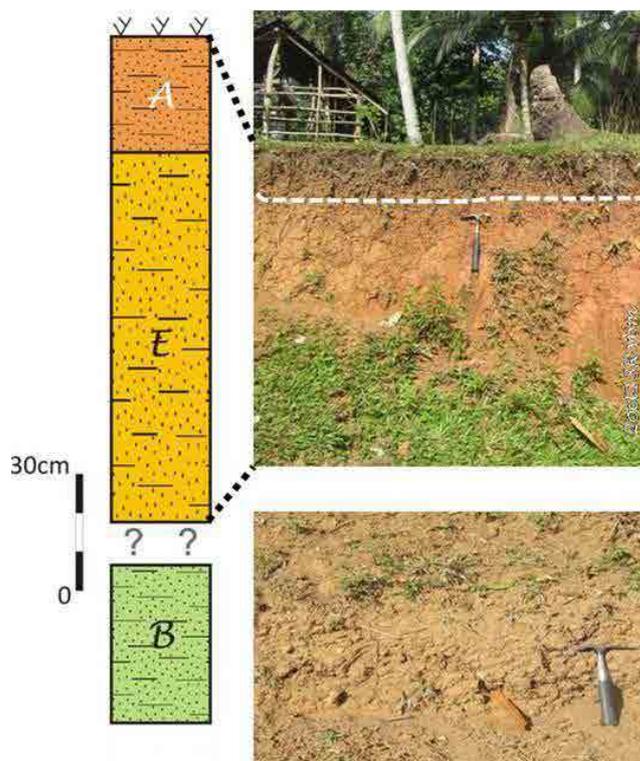


Figure 6. Soil profile at the 260 site

The A-horizon (top soil) consists of fine, dark brown sand, non calcareous, and containing gravel, along with fragmented and complete bricks. The E-horizon consists of fine, reddish brown, non calcareous sand.

The B-horizon is also made up of fine, light brown sand, non calcareous, containing quartz & silicates



Figure 7. Soil profile at sec-I

The A-horizon consists of sandy clay, dark brown in colour, non calcareous, and containing various sizes of granite, kuarsit, andesite, and basalt. Scale: the geological hammer is 31.4cm in length

The excavation in Sector-I (sec-I) uncovered many assemblage of bricks, plus various kinds of stones (2 mm to 8 cm in size) such as andesite, quartzite, and granite. The bricks from sec-I have an average size of 8-9 cm thick, 19-20 cm long and 20 cm wide. It was brownish grey in colour, non-calcareous, good porosity, being composed of sandy siltstone containing fine to medium sized quartz sand, and straw fragments are absent. Petrographic descriptions reveal the bricks from sec-I consists of many minerals namely quartz, orthoklas, biotite, plagioklas, and pyroxene. Some stone

fragments also present such as extrusive igneous rock (andesite and basalt), sedimentary rock. Matrix consists of clay, serisit, volcanic glass etc. (Fig 8). The raw material of bricks might come from the E-horizon of Tuff Unit. Based on the colour of matrix and absence of carbon, it is presumed that the bricks found at sec-I have never used a combustion process in kilns when it was made. Furthermore, since the bricks did not use straw for reinforcing material, it is presumed the type of bricks at Padang Candi looks like sun-dried bricks.

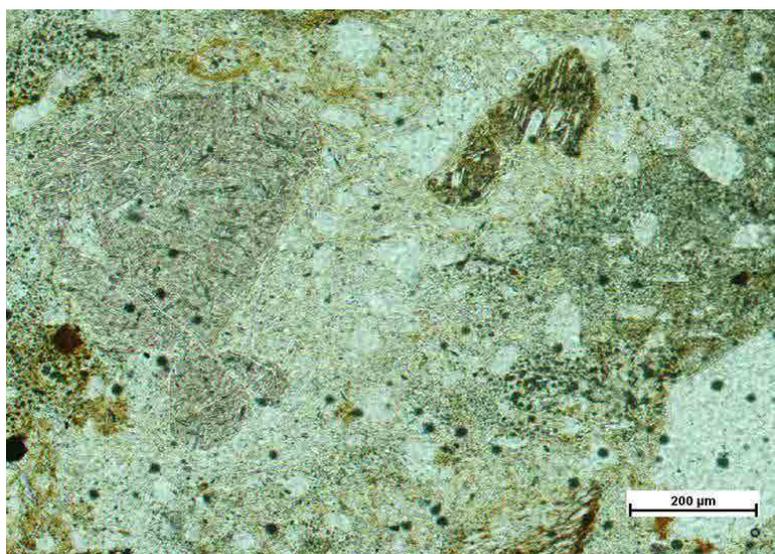


Figure 8. Thin-section of bricks from Sector-I (sec-I)

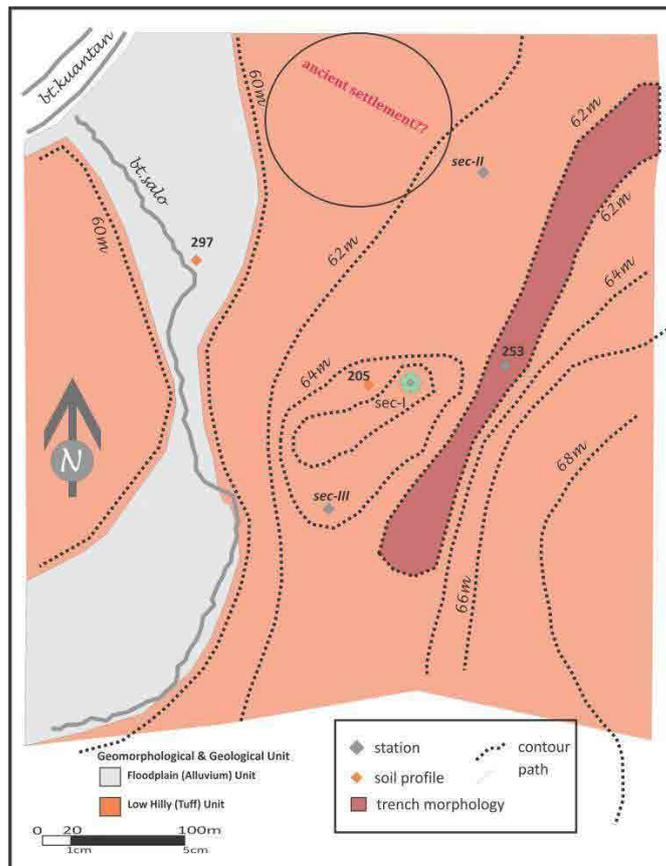


Figure 9. The geomorphological situation on sec-I, sec- II & sec-III and its surrounding



Figure 10. The Floodplain Unit on the northwest of Sector-I (sec-I)

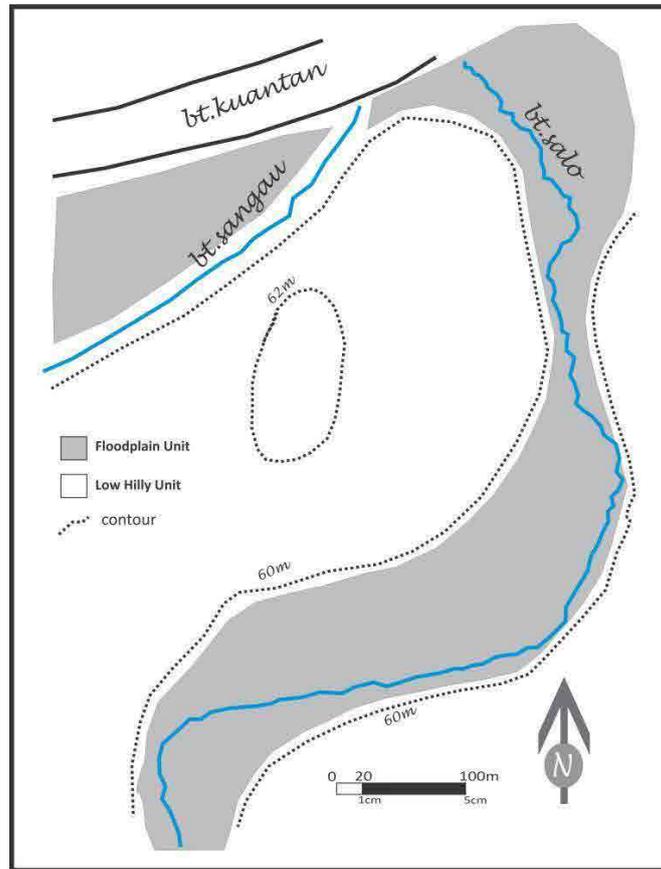


Figure 11. The geomorphological situation at westward of Sector-I (sec-I)

The landscape around the site consists of two geomorphological units, namely, the Floodplain Unit and the Low Hilly Unit. The former is developed from the unconsolidated clastic materials from the Quaternary river alluvium (Qal) (Fig 9). The relatively flat land, stretching either side of the rivers, often flood during heavy rain (Fig 10). The site of sec-I, sec-II and sec-III which the remains of bricks are come from, located on Low Hilly Unit; has a relative elevation between 50 and 70 m and was formed by the Tuff Unit of Miocene Telisa Formation (Tmtu) (Fig 11)

Sector-I (sec-I) situated on the relatively higher isolated hilly than sec-II and sec-III. The slope tilts westward

with a slope gradient between 2.7% and 3.6% around sec-I. But, the slope gradient to the west of sec-II is almost flat at about 0.9%. Therefore, it is assumed, the area westward of sec-II might be remains of ancient settlement (see Fig 9). For settlement, humankind usually will choose an appropriate physical environment to satisfy their demands, among others, to gain food, which they can do by means of collecting, fishing, and hunting. This way of living made humankind entirely dependent on nature. Presumably, this ancient settlement area is favorable on the basis of geomorphological point of view, and located at the estuary of Batang-salo river.

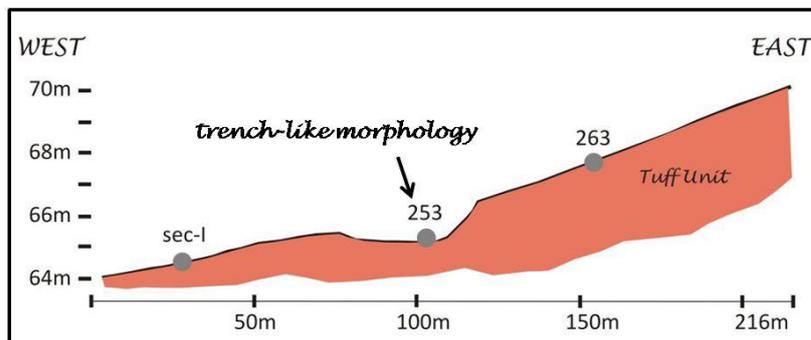


Figure 12. West-east cross section of trench-like morphology



Figure 13. The trench-like morphology at 253 sites. The upper photo is facing north and the lower one, facing south.

In the matter of sec-I which is situated on isolated hilly, evoke a curiosity about the status of sec-I, whether sec-I was the remains of main temple? This matter should be a consideration by archaeologist when do next excavation, including the area which is supposed

as an ancient settlement as above mentioned.

Afterwards, there is trench-like morphology found eastward of sec-I, stretch southwest-northeast between the 62m and 64m contours (see Fig 9 & Fig 12-13). The presence of the trench-like

morphology also gives arise of curiosity about its function, whether it was a crop cultivation land which was built near by the temple for supporting the community because one of the function of the presence of temple usually provided means of livelihood for a large number of persons. Or, it is remains of a man-made pond, which was established as a symbolic representation of the house of the gods?

Nowadays, the trench-like morphologies might be a part of a dry paddy field, called “gaga” or “gogo” in the local language. It refers to the permanent, un-terraced, dry fields on hilly slopes, or in the mountains (Meer, 1979: 32-33). Anyhow, detailed study is needed to gather evidence and verify the origin and purpose of the presence of a trench-like morphology at the site

CONCLUSION

In the context of geology, there are two lithological units can be recognised at Padang Candi, namely Quaternary river alluvium (Qal) Unit and Tuff Unit. In terms of the geomorphology, the landscape at Padang Candi consists of two units, namely, the Floodplain formed by Quaternary river alluvium (Qal), and the Low Hilly composed by Tuff Unit as a part of the Miocene Telisa Formation (Tmtu). The site of Sector-I (sec-I), Sector-II (sec-II) and Sector-III (sec-III) which the remains of bricks are come from, located on Low Hilly Unit; has a relative elevation between 50 and 70 m and was formed by the Tuff Unit of Miocene Telisa Formation (Tmtu).

Sector-I (sec-I) situated on the relatively higher isolated hilly than sec-II and sec-III. The slope gradient to the west of sec-II is almost flat at about 0.9%. Therefore, it is assumed, the area westward of sec-II might be remains of ancient settlement.

Presumably, this ancient settlement area is favorable on the basis of geomorphological point of view, and located at the estuary of Batang-salo river.

In the matter of Sector-I (sec-I) which is situated on isolated hilly, evoke a curiosity about the status of sec-I, whether sec-I was the remains of main temple? This matter should be a consideration by archaeologist when do next excavation, including the area which is supposed as an ancient settlement as above mentioned. The presence of the trench-like morphology also gives arises of curiosity about its function, whether it was a crop cultivation land. Or, it is remains of a man-made pond, which was established as a symbolic representation of the house of the gods?

The bricks from Sector-I (sec-I) has an average size of 8-9 cm thick, 19-20 cm long and 20 cm wide. Based on petrographical analysis, it is presumed that the bricks found at Sector-I (sec-I) had never used a combustion process in kilns when it was made. Furthermore, since the bricks did not use straw for reinforcing material, it is presumed the type of bricks at Padang Candi looks like sun-dried bricks.

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Dating to the archaeological and geological stuffs has not been carried out in order to know the age of culture history

at Padang Candi. However, based on the script on the gold plates, might indicate the cultural period of Padang-Candi coincides with the reign of Sriwijaya, which ruled in the 8th - 10th century AD (AD 700-1000)

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