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Further Archaeological Excavation Report

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Kai Tak Development Engineering Study
cum Design and Construction of Advance Works
– Investigation, Design and Construction**

FURTHER ARCHAEOLOGICAL EXCAVATION REPORT

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- Appendix A General Layout Plan of Trench Location
Appendix B Longjin Bridge and Formation Kowloon City Pier Locations in Outline Zoning Plan
Appendix C Further Archaeological Excavation - Structural Assessment Report

Responses to Comments

Abbreviation

AA	Archaeological Assessment
AF	Appendix Figure
AMO	Antiquities and Monuments Office
CEDD	Civil Engineering and Development Department
CMP	Conservation Management Plan
EIA	Environmental Impact Assessment
EIAO	Environmental Impact Assessment Ordinance
GD	Granite Decking
CEDD/KDevO	Kowloon Development Office of Civil Engineering and Development Department
L	Layer
OZP	Outline Zoning Plan
PES	Pier-end-structure
MCAL	Maunsell Consultant Asia Ltd
mPD	Meter, Hong Kong Principal Datum
SP	Supporting Pillar
T	Trench

Abstract

In accordance with the recommendation of the Archaeological Impact Assessment Report in Environmental Impact Assessment (EIA) Study for Kai Tak Development, a further archaeological excavation for Longjin Bridge was undertaken during the period from 31 October 2008 to 20 February 2009. This report presents the findings of the further archaeological excavation and would also facilitate formulation of Conservation Management Plan (CMP) for Longjin Bridge (also known as Lung Tsun Stone Bridge) by Antiquities and Monuments Office (AMO).

Trenches T1, T2 and T3a to T3d were excavated along the predicted footprints of Longjin Bridge and the former Kowloon City Pier and at the possible location of Pavilion for Greeting Officials. An additional grid was also introduced in order to assess the existing condition of the supporting pillar SP6. The grid was excavated down to the pillar's footing at -0.80mPD. The pillar is hexagonal-shaped in plan, comprising a matrix of solid granite blocks with sandy mortar infills. Portions of the northern section of the Longjin Bridge were discovered beneath the former Terminal Building basement slab at levels between +1.03mPD and +2.37mPD in T3a, T3b, T3c and T3d. All deckings of these sections of the Bridge were demolished.

A structural assessment of the remains on Longjin Bridge and former Kowloon City Pier was conducted. Possible impacts on the structural integrity of the remains were assessed. As observed on site, most of the granite blocks of pillar SP6 and the seaward end and northern portion of Longjin Bridge are in good and stable condition, except for the loose granite blocks and fragments on top of supporting pillars and solid mass section (northern portion) of the Bridge.

Longjin Bridge was built in 1873 and was later modified and extended in phases until 1910. During the reclamation of Kai Tak Bund commencing from 1916 until 1924, the northern section of Longjin Bridge was buried and the pavilion for Greeting Officials was demolished. The use of Kai Tak Bund was originally planned for residential development but was later turned into Kai Tak Airport. The airport was expanded by Japanese troop in 1942. During its expansion, the southern section of the Bridge and the Former Kowloon City Pier were also demolished and buried in the newly reclaimed area. The former Terminal Building of Kai Tak Airport was commissioned in 1960. The decking of the northern section of the Bridge was removed during construction of the former Terminal Building.

提要

據啓德發展環評研究之考古影響評估報告建議，需為龍津石橋作一次後續考古發掘。因此，在 2008 年 10 月 31 日至 2009 年 2 月 20 日期內，發掘了龍津石橋和前九龍城碼頭。本次考古發掘結果，並為古物古蹟辦事處制訂《龍津石橋保育管理計劃》提供資料。

在龍津石橋、前九龍城碼頭的預測走線和接官亭的可能範圍內，挖掘了 1 號、2 號和 3 號探溝。為評估 6 號橋墩現況，另發掘了一個探方。該探方發掘至橋墩基石(深達主水平基準 - 0.8 米)。該橋墩平面為六角形，為一實體石建築，內為石塊和灰砂漿。T3a、T3b、T3c 和 T3d 探溝位於前機場客運大樓地庫範圍內，在各探方主水平基準+1.03 米至+2.37 米的深度內，均發現龍津石橋北段；其橋面均被拆毀。

龍津石橋和前九龍城碼頭遺蹟已進行結構評估，並評估對其結構完整性的可能影響。經現場勘察發現，除橋墩頂部和龍津石橋實體部分(北段)有一些鬆脫的花崗石塊外，6 號橋墩、龍津石橋向海之端和北段大部分花崗石結構均良好及穩固。

龍津石橋始建於 1873 年；及至 1910 年，龍津石橋經歷了數次維修和擴建。1916 年至 1924 年啓德濱填海，龍津石橋北段埋入填海區內；接官亭亦被拆毀。啓德濱原為住宅用地，後改為啓德機場。1942 年日本軍隊擴建啓德機場時，龍津石橋南段和前九龍城碼頭一一被毀和埋入新填海區內。啓德機場客運大樓在 1960 年啓用，在大樓興建時，拆毀了龍津石橋北段橋面。

1 INTRODUCTION

1.1 Background

- 1.1.1 An archaeological investigation was undertaken for the environmental impact assessment (EIA) under Agreement No. CE 35/2006(CE) Kai Tak Development Engineering Study to ascertain the archaeological potential in the North Apron area of the former Kai Tak Airport. Remains of the Longjin Bridge (also known as Lung Tsun Stone Bridge) were identified during the investigation between 31st March 2008 and 2nd June 2008.
- 1.1.2 The Longjin Bridge is a unique historical structure that was thought to have been completely demolished during the reclamation for the Kai Tak residential development in the 1920's and various phases expansion of the former Kai Tak Airport. The Bridge has historical associations with the former Kowloon Walled City and the former Kowloon Fort and represents a unique and valuable historical structure. Therefore, it is recommended that all identified sections of the Bridge (after the completion of further archaeological investigation) should be preserved in situ and integrated into the future Kai Tai Development for public education and tourism purposes.
- 1.1.3 As per the recommendation of the Kai Tak Development EIA Report, further archaeological investigation and preservation *in situ* will be required for the extant sections of the Longjin Bridge.
- 1.1.4 AECOM Asia Company Limited (formerly known as Maunsell Consultants Asia Limited (MCAL)) was commissioned by the Civil Engineering and Development Department (CEDD) of the Government of the Hong Kong Special Administrative Region to undertake the further archaeological excavation at the North Apron area of the former Kai Tak Airport under an additional duty to Agreement No. CE 35/2006(CE).
- 1.1.5 The further archaeological excavation works were carried out during the period from 31 October 2008 to 20 February 2009 under supervision of archaeologist Mr. Steven Ng. The field recording and land surveying works were completed on 23 February 2009.

1.2 Objective and Structure of Report

- 1.2.1 The objective of this report is to present the findings of the further archaeological excavation works and the significances of the findings.
- 1.2.2 Following this introductory section, the structure of this Further Archaeological Excavation Report is set out below:
- Section 2 reviews the objectives and scope of the further archaeological excavation;
 - Section 3 presents the tasks involved and the methodology for the further archaeological excavation;
 - Section 4 presents the geological, historical and archaeological background of the areas of the further archaeological excavation;
 - Section 5 presents the findings of the further archaeological excavation;
 - Section 6 describes the artefacts and other finds retrieved;
 - Section 7 presents the results of the structural assessment of archaeological remains identified;
 - Section 8 discusses the significance of the archaeological findings;
 - Section 9 presents a summary of the report and recommendations; and
 - Section 10 presents bibliography for the report.

2 OBJECTIVE AND SCOPE OF FURTHER ARCHAEOLOGICAL EXCAVATION

2.1 Objective of Further Archaeological Excavation

2.1.1 The overall objective of the further archaeological excavation works is to ascertain the extent of the possible remains of the Longjin Bridge and Former Kowloon City Pier within Kai Tak Development area, in order to facilitate formulation of Conservation Management Plan (CMP), including the option of preservation of the remains of the monuments *in-situ*.

2.2 Scope of Further Archaeological Excavation

2.2.1 The scope of works for the further archaeological excavation works, as shown in (**Figure 1** and **AF 1.1B**), are as follows:

- To demarcate the extent of seaward end of the Longjin Bridge and its remains and to search for the 1920s' Former Kowloon City Pier at Trench 1;
- To record in detail one of the known 1875 granite pillars (No. SP6) at the proposed additional grid within Trench 1;
- To search for the 1892 pillars of the timber extension and the 1910 pillars of the concrete extension at Trench 2;
- To search for any remains of the Pavilion for Greeting Officials, granite pillars, decking and the landward portion of the 1875 Longjin Bridge at Trenches 3a to 3d; and
- To present all the findings about the entire Longjin Bridge and other relevant items of historical significance such as Kowloon Fort, Pavilion for Greeting Officials, former Kowloon City Pier, causeway / seawall, pre-World War II or after World War II disturbance to these items to indicate development history of Kai Tak Area / Kowloon City areas.

3 TASK AND METHODOLOGY

3.1 Desk-top Study

3.1.1 A desk top study was conducted through search and review of previous relevant archaeological reports (including previous archaeological works, findings and interpretations), historical study papers, geological information, historic maps, historic and old aerial photographs.

3.1.2 The historic maps and current survey maps were then overlaid to ascertain the exact location of Longjin Bridge and the Former Kowloon City Pier. The location found was verified by old aerial photographs, where necessary.

3.2 Preparation of Schematic Plans of Longjin Bridge and Former Kowloon City Pier

3.2.1 The original Longjin Bridge was built of granite, measuring about 210m long, with decking and pillar measuring about 2.6m and 4m wide respectively. The timber extension measured about 80m long and 4m wide which are based upon the findings of:

- (1) the ca.1903 historic maps of *Kowloon City Survey* (Sheet No. 5) in scale of 1:1,000 (see **Figure 4 & AF1.1B**); and
- (2) the inscriptions of two stone tablets dated to 1875¹ and 1892².

3.2.2 Schematic plans showing the side and top views of the Longjin Bridge and the Former Kowloon City Pier were prepared based on the available information. The plans provided useful information for engineers to carry out the excavation design. The side view and the plan of the Longjin Bridge and the Former Kowloon City Pier are shown in **Figure 2**.

3.3 Excavation Design and On-site Excavation

3.3.1 The technical design of excavation works (including dewatering control measures) for the Longjin Bridge and the Former Kowloon City Pier was then worked out based on the outcome of desk-top study and the schematic plans of the Longjin Bridge.

3.3.2 Excavation works were conducted at a number of excavation trenches as shown in **Figure 1, AF1.1A and AF1.1B**. The details are described in the following paragraphs.

3.3.3 To ascertain the extent of surviving sections of the Longjin Bridge, Trenches 1 to 3 (T1 to T3) were excavated. Trench 3, which was located within the area of the former Kai Tak Airport Terminal Building, was sub-divided into four sub-trenches (T3a, T3b, T3c and T3d).

3.3.4 T1 was located near the seaward end (PES) of the Longjin Bridge for the search of concrete remains of the Former Kowloon City Pier. T2 was opened for the search of timber remains of the 1892 extension of the Longjin Bridge. T3a to 3d were opened for the search of the landward section of the 1875 Longjin Bridge and the Pavilion of Greeting Officials.

3.3.5 The additional grid for SP6 was dug at an excavation trench of 31st March to 2nd June 2008 in order to further examine the condition of the extant SP6 granite pillar of the 1875 Longjin Bridge. The excavation design for SP6 is shown in **Figure 3**.

¹ The inscriptions of tablet of 1875 reads as “ 同治歲癸酉，眾釀金易渡而梁，計長六十丈，廣六尺，爲礫二十有一。糜金錢若干，光緒乙亥橋竣。” (from 魯金 1991 《九龍城寨史話》，香港，三聯書店。科大衛、陸鴻基、吳倫寬 1986 《香港碑銘彙編》，第一冊，香港，市政局。)

² The inscriptions of tablet of 1892 reads as “ 乃仿招商局碼頭之制，續作橋廿四丈，又於其端爲丁字形，寬一丈二尺，其製精而其費較省，且易石而木，泊船時亦無兩堅激撞之患，其爲用亦更適。” (from 科大衛、陸鴻基、吳倫寬 1986 《香港碑銘彙編》，第一冊，香港，市政局。)

- 3.3.6 Mechanical excavator was employed under close supervision of archaeologist Steven Ng during the excavation of the top soil above the decking surface of the Longjin Bridge at T1 to T3a-T3d and at the additional grid for SP6.
- 3.3.7 In order to prevent any damage or movement of the artefacts and remains of the Longjin Bridge, hand digging was carefully carried out under the close supervision of licensed archaeologist Mr. Steven Ng during the following circumstances: (1) within 300mm above the decking surface of the 1875 Piers at about + 2.90 mPD to 3.10 mPD; and (2) when revealing artefacts.
- 3.3.8 Materials excavated from the trenches and the additional grid were stockpiled at a safe distance away from the trenches and additional grid.

3.4 Remains Treatment

- 3.4.1 The retrieved finds were processed following AMO's Guidelines for Handling of Archaeological Finds and Archives.
- 3.4.2 The positions of the trenches and the additional grid were recorded according to the Hong Kong metric grid system. The site benchmark was based on Hong Kong Principal Datum (mPD).
- 3.4.3 The stratum of each trench was divided according to soil colour, soil texture and artefact. Stratigraphy drawing and photograph of at least one section of each trench were prepared and presented in **Section 5** of this report.
- 3.4.4 All retrieved artefacts were registered, cleaned, marked, labeled, bagged and boxed.
- 3.4.5 After site recording, the trench excavation would be backfilled in accordance with the procedures described below:
- All archaeological features are covered by suitable geotextile membrane before backfilling.
 - Backfilling the first 300mm thick layer on the top of archaeological features with fine fill materials (such as sand fill) by hand. The fill materials should not contain any boulders, rocks or other sharp objects.
 - Backfilling the next 700mm thick layer with generally fine fill materials. Light compaction should be carried out by hand in consultation with engineer and archaeologist.
 - Backfilling of trenches and additional grid 1m above archaeological features should be carried out in a similar way as traditional backfilling works. No heavy machineries should be deployed for compaction of soil.

4 DESKTOP STUDY

4.1 Geological Background

- 4.1.1 In terms of geology, the study area is mainly composed of 20th century reclamation fill over marine mud and sand in what were formerly the shallow coastal waters of Kowloon Bay. However, around the periphery of the excavation area, in particular along its north edges, the areas are mapped as alluvium. Such fertile sediments were invariably targeted by people in the past for agriculture and settlement (historic and earlier).
- 4.1.2 As indicated in the 1:20,000 geological map of Hong Kong and Kowloon, the marine silty sand of Hang Hau Formation of Holocene is identified as the superficial stratum of Kowloon Bay seabed. The Longjin Bridge and the Former Kowloon City Pier are founded on the layers of marine silty sand and reclamation fill soil. The Geological Map of Kowloon Bay is shown in **Figure 5**.
- 4.1.3 The Kowloon Bay is characterised by a generally low-lying and gently sloping coastal plain, within which the 35m high Sacred Hill (and its slightly higher sister 'peak') provides the sole interruption to the broad sweep of the Bay. The pre-reclamation Kowloon Bay landscape as mapped in 1903 -1904 survey map is shown in **Figures 6, 7a and 7b**.

4.2 Historical Background

- 4.2.1 There were 13 imperial salt fields set up in Guangdong in Northern Song dynasty. One of them was Guanfu Chang (官富場) which was set up in eastern Kowloon.
- 4.2.2 Guanfu Chang was one of the biggest imperial salt production grounds in Guangdong. According to local historic study, the scale of Guanfu Chang was quite substantial based on the fact that an imperial garrison of 150 soldiers was established by the Salt Official to suppress salt smuggling in the area in 1200. It is also believed that an associated Yamen was established in the Kowloon City area at around this time. Salt manufacturing of Guanfu Chang ceased completely after the Coastal Evacuation period of the 1680s in the early Qing dynasty.
- 4.2.3 Records and local folklore suggest that three villages, namely Po Kong, Nga Tsin Wai and Ma Tau Wai, were established in the Kowloon City area as early as middle 12th century. As seen in the 1903 – 1904 survey map in **Figure 6**, Kowloon City by then was a well established area settled with quite a number of villages including Kau Pui Shek and Ma Tau Chung Tsuen. Fishing, farming and quarrying were the major industries at that time.
- 4.2.4 Kowloon Fort (九龍炮台) was first established in Kowloon City in 1811 by the Qing Chinese Government to suppress piracy. To further advance the Qing Government's coastal defence of the region, the fort was rebuilt in 1846³.
- 4.2.5 After the First Opium War between Britain and China in 1839 to 1840, Kowloon Walled City was built in 1847⁴ and was effectively a garrison town within which several hundred soldiers and an Assistant Magistrate (巡檢) were stationed to reinforce the coastal defence of the region.

³ 《複核勘估工程情形稟》(dated 18 July 1846)：「.....另改修九龍炮台等項工程，履勘地勢，確估銀數，繪圖造冊，並將未盡事宜備具清折。.....」《造繳九龍寨城等項估工程細冊稟》(dated 9 September 1846)：「.....另改修九龍舊炮台，共估計工料銀二萬六千七百兩。.....」(暨南大學編 1996 《勘建九龍寨城全案》，廣州，暨南大學出版社。)

⁴ 《九龍城工完竣申繳鈐記稟》(dated 9 August 1847)：「.....伏查卑職監修工程一律完竣，用過銀數造冊報清厘，並無經手未完事件。理合將奉發鈐記一顆截角呈遞，伏乞大人察核飭銷，實為公便。肅此，具稟.....」(暨南大學編 1996 《勘建九龍寨城全案》，廣州，暨南大學出版社。)

- 4.2.6 At around the same time as the Kowloon Fort was relocated closer to the shore, an administrative office of the Assistant Magistrate of Kowloon (九龍巡檢, a Yamen) was also built. Besides the several office buildings, there were also the Longjin Free School (龍津義學), a paper-burning pavilion and, somewhat later, the Longjin Bridge and Pavilion for Greeting Officials (接官亭 also as Longjin Pavilion 龍津亭).
- 4.2.7 Hong Kong was a centre of opium smuggling after 1858, especially in the early 1860s⁵. Import of Opium to China was legalized by the Treaty of Tientsin in 1858, but importing opium to China was only limited to foreign vessel. Chinese junk was prohibited to carry opium. However, Hong Kong Government gave protection of Chinese junk with British flag to carry opium to China. The Qing Chinese Government therefore had no means to control opium import to China and also lost revenue on foreign vessels carrying opium.
- 4.2.8 In early 1868, Viceroy of Quangdong and Quangxi Provinces, ordered four customs stations to be established in waterways surrounding Hong Kong and Kowloon at Fat Tong Chau, Ma Wan Island, Cheung Chau Island and Kowloon City (**Figure 7a**). It is so-called by Hong Kong Government as “blockade of Hong Kong”.
- 4.2.9 In order to provide a landing place for Chinese customs force vessel, Major-general (副將) of Depang Xie (大鵬協, xie as a brigade) and Deputy Magistrate of Kowloon advised local people to donate money for construction of a new stone pier, namely Longjin Bridge. The construction works of the Longjin Bridge (pier) was commenced in 1873 and completed in 1875. The length of the Bridge was about 210m and was laying in N131⁰. The further timber extension of the Bridge was completed in 1892 and the timber extension was 80m long and laying in N118⁰. The funding of the timber extension came from the donation by local charity organization, Lok Sin Tong (樂善堂) of Kowloon Street and some villages. The repair works of timber section of Longjin Bridge was completed in 1900 by Public Works Department of Hong Kong Government. This wooden extension was replaced by a concrete extension in 1910 and it included a wooden shelter for passengers waiting for steam-ferry.⁶
- 4.2.10 Larger machine vessels were allowed to moor at this newly-built pier (the Longjin Bridge). It also provided a landing place for ferry services running among Kowloon City, Guangzhou and Macau.
- 4.2.11 The Longjin Bridge was built in 1873 which not only provided service to Imperial Chinese Customs but also to Chinese troops. During the 1860s to the 1890s, Xinan County (新安縣 including Shenzhen, Kowloon and New Territories) was guarded under two Chinese military divisions. To the west, the navy force and some land troop commanded by the general of naval force, which reads as “Shuishi Tibing (水師提標)” in Chinese, guarded western New Territories and western Shenzhen, and a land troop garrison was set up in Tuen Mun. To the east, naval force (in Chinese Depang Xie) guarded eastern Shenzhen, mainland of middle and eastern New Territories, Kowloon and outer islands such as Lantau Island, Lamma Island, Cheung Chau Island and Ma Wan Island.

⁵ Endacott, G.B. 1964, 1973 Chapter 17, Social and Economic Conditions, *A History of Hong Kong*, Hong Kong, Oxford University Press. “he (Sir Richard Macdonnell, the Governor of Hong Kong, 1866-72) denied that there was much opium smuggling; he estimated that total yearly import of opium into Hong Kong averaged 80,000 chests, of which 63,000 went to northern ports and 3,000 to California; he put smuggling at 1,500 chest from Hong Kong and about 4,500 form Macao. The Chinese pit smuggling at 30,000 to 40,000 chests annually and asked to be allowed to set up customs stations in the colony.....”

⁶ Ove Arup & Partners HK Ltd 2001. *Comprehensive Feasibility Study for the Revised Scheme of South East Kowloon Development – Cultural Heritage Impact Assessment*. Section : 12.6.6.6 ; “ After 1898, one of the first tasks of the Public Works Department in the New Territories was the repair of the Kowloon City Pier (Lung Tsun Stone Bridge, 龍津石橋). Timber work was repaired at a cost of amount \$6,000 and the works was completed in 1900. “

- 4.2.12 The headquarters of Depang Xie was set up in Kowloon Walled City and further down were Left Battalion (左營) and Right battalion (右營). The commanding centre of Left Battalion, established in Tung Chung Fort, Fan Lau Fork and Tung Chung Small Battery were under its command. Kowloon Fort was under command of Right battalion.
- 4.2.13 As stipulated in the *Convention Between Great Britain and China Respecting an Extension of Hong Kong Territory* (展拓香港界址專條) signed at Beijing at 9 June 1898, Kowloon Walled City and a “landing place” were not leased to Britain, and Chinese government had the right to manage and control the Walled City and the “landing place”. According to the “Use of Landing Place near Kowloon by Chinese” of the Convention: “It is further agreed that the existing landing place near Kowloon City shall be reserved for the convenience of Chinese men-of-war, merchant and passenger vessel, which may come and go and lie there at their pleasure; and for the convenience of movement of the officials and people within the city.” (『又議定：仍留九龍城原舊碼頭一區，以便中國兵商各船、渡艇任便往來停泊，且便城內官民任便行走。』).
- 4.2.14 Sir Henry Blake, Governor of Hong Kong attended the takeover ceremony in an open space near Kowloon Walled City on 17th April 1898. Village representatives from Kowloon villages also attended the ceremony.
- 4.2.15 On 16th May 1899, shortly after the ceding of the New Territories, British troop landed at Longjin Bridge and they were assigned to illegally occupying Kowloon Walled City. The Qing officials and his troops were driven out of the Walled City by the British leaving the Kowloon Walled City under the control of neither the British nor the Chinese Government.
- 4.2.16 The Viceroy Quandong and Quangxi Provinces, Hon. Tan Zhonglin (譚鐘麟) sent an official to enquire why Britain did so, Blake refused to see anyone except Viceroy in person. Qing Chinese Government therefore formally made representations to Britain occupation and also claimed handing Kowloon Walled City over to China. The Viceroy of Quandong and Quangxi Provinces Hon. Li Hongzhong (李鴻章) queried why Britain occupied Kowloon Walled City and reclaimed Britain to hand over Kowloon Walled City to China immediately when he passed the colony in July 1900.
- 4.2.17 British troop who occupied Kowloon Walled City was then endorsed by the Secretary of State of Britain, and Royal Order-in-Council dated 27 December 1899. Britain then formally declared that the further presence of Chinese officials in Kowloon Walled City was found to be in conflict with defense of Hong Kong and hence this could not be permitted by Britain.
- 4.2.18 Kowloon Bay attracted the interest of private entrepreneurs such as Sir Ho Kai (何啟) and his partner Mr. Au Tack (區德). Their Kai Tak Land Development Company reclaimed the northern part of Kowloon Bay, set out a regular street grid, built tenement blocks and shop houses, and protected the seaward face of their reclamation with a new seawall, which was completed in 1924 (see **Figure 8**).
- 4.2.19 As seen in the early 1930s map and a photograph of 1932 (**Figures 9 and 10**), the landward portion of the Bridge, including the Pavilion of Greeting Officials, was buried within the first phase Kowloon Bay Reclamation between 1916 and 1920.
- 4.2.20 The surviving seaward portion of the Bridge continued in use until 1930 providing ferry services running among Hong Kong Island, Hunghom and Kowloon City. Then a concrete extension was built further to the seaward end of the Bridge and the Bridge was given a new name as Kowloon City Pier.

4.2.21 The 1920s' Kai Tak residential development failed and was taken over by the Government and the airfield at Kai Tak opened on Lunar New Year's Day in 1925. The airfield continued in use and was gradually improved until World War II (WWII), during which a new runway was constructed during the Japanese occupation (**Figures 11 and 12**). This airport extension involved the demolition of tenements and villages to the west of the airfield, and the vast quantities of building rubble thus generated were then used as reclamation fill by the Japanese military engineers. Green bricks and granite blocks from the walls of Kowloon Walled City were also removed for the same purpose.

4.3 Archaeological Background

4.3.1 Archaeological investigation for the Comprehensive Feasibility Study for the Revised Scheme of South East Kowloon Development was carried out in 2002. Two machine-excavated and one hand-excavated trenches were conducted at the southwest of the former Airport Terminal Building, which were believed to be in the vicinity of the Sacred Hill. The results of the investigation showed that, prior to modern reclamation, the area investigated was formerly part of Kowloon Bay.

4.3.2 A further fieldwork was carried out in 2003 at the north apron area of the former Kai Tak Airport. The purpose of that investigation was to identify any remains of archaeological interest in the area. The investigation did not identify any evidence for the remains of Longjin Bridge. Yet two sections of the 1924 Seawall were exposed and were considered as important clue for refining the likely location of the Longjin Bridge and Kowloon Fort.

4.3.3 A box culvert for South East Kowloon Development Site Preparation and Drainage Works at North Apron Area of Kai Tak Airport was constructed on a NE-SW alignment along the line of the road between the former Airport Terminal Building and the former car park building at Concorde Road. With reference to AMO's *Site Initial Evaluation Records* made during the construction of the box culvert: wooden piles and pottery sherds were identified in several sections of the drainage alignment, and a stone slab was identified in the proposed vicinity of the Longjin Bridge.

4.3.4 The most recent archaeological investigation was carried out under the Kai Tak Development Engineering Study between 31st March 2008 and 2nd June 2008. That investigation comprised five trenches (AA1 to AA5) which were designed to examine areas not covered by previous archaeological fieldworks due to accessibility problem.

4.3.5 Based upon the location of the 1924 seawall exposed in 2003, another section of the 1924 seawall, two supporting concrete pillars of Former Kowloon City Pier, seaward end (also as Pier-End-Structure, (PES)), granite supporting pliers and granite decking blocks of Longjin Bridge were discovered in trench AA5 during the early 2008 investigation.

4.4 Construction and Modification Phases of Longjin Bridge and Former Kowloon City Pier

4.4.1 The Longjin Bridge and Former Kowloon City Pier were built in 1873 and the 1920s respectively. Longjin Bridge underwent four phases of modification. Details are described in the paragraphs below.

4.4.2 Construction: in 1873, the original Bridge was built of granite, measuring about 210m long and 2.6m wide, and was laid in the direction of N131°. The works were completed in 1875⁷.

⁷ 魯金 1991 《九龍城寨史話》，香港，三聯書店。科大衛、陸鴻基、吳倫霓霞 1986 《香港碑銘彙編》，第一冊，香港，市政局。ca.1903 *Map of Survey District No.1 of Kowloon City Survey No.5* .

- 4.4.3 At the landward end of the Bridge, there was a two-storey pavilion. It was used to greet Chinese imperial officials. Locals named it as the “Pavilion for Greeting Officials”. Two stone tablets were erected inside the pavilion with inscriptions on them recording the 1873 and 1892 works of the Bridge. The pavilion was demolished during the reclamation of Kai Tak residential development between 1916 and 1920. The entrance stone tablet of the pavilion which reads as “Longjin (龍津)” still remained at the Lok Sin Tong (樂善堂) Primary School in Nam Kok Road, Kowloon City.
- 4.4.4 Phase 1 modification: in 1892, a timber extension was added to the seaward end of this Bridge, measuring 80m long. The seaward end was extended, measuring 4m wide. The extension works were funded by Lok Sin Tong, a local charitable organization of Kowloon City Market, established in the 1880s. The timber extension was laid in the direction of N118⁰⁸.
- 4.4.5 Phase 2 modification: Longjin Bridge was repaired by timber works and the works were completed in 1900⁹.
- 4.4.6 Phase 3 modification: in 1910, the timber extension of the Bridge was replaced by a concrete structure. A wooden shelter was built at the seaward end of the timber extension¹⁰.
- 4.4.7 Phase 4 modification: between 1916 and the early 1920s, the northern section of the Bridge was demolished during the site works associated with reclamation for the residential development in Kowloon City¹¹.
- 4.4.8 Kowloon City Pier: the Longjin Bridge was given a new name, the Kowloon City Pier, upon completion of the final extension works in the early 1920s. The 1892 original timber extension of the Bridge was demolished and a new concrete extension of about 60m length was added to the seaward end of the original Longjin Bridge. The distance of the seaward end of the Former Kowloon City Pier to the 1924 seawall is measured about 112m based on the early 1930s historic map in scale of 1:2,400. A causeway in form of seawall was constructed for the Former Kowloon City Pier in 1933 and the Pier was rebuilt between 1936 and 1937¹² (**Figure 13**). The duration of service of the Former Kowloon City Pier is from the early 1920s to August 1942.
- 4.4.9 Buried Period: the burial of the Bridge and the Pier reflects the progress of urban development of Kowloon Bay since 1916. The northern section of the Bridge was buried under the reclamation for the development of Kai Tak Bund. The southern section of the Bridge remains exposed during that period of time and a new concrete extension of the Bridge, namely Former Kowloon City Pier, was constructed and linked with the southern section of the Bridge. Subsequently both the southern section of the Bridge and the Pier were demolished and buried under the new reclamation for Kai Tak Airport in 1942. Due to increase in demand for civil aviation in the late 1950s, a new Kai Tak Terminal Building was opened in 1960s. During construction of the Terminal Building basement, the decking of the buried northern section of the Bridge might be further disturbed.

⁸ 科大衛、陸鴻基、吳倫霓霞 1986 《香港碑銘彙編》，第一冊，香港，市政局。

⁹ Ove Arup & Partners HK Ltd 2001 *Comprehensive Feasibility Study for the Revised Scheme of South East Kowloon Development* (Agreement No. CE 32/99), Section 12.6.6.6, Hong Kong, Territory Development Department of Hong Kong SAR Government.

¹⁰ Territory Development Department, 2000 *Comprehensive Feasibility Study for the Revised Scheme of South East Kowloon Development* (Agreement No. CE 32/99), Section 12.4.2 .3, Hong Kong, Hong Kong SAR Government.

¹¹ 魯金 1988, 1997 《九龍城寨史話》，香港，三聯書店。

¹² 何佩然 2004 《地換山移：香港海港及土地發展一百六十年》，香港，香港商務印書館。

5 ARCHAEOLOGICAL FINDINGS

5.1 Longitudinal Section and Plan of Longjin Bridge and Former Kowloon City Pier

5.1.1 A review of the ca.1903 *Kowloon City Survey* (Sheet No.5, 1:1,000) (**Figure 4**) has been conducted. Based on the review, Longjin Bridge has two sections namely the seaward section and the landward section. The seaward section looks like a bridge and hence it was called “Bridge” (橋) in Chinese. A total of 20 granite supporting pillars were erected in the seaward section to support granite slabs or decking of the Bridge. With reference to historic photographs, the landward section is in the form of a solid mass with its walls constructed of granite blocks as illustrated in **Figure 2**. The Bridge and the Pier had come across a number of construction stages, the works of each stage and the approximate dimensions of the Bridge and the Pier are summarised in **Table 5.1** below based on the available information. All findings and their measurement and height levels are presented in **Table 8.1**.

Table 5.1 Different Construction Stages of Longjin Bridge and Former Kowloon City Pier

Year	Name of Construction	Description of Works	Features	Approximate Dimensions (m)	Source
Ca. 1873 (<i>Source 1</i>)	Pavilion for Greeting Officials (Longjin Pavilion)	Likely built in this year	Two storey, constructed of bricks and stones with Chinese traditional roof system.	8m (W) x 7m (L) (<i>Source 1</i>)	(1) Kowloon City Survey Sheet No.5, 1:1,000 (Figure 4)
1873	Longjin Bridge	Masonry Construction	The bridge had three sections: (1) northern section of solid mass, decking and side walls of granite blocks; (2) southern section with 20 granite pillars of granite structure; each granite decking between 2 pillars was composed of five granite slabs placed longitudinally; and (3) seaward end of the Bridge which was a solid mass, with the decking and side walls made of granite blocks; two landing steps were located in left and right sides of the seaward end.	(1) northern section: 87m (L) x 2.6 m (W, decking); (2) southern section: 123m (L) x 2.6m(W, decking), (3) supporting pillar: 4m (L). (4) seaward end: 6.90m (L) x 4.94m (W). (<i>Source 1</i>) Total length: about 200m ¹³ (<i>Source 2</i>) Total length: about 210m, surface level of seaward end: 2.62 to 2.70 mPD; seaward end: 6.90(L) x 4.94m(W) (<i>Source 3</i>)	(1) Kowloon City Survey Sheet No.5, 1: 1,000 (Figure 4) (2) Tablet of Longjin Bridge (龍津石橋碑). (3) This further excavation of 2008-2009

¹³ According to the Tablet of Longjin Bridge, the length of Bridge is about 200m.

Year	Name of Construction	Description of Works	Features	Approximate Dimensions (m)	Source
1892 (Source 4)	Timber Extension of Longjin Bridge	Timber structure	A timber structure similar to a Pier of China Merchants Steam Navigation (輪船招商局) in Kennedy Town, Hong Kong, Island. (Source 4)	Total length: about 80 m. (Source 4)	(4) Tablet of Longjin Bridge Extension (龍津石橋加長碑).
1910 (Source 5)	Replacement of Timber Extension of Longjin Bridge	Concrete structure	A new concrete structure was built to replace the timber structure of the Bridge	Total length: 85m, decking: 3m(W); seaward end of this concrete extension: 13(L) x 6m(W). (Source 1)	(1) Kowloon City Survey Sheet No.5, (5) Ove Arup & Partners HK Ltd 2001 <i>Comprehensive Feasibility Study for the Revised Scheme of South East Kowloon Development</i>
ca. 1932 (Source 8)	Concrete Extension of Longjin Bridge	Concrete extension works	A new concrete extension with a shelter to link with the Former Kowloon City Pier	Total length: 65 m, causeway end 32m(L) x 4m(W. of base), decking of causeway: 4m(W). (Sources 6 & 7) Total length: 65 m, causeway end 32m(L) x 9 m(W). (Source 3)	(3) This further excavation of 2008-2009 (6) The Early 1930s Kowloon City survey map, 1:2,400 (Figure 9) (7) Plan of Kowloon City Pier, 1:600. (8) 何佩然 2004 《地換山移：香港海港及土地發展一百六十年》
1933 (Source 8)	Causeway of Kowloon City Pier	Construction of causeway in form of seawall	A masonry seawall was built and used as a causeway to Kowloon City Pier	Total length: 32 m; width of the path: 4m. (Source 7) Total length: 20m. (Source 3)	(3) This further excavation of 2008-2009 (7) Plan of Kowloon City Pier, 1:600 (Figure 13). (8) 何佩然 2004 《地換山移：香港海港及土地發展一百六十年》

Year	Name of Construction	Description of Works	Features	Approximate Dimensions (m)	Source
1936-1937 (Source 8)	Reconstruction of Kowloon City Pier	Concrete refurbishment of granite decking	New extension of concrete was built linking with original seaward end of Longjin Bridge	Total length: 63m; southern portion 37m(L) x 9.5 m(W) , northern portion: 26m(L)x 4.5m(W) (Source 7) Total length:65m, northern portion: 29m long and 4.8m width, southern portion: 36m long and 9.7m wide. (Source 3)	(3) This further excavation of 2008-2009 (7) Plan of Kowloon City Pier, 1:600 (Figure 13). (8) 何佩然 2004 《地換山移：香港海港及土地發展一百六十年》

5.1.2 Each span of the decking of the Bridge in the seaward section was composed of five longitudinal granite slabs placed in parallel with the centreline of the Bridge between two supporting pillars. Each span of the decking of the Bridge in the landward section was composed of nine longitudinal granite slabs placed in parallel with the centreline of the Bridge (see **Figures 7a** and **7b**).

5.1.3 The original form of Former Kowloon City Pier could make reference to a map of Kowloon City Pier (1:600, **Figure 13**). A wooden shelter was erected in the seaward end of the Kowloon City Pier as seen in a photograph of 1932 and a similar shelter was identified in a 1945 photograph of Queen's Pier in Central (**Figure 14**).

5.2 Trench and Grid Excavation

Trench Locations

5.2.1 A total of six trenches (T1, T2, T3a to T3d) and an additional grid (SP6) were excavated within the study area (**AF 1.1A**), which were located along the footprint of Longjin Bridge and Former Kowloon City Pier. These trenches and grid were located in accordance with three historic maps:

- *Kowloon City Survey* (Sheet No.5, 1:1,000, ca.1903, **Figure 4**);
- *Map of Hong Kong: Kowloon City Sheet* (1:2,400, the early 1930s, **Figure 9**); and
- *Map of Kowloon City Pier* (1:600, the early 1930s **Figure 13**).

5.3 Findings of Trench T1

Stratigraphy

5.3.1 Trench T1 was located at the north apron area of the former Kai Tak Airport (**AF 4.1** and **Figures 1** and **15**). The trench was set out along the footprint of the Longjin Bridge with reference to the findings in 2003 and April 2008. The trench measured 110m (length) x 15m (width).

5.3.2 The stratigraphy of T1 is shown in **Tables 5.2 and 5.3** below for the northern portion and the southern portion respectively. Layers 1 to 2 consist of apron floor and concrete slabs, which dated to the 1960s. Layers 3 to 5 comprise reclamation fill soil and fill materials such as red brick and some granite blocks from the reclamation of Kai Tak Airfield extension works between 1942 and 1945. The matrix of Layer 5 consisted of red bricks and granite blocks (**Figure 16**). Further southeast in the southern portion of Trench T1 where the Former Kowloon City Pier locate, six layers were observed but a layer of fill materials is missing (**Figure 17**).

Table 5.2 Strata of T1 North (Figure 16)

Layer	Soil deposit description	Cultural remains and chronology	Top of layer in mPD
L1	Concrete	The 1906	4.43
L2	Sandy soil occasionally with shell, light grey	The 1960s	4.43
L3	Sandy soil, light brown	1942-1945	3.83
L4	Loamy soil, reddish yellow	1942-45	3.63
L5	Sandy soil, reddish yellow	1. Red bricks, demolished materials of shop-houses of Kai Tak Bund, 1942-45. 2. Seaward end (PES) and seaward section of Longjin Bridge, 1875	3.13 (the excavation reached 1.41 mPD)

Table 5.3 Strata of T1 South (Figure 17)

Layer	Soil deposit description	Cultural remains and chronology	Top of layer in mPD
L1a	Concrete	The 1906	4.94
L1b	Concrete	The 1906	4.83
L2	Sandy soil occasionally with shell, light grey	The 1960s	4.63
L3	Loamy soil, yellowish brown	1942-1945	4.43
L4	Loamy soil, reddish yellow	1942-45	4.23
L5	Sandy soil, dark grey	1942-1945	4.03
L6a	Sandy soil, reddish yellow	1942-1945	3.83
L6b	Loamy sandy soil, reddish yellow	1942-1945 47 support concrete pillars and two landing steps of Former Kowloon City Pier, 1924-1942	3.43

1930s' Causeway

5.3.3 A single side sloping-faced portion of the 1930s' causeway of overall 20.4m length and approximately 4m width was discovered. The top elevation of this causeway was at 3.32 mPD. The causeway clearly reflected the design of a granite rubble core/foundation faced with rough-dressed granite blocks which were mostly sub-square. The full cross-section of the causeway was not exposed.

5.3.4 The 1930s' causeway is noted in a map of Former Kowloon City Pier (**Figure 13**). Causeway survives beneath the Kai Tak Airfield reclamation of 1942 to 1945 and a sloping wall of huge granite blocks (each measured 2.2m x2.2m) has been exposed.

5.3.5 Concrete pavement with iron fence holes and a suspected base of a lighting post were discovered along the 1930s' causeway. It is possible that this causeway was also served as an alternative ramp for passengers and lorries to the Former Kowloon City Pier.

Former Kowloon City Pier

- 5.3.6 A total of 47 supporting pillars and two landing steps have been unearthed. Decking was likely to be demolished when reclamation works were conducted between 1942 and 1945. The Pier's remains with an overall length of 65m were discovered.
- 5.3.7 The Pier was seen in a historic photograph dated 1932(**Figure 10**). It is therefore believed that the Pier was built before 1932. According to a recent publication, the Pier was rebuilt between 1936 and 1937¹⁴. With reference to the 1932 historic photograph, a wooden shelter was erected there (**Figures 9, 10, 13, 19 to 24, AF1.1A and AF 1.1B**).
- 5.3.8 The total length of Pier are 65m, its length and width of the northern portion measure 29m and 4.8m respectively; southern portion measures 36m long and 9m wide. A ramp was built between northern portion of the Pier and the seaward end of original Longjin Bridge (**Figure 19, and AF1.1A**). The average top elevation of the supporting pillar is at 3.2mPD.
- 5.3.9 The concrete pillars of the Pier are grouped into the following four types with the number of each type indicated. From structural point of view, it is believed that that vertical pillar mainly provided vertical support whereas the lateral resistance of the Pier was derived from the inclined pillars.
- Type 1: single vertical pillar (14 nos.);
 - Type 2: single vertical pillar with one inclined pillar (11 nos.);
 - Type 3: single vertical pillar with two inclined pillars (15 nos.); and
 - Type 4: single vertical pillar with more than two inclined pillars (7 nos.).
- 5.3.10 Two supporting concrete pillars with vertical timber fenders found in May 2008 were called "dolphin pier". The function of these pillars was previously interpreted in the archaeological investigation undertaken in 31st March to 2nd June 2008 as "this seems to suggest that, in its (Longjin Bridge) later stages of use, the Longjin Pier (with dolphin piers) was receiving some quite substantial vessels"¹⁵. They are however confirmed in this further excavation that the dolphin piers are 2 of the 47 supporting pillars of the Former Kowloon City Pier.

Seaward End (Pier-End Structure, (PES) of Longjin Bridge

- 5.3.11 Subsequent to the archaeological investigation undertaken in 31st March to 2nd June 2008, the seaward end of Longjin Bridge was re-excavated under this investigation to search for the 1930s causeway and the Former Kowloon City Pier at areas further southeast (**Figures 19, 25 to 33, AF1.3**).
- 5.3.12 The seaward end is a solid mass with rocks and sandy mortar infills. Its side walls and decking were constructed of longitude and transverse granite blocks. The seaward end measures an overall length and width of 6.90m and 4.94m respectively. The top of the decking is about +2.66 mPD. The seaward end is rectangle in plan and there are two landing steps located at the eastern and western sides. Five steps were discovered in the western end.

¹⁴ 何佩然 2004 《地換山移：香港海港及土地發展一百六十年》，香港，香港商務印書館。

¹⁵ Maunsell Consultants Asia Limited. 2008. *Archaeological Impact Assessment Report of Engineering Study cum Design and Construction of Advance Works – Investigation, Design and Construction*.

- 5.3.13 The seaward end exhibited some evidence of two historic modifications as follows:
- timber extension was modified to concrete extension in 1910 (details refer to Section 4.4); and
 - construction of Former Kowloon City Pier in the 1920s.
- 5.3.14 The two historic modifications are reflected by three different concrete layers observed at the decking surface of the seaward end as follow:
- the first layer is the original decking surface of the seaward end;
 - the second layer is a subsequently paved concrete layer; and
 - the third layer is a concrete ramp connected to the new ferry pier extension - Former Kowloon City Pier (**Figures 30 to 33**).
- 5.3.15 Some evidences of repairing by cement were also observed at the landing steps and decking surface of the seaward end (**Figures 28, 31 and 33**).

Supporting pillars, SP1, SP2 and granite decking, GD1 and GD2 of Longjin Bridge

- 5.3.16 Subsequent to the archaeological investigation undertaken in March to June 2008, for the purpose of aerial photographic record and examination of existing condition, supporting pillars SP1 and SP2, and granite decking GD1 and GD2 were re-excavated under this investigation (**Figures 55 and 56, AF1.5**). All the items of these remains identified on site are currently in a stable condition and the aerial photography of these remains were successfully taken. (details refer to **Section 7** and **Appendix C**).

5.4 Findings of Trench T2

Stratigraphy

- 5.4.1 Trench T2 was located at the north apron area of the former Kai Tak Airport and measured 70m (length) x 16m (width). The average depth of T2 was about 3.0m below existing ground surface of 5.02mPD. The excavation terminated at about 1.87mPD and the average ground water table was at 2.3mPD.
- 5.4.2 Five strata were identified according to the different soil colour, texture and the contained human remains. The strata of T2 are presented in **Table 5.4** below and the section drawings are shown in **Figures 15 and 34**.

Table 5.4 Strata of T2

Layer	Soil deposit description	Cultural remains and chronology	Top of layer in mPD
L1	Concrete	The 1906	4.96
L2	Sandy soil occasionally with shell, light grey	The 1960s	4.46
L3	Sandy soil, light brown	1942-1945	3.86
L4	Loamy soil, reddish yellow	1942-45	3.66
L5	Sandy soil, reddish yellow	Red bricks, demolished materials of Kai Tak Bund, 1942-45.	3.16

- 5.4.3 Layers 3 to 5 comprise fill soil and fill material for the reclamation when Kai Tak Airfield was extended between 1942 and 1945. It is believed that these red bricks and granite blocks of L5 are demolished materials of Kai Tak Bund and village houses nearby.

Findings

- 5.4.4 No evidence of remains of the 1892 timber extension or the 1910 concrete extension was revealed in T2. A new concrete extension (Former Kowloon City Pier) was built in the 1920s to link with the southern end of the Longjin Bridge. For the safety of vessel mooring at the Pier, it is believed that any previously constructed structures in the seabed in the vicinity of the Pier would have been removed. Therefore, it is considered reasonable that no remains of the previous extension were discovered in this trench.

5.5 Findings of Additional Grid of SP6

Findings

- 5.5.1 In order to assess the existing condition of SP6, an additional grid was excavated inside T1 down to the base of the pillar foundation (**AF 1.4**). Steel sheet piling was adopted around the additional grid to prevent collapse of the grid (**Figures 35 to 46**).
- 5.5.2 With reference to the information of supporting pillar SP2 revealed in May 2008 (**Figure 55**), excavation was carried out at supporting pillar SP6 down to its uppermost of first layer of footing stone at -0.80mPD. The top elevation of SP6 is 2.26mPD. Cobbles were found surrounding the footing stones of SP6, with both the width and depth of cobbles of all about 1.2m (**Figures 51 and 52**). The length and width of SP6 measured 4.2m by 3.0m.
- 5.5.3 SP6 is hexagonal in plan. It is a solid mass with granite blocks and sandy mortar infills. Its side walls were constructed of longitude and transverse granite blocks. The granite blocks were pre-shaped and were bonded together by sandy mortar in orange colour (**Figures 36 to 45**).
- 5.5.4 Each layer of granite blocks was aligned at right angle to the layer below or above. Each side wall was constructed by seven layers of granite blocks, and each block measured about L150cm x H20cm x W30cm (**Figures 37 to 41**). The pillar is standing onto three layers of dressed footing granite blocks and a layer of undressed cobbles. Each dressed granite footing block measured about L150cm x H20cm x W30cm (**Figure 50**). The cobble layer is estimated to be about 6.2m long, 5.5m wide and 1.2m thick.
- 5.5.5 The pillar was erected at seabed deposit of grey coarse sand (**Figures 53 and 54**). The footing stones were lying below the side walls (**Figures 47 and 48**). It is believed that the construction of the footing stones was carried out during the short time span between high tides and low tides.
- 5.5.6 The top layer of masonry work was set perpendicular (SW-NE) to the longitudinal axis of the Bridge and the decking slabs, thus creating both a strong structure and an aesthetically pleasing effect.

5.6 Findings of T3a

Stratigraphy

- 5.6.1 T3a was located within the site of the former Terminal Building at the north apron area south of original Arrivals Road. Based on the desktop study, it is anticipated that the landing end of Longjin Bridge and Pavilion for Greeting would be discovered in this trench (**AF1.1B**).
- 5.6.2 Layers 1 to 3 consist of filled soil and concrete slab, which dated to 2006 and the 1960s respectively (**Figures 66 and 67**). Layer 4 comprises fill soil from the reclamation of Kai Tak Bund between 1916 and 1920. The matrix of Layer 5 consists of granite blocks which were bonded together by sandy mortar (**Figures 60 to 63**). The stratigraphy of T3a is shown in **Tables 5.5** below.

Table 5.5 Strata of T3a

Layer	Soil deposit description	Cultural remains and chronology	Top of layer in mPD
L1	Filled soil, light yellow	2006	+6.01
L2	Concrete	Basement floor of Terminal Building	+3.51
L3a	Concrete slab	Footing of Terminal Building basement	+3.61
L3b	Concrete slab	A brick wall of former Terminal Building	+3.00
L3c	Filled sandy soil, dark brown	The 1960s	+2.80
L4	Loamy soil, reddish yellow	1916-1920, filled soil of Kai Tak Bund reclamation works	+2.42
L5	Landing end of Longjin Bridge and Pavilion for Greeting Officials	1. Granite blocks, sandy mortar of Longjin Bridge; 2. Wall foundation stones of Pavilion for greeting Officials, 1873	+2.21
L6	Marine coarse sand, grey	A broken porcelain plate with seal of "Made in the Reign of Tongzhi.	(the lowermost of excavation reached +1.41 mPD)

Findings of Landing Portion of Longjin Bridge and Pavilion for Greeting Officials

- 5.6.3 The dimensions of the Pavilion as indicated in the historic map (Kowloon City Survey Sheet No. 5, original scale of 1:1,000, **Figure 4**) is 7m between the eastern and western edges, and 8m between the northern and southern edges. The location of the unearthed remains agrees with the location of the Pavilion and the landing portion of the Bridge shown in the historic map (**Figures 61 and 63, AF1.1B**). Based on that, it is considered that the unearthed remains at T3a are the remains of the landing portion of the Bridge and the edge structure of the Pavilion.
- 5.6.4 The top elevation of the landing portion of the Bridge is about 2.81mPD. The length of the landing portion remains is 5.25m and the width is 4.8m (**Figures 61 to 68, AF1.9**). The granite decking and the western half of the landing portion were not discovered. The eastern side wall of the landing portion has been unearthed and next to this side wall is a triangular area which is consistent with the arrangement at the connecting area between the Pavilion and the Bridge as shown in the historic map (**Figure 4**).
- 5.6.5 The western, eastern and southern edge structure of the Pavilion were discovered with three layers of granite blocks (the top elevation of the first layer is at +2.21mPD and the bottom elevation of the third layer is at +1.41mPD). No other structural elements were identified below these three layers of granite blocks. The size of the excavated remains of the edge structure of the Pavilion is 6.4m (W) by 3.4m (L), and part of the western edge structure was not excavated. Assuming that the total length of the western edge is 7m, it is likely that about 0.6m of the western edge is buried under the slope of this trench. Therefore, the total length between the eastern and the western edges is about 7m which is consistent with the dimension shown in the historic map (**Figure 4 and AF1.1B**).

- 5.6.6 The excavated remains of the eastern and western edge structure measured 2.1m and 2.5m long respectively (**Figures 66 to 68**). The granite blocks of the southern edge structure are directly interfaced with the landing portion of the Bridge, with reference to inscriptions of the table the Bridge was constructed in 1873; it is therefore believed that the restoration works of the Pavilion¹⁶ and construction works of the Bridge would likely be carried out in the same year of 1873.
- 5.6.7 A huge concrete solid mass of the former Terminal Building underground structure was identified at the northern part of this trench which restricted further excavation to the north (**AF 4.1**). It is therefore believed that most of the remains of the northern edge structure of the Pavilion would have been disturbed or no longer exists.
- 5.6.8 The floor of the Pavilion was not discovered and a layer of grey marine sand was found below the anticipated level of the Pavilion floor (**Figure 63, AF1.9**). Two discrete granite slabs were also found within the anticipated location of the Pavilion and the function of these two granite blocks is uncertain.
- 5.6.9 A datable artefact was found in the marine sand layer inside the site of the Pavilion. It is a broken porcelain plate with seal of “Made in the Reign of Tongzhi (同治年製)” written in minuscule script writing style¹⁷ (**Figure 69**). The Bridge was built in 1873 (the 13th year of Tongzhi Reign) which is consistent with the time span of manufacturing of this datable artefacts.

5.7 Findings of T3b

Stratigraphy

- 5.7.1 T3b was located within the site of the former Terminal Building at the north apron area southeast of T3a. Based on the desktop study, it is anticipated that the northern portion of Longjin Bridge would be discovered in this trench.
- 5.7.2 Layers 1 to 4 consist of filled soil and concrete slab, which dated to 2006 and the 1960s respectively. Layer 5 comprises fill soil from the reclamation of Kai Tak Bund between 1916 and 1920. However, a beer bottle of the 1970s was discovered in this layer suggesting that the original filled soil of the 1920s was disturbed subsequently. The matrix of Layer 5 also consists of remains of Longjin Bridge (**Figure 70 and AF 1.8**). Layers 6 and 7 are regarded as seabed deposit. Rubbish of the late 19th to early 20th centuries was found dumped into Layer 6. The stratigraphy of T3b is shown in **Table 5.6** below.

Table 5.6 Strata of T3b

Layer	Soil deposit description	Cultural remains and chronology	Top of layer in mPD
L1	Filled soil, light yellow	2006	+5.75 (ground surface)
L2	Filled soil, light grey	2006	+3.02
L3	Filled soil, reddish yellow colour	2006	+2.55
L4	Terminal Building concrete floor	The 1960s	+2.15

¹⁶ With reference to some historic photographs, it is believed that the original remnant tablet “Longjin” (龍津) is the one now retained at Lok Sin Tong Primary School on the school gate at Nam Kok Road, Kowloon City. The inscription of Chinese characters are on the front of the tablet read as “同治十三年甲戌仲夏，龍津，南海潘仕釗書” indicating that the Pavilion was likely restored in 1873.

¹⁷ The reign of Qing emperor Tongzhi is between 1862 and 1873.

Layer	Soil deposit description	Cultural remains and chronology	Top of layer in mPD
L5	Loamy soil, red colour	1. 1970s beer bottle, 2. granite blocks, sandy mortar of Longjin Bridge.	+1.65 (top elevation of Bridge remains at +2.23mPD)
L6	Mud, black colour	Rubbish , late 19 th to early 20 th centuries	+0.55 mPD
L7	Coarse marine sand, dark grey	None	+0.15 mPD (the excavation was down to -0.20 mPD)

Findings of Northern Portion of Longjin Bridge

- 5.7.3 The remains of the northern portion of Longjin Bridge together with a side wall (eastern) were discovered in L5 which is about 60cm below the bottom level of the basement floor of former Terminal Building. The top elevation of the remains is at 2.23mPD. The length of the remains is 5.2 m and the width is 2.6m (**Figures 71 and 72**). The granite decking of the Bridge was not discovered. Two side walls of the Bridge were unearthed and the height of the excavated side wall remains is 1.7m. With reference to the historic map (Kowloon City Survey Sheet No. 5, original scale of 1:1,000, **Figure 4 and AF1.1B**), the width of the remains is consistent with the width of that portion of the Bridge shown in the historic map.
- 5.7.4 The remains consist of a solid mass with rocks and sandy mortar infills. The side walls were constructed of five layers of granite blocks with the top elevation of the first layer at 2.23 mPD and the bottom elevation of the footing stones at +0.60mPD. The width and height of side wall granite blocks are about 200mm and 300mm respectively. The range of side wall granite blocks measured between 1000mm (L) x 300mm (W) x 200mm (H) and 2200mm (L) x 300mm (W) x 200mm (H) (**Figures 74 to 76**). The wall blocks were bonded together by sandy mortar in orange colour (**Figure 73**).
- 5.7.5 The remains were standing on a layer of granite footing blocks (some of them were dressed granite blocks) and the footing was founded on seabed deposit of coarse sand in grey colour (**Figures 74 and 75**). There is a difference between this portion of the Bridge and supporting pillar SP6. For this portion of the Bridge, there is no cobble layer beneath the footing stones. Besides, this portion of the Bridge is in the form of a solid mass with its decking and side walls constructed of granite blocks. Loading was distributed over the footing stones which were then transferred to the marine sand layer. Since the concrete structures of the former Terminal Building has restricted the excavation, only the eastern side wall of the Bridge was discovered in T3b.

5.8 Findings of T3c

Stratigraphy

- 5.8.1 T3c was located within the site of the former Terminal Building at the north apron area southeast of T3b. Based on the desktop study, it is anticipated that the northern portion of Longjin Bridge would be discovered in this trench.
- 5.8.2 Layers 1 to 2 consist of filled soil and concrete slabs which dated to 2006 and the 1960s respectively. Layers 3 to 5 comprise fill soil from the reclamation of Kai Tak Bund between 1916 and 1920. The matrix of Layer 5 also consists of remains of Longjin Bridge (**Figures 77 to 78**). The stratigraphy of T3c is shown in **Tables 5.7** below.

Table 5.7 Strata of T3c

Layer	Soil deposit description	Cultural remains and chronology	Top of layer in mPD
L1	Filled soil, light yellow	None, 2006	+5.72 (ground surface)
L2	Terminal Building concrete floor	The 1960s	+2.42
L3	Loamy soil, yellow colour	None, 1916-1920s	+1.82
L4	Coarse sand, grey colour	None, 1916-1920s	+1.72
L5	Compacted soil, yellow colour	Longjin Bridge	+1.22 mPD (the excavation was down to +0.72 mPD)

Findings of Northern Portion of Longjin Bridge

- 5.8.3 The remains of the northern portion of Longjin Bridge together with a part of eastern side wall were discovered in L5 which is about 100cm below the bottom level of the basement floor of former Terminal Building (**AF4.1**). The top elevation of the remains is at 1.22mPD and the size of the excavated remains is about 1.4m(L) x 2.5m(W) (**Figure 78**). The decking of the Bridge was not discovered in this trench. Because a huge concrete mass of the former Terminal Building was found in this trench, excavation was limited.
- 5.8.4 The remains consist of a solid mass with rocks and sandy mortar infills. Based on the observation of eastern side wall and comparison with similar findings in T3b and T3d, it is believed that the eastern side wall was also constructed of longitudinal and transverse granite blocks. The wall blocks were bonded together by sandy mortar in orange colour. Only one layer of granite block of the eastern side wall was discovered. The longitudinal blocks each measure 1200mm (L) x 300mm (W) x 200mm (H). The height of the excavated remains of the side wall is 35cm.

5.9 Findings of T3d

Stratigraphy

- 5.9.1 T3d was located within the site of the former Terminal Building at the north apron area southeast of T3a. Based on the desktop study, it is anticipated that the northern portion of Longjin Bridge would be discovered in this trench.
- 5.9.2 Layers 1 to 3 consist of filled soil, bitumen and concrete materials. L2 and L3 are remains of the former Terminal Building which dated to the 1960s. The former Terminal Building was demolished in 2006. Layer 4 comprises fill soil from the reclamation of Kai Tak Bund between 1916 and 1920. The matrix of Layer 4 also consists of remains of Longjin Bridge (**Figure 79**). The stratigraphy of T3d is shown in **Table 5.8** below.

Table 5.8 Strata of T3d

Layer	Soil deposit description	Cultural remains and chronology	Top of layer in mPD
L1	Filled soil, light yellow	2006	+5.57 (ground surface)
L2	Bitumen	The 1960s, ramp of basement of Terminal Building	+3.72
L3	Concrete	The 1960s, basement floor of the Terminal Building	+3.67
L4	Filled soil	1916-1920s, filled soil of reclamation of Kai Tak Bund; Longjin Bridge	+2.97 (the excavation was down to + 1.17 mPD)

Findings of Northern Portion of Longjin Bridge

- 5.9.3 The remains of the northern portion of Longjin Bridge together with two side walls were discovered in L4 which is about 60cm below the bottom level of the basement floor of former Terminal Building. The length of the remains is 10.2m and the width is 2.6m. The decking of the Bridge was not discovered. A huge concrete footing of 1.95m x 1.9m of the former Terminal Building is standing onto the remains (**Figures 80 to 84, AF1.6**). Remains of the western and eastern side walls of the Bridge were unearthed and the height of the excavated remains of the western side wall is 1.2m.
- 5.9.4 The remain is a solid mass with rocks and sandy mortar infills. Side walls of the remains were constructed of longitude and transverse granite blocks (**Figure 82 and AF1.6**). The wall blocks were bonded together by sandy mortar in orange colour. The western side walls were constructed of four layers of granite blocks. The top elevation of the first layer of blocks is at 2.37mPD whereas the bottom elevation of the fourth layer stones is at 1.17mPD.

5.10 Archaeological Potential of Area between T1 and T3

5.10.1 The elevations of the remains discovered in this excavation are as below:

- Top elevation of the seaward end of the Bridge; +2.66mPD (Trench T1);
- Top elevation of the Former Kowloon City Pier; +3.20mPD (Trench T1);
- Top elevation of the decking of the Bridge (CS1 and CS2): +2.41 mPD (Trench T1);
- Top elevation of SP6: +2.26mPD (Trench T1);
- Bottom elevation (lowermost of third layer of footing stone) of SP6: about -2.0mPD (Trench T1);
- Top elevation of landing end of Longjin Bridge: +2.81mPD (Trench T3a);
- Top elevation of remains of Pavilion: +2.21mPD (Trench T3a);
- Top elevation of Bridge remains: +2.23mPD (Trench T3b);
- Bottom elevation of footing stones of Bridge: +0.60mPD (Trench T3b).
- Top elevation of remains of Longjin Bridge: +1.22mPD (Trench T3c);
- Top elevation of remains of Longjin Bridge: +2.37mPD (Trench T3d); and
- Floor of Terminal Building basement: +3.67mPD (Trench T3d);

5.10.2 Based on above elevation levels, it is indicated that the Bridge remains would likely exist between -2.0 mPD and +2.81mPD at area between Trenches T1 and T3. Based on the observation in this investigation, it is anticipated the remains of the Bridge would likely exist below the existing ground surface of the area between T1 and T3d and have not been destroyed by the construction of the former Terminal Building.

6 ARTEFACTS AND OTHER FINDS

6.1 Artefacts Description

6.1.1 The artefacts recovered from this excavation dated to the middle 19th to early 20th centuries. They have been sorted into three categories: ceramic, glass and bone. Relative dating has been achieved by comparing artefacts to similar finds from Kowloon Walled City and previous archaeological investigations at former Kai Tak Airport. The details of findings are presented in **Table 6.1** below.

Ceramics

6.1.2 Ceramic sherds were found in T3a, T3b and the grid of SP6. The classification of ceramics in this report is based on two criteria:

- Ware fabric (paste): the inclusion (such as sand) in the clay, colour and hardness of the fabric;
- Form: the form and fine context which provide an indication of pottery function such as serving, eating, cooking or storage.

6.1.3 According to ware-fabric, the pottery sherds found on site can be classified into two categories: porcelain and pottery. The porcelain wares include fragment of pillow, spoon, bowls, plates and cups (**Figures 85 to 88**); the pottery wares are pot and opium containers (**Figure 89**).

6.1.4 The decoration of pillow, bowl and plates mainly are under glazed blue and white floral pattern. A few were decorated with colour floral pattern. Double happiness Chinese character (囍) decorated in blue colour were found in some bowls which dated to late 19th to 20th centuries (**Figures 85 and 86**). A broken porcelain pillow was decorated Qilin (**Figure 88**).

6.1.5 There is a special find of a broken porcelain plate with a datable seal in the external base. The seal reads as “同治年製” (made in the reign of Tongzhi, **Figure 90**) which was revealed in L6 of T3a. Layer L6 is a marine coarse sand layer which was identified in the original location of the Pavilion for Greeting Officials.

6.1.6 Chinese characters “玩玉” 寺川製 “香港 xx (characters unidentified)” “中國 xx (characters unidentified)” “xx 年造 (characters missing)” were marked in the bottom of a few cups and bowls (**Figures 91 to 92**).

6.1.7 Three small opium containers (15mm height and 24mm diameter) without cover was found in L6 (marine mud) in T3b. They were made of pottery clay and dark brown glaze was observed at the inside surface (**Figure 89**).

Glass ware

6.1.8 Four glass wares were revealed in SP6 and T3b including a bottle cover (**Figure 93**) and three small bottles. “Dr. JSB Siegert & Sons” and “bitters, 1133, Angostura” were seen in the surface and the base of a bottle with height of 125mm. The company of JSB Siegert, was established in 1867. The company is still running and is known as “Angostura @ bitters”. This bottle should date to late 19th century (**Figure 94**). Another two were revealed in L6 of T3b which is believed to be medicine bottles. Chinese characters “必得勝” was seen in a bottle surface. The heights of these two bottles are 40mm and 60mm (**Figure 95**).

Pottery

6.1.9 A complete small pot with dark brown glaze and a broken candle stand (**Figure 96**) were found in the grid of SP6. A complete pottery pot cover was found in L6 of T3b (**Figure 97**).

Bone

6.1.10 A broken point made of bone was revealed in L6 of T3b. The length of this point is 45mm and the width is 5mm. Two polishing surfaces were observed in the end of the point (**Figure 98**).

6.2 Other Finds

6.2.1 A few seeds were preserved in L6 (a layer of marine mud) in T3a. Some of them are selected and collected. One of these seeds is identified as pine seed (**Figure 99**).

6.2.2 A few numbers of iron slag were collected in L6 in T3a (**Figure 100**).

Table 6.1 Artefacts and Other Finds

Trench	Layer	Findings	Quantity	Chronology
T1	All layers	No	N/A	N/A
T2	All layers	No	N/A	N/A
Grid of SP6	Sea bed deposit	Complete pot, Broken candle stand, Dr. JSB Siegert & Sons bitter bottle, Broken pottery pot cover, Broken glass bottle cover, Broken pot base.	1 1 1 1 1 1	Late 19 th century
T3a	L6	Broken porcelain plate with a datable seal in the external base, the seal read as “同治年製”.	1	1861-1873
T3b	L6	Complete small opium containers, Broken pillow, Broken porcelain cup, Broken spoon, Broken bowl, Broken plates, Seed, Iron slag, Broken bone point, Complete glass bottles.	3 1 10 1 12 8 23 10 1 2	Late 19 th to early 20 th centuries.
		Total	81	

6.3 Significance of Artefacts

- 6.3.1 The artefacts and a few seeds provided information for the understanding of the material culture of the people living in Kowloon Bay between the middle 19th and early 20th centuries.
- 6.3.2 According to the tablet which was originally placed at the entrance of the Pavilion, the Chinese characters of this tablet reads as Longjin (龍津) and the year of 13th of reign of Tongzhi (1873)¹⁸, which provides a clue to interpret that this Pavilion was restored in 1873.
- 6.3.3 An artefact was unearthed to verify the construction year of the Bridge. It is a broken plate with a datable read seal made in the reign of Tongzhi (1861-1873)(**Figure 69**). It was revealed at he location of the Pavilion and its manufacture period agrees with the year of construction of the Bridge (1873) and the restoration year of the Pavilion (1873).

¹⁸ The original table of the Pavilion is using as a remnant of a primary school gate in Kowloon City, its back was craving “Long Shing Tong” (樂善堂). All Chinese characters are readed in the front of this tablet are “ 同治十三甲戌仲夏，龍津，南海潘仕釗書。”

7 STRUCTURAL ASSESSMENT

7.1 Introduction

7.1.1 The assessment of the visual structural integrity of the Longjin Bridge and the Former Kowloon City Pier remains was conducted. The findings are presented in the “Further Archaeological Excavation - Structural Assessment Report” in **Appendix C**. The summary of the report is provided in the paragraphs below.

7.2 Inspection Findings

7.2.1 Inspections were conducted on site to assess the structural integrity of the remains of Longjin Bridge and Former Kowloon City Pier listed below:

- Granite decking (GD1, GD2, **Figure 55**);
- Supporting pillars (SP1, SP2 and SP6, **Figures 43 and 55, AF1.5**);
- Seaward end (also as Pier-end-structure, PES) of Longjin Bridge (**Figure 31 and AF1.3**);
- Wall sections of Longjin Bridge (**Figures 62, 76**);
- Landing steps and supporting pillars of Former Kowloon City Pier (**Figure 19 and AF1.1A**); and
- Western, southern and eastern edges of Pavilion for Greeting Officials (**Figures 64 to 66, AF1.9**).

7.2.2 As observed on site, all the remains identified are standalone elements resting on soils individually. Complicated structures involving structural member(s) supported on another member(s) (such as a bridge deck wholly supported by supporting pillars or abutments) were not discovered.

7.2.3 The granite decking was composed of 5 or 9 granite slabs placed longitudinally in landward porting and seaward portion of the Bridge respectively (**Figures 7a and 7b**). The supporting pillars are solid mass granite structures in hexagonal shape supported by granite footing stones and cobble layer. The seaward end structure of Longjin Bridge, the wall sections of Longjin Bridge and the foundation of Pavilion for Greeting Officials are also found to be solid mass granite structures. The landing steps and supporting pillars of Former Kowloon City Pier are concrete structures, with rebars found in some of the remains.

7.2.4 In conclusion, all the items of remains identified on site are currently in a stable condition. However, the loose fragments, such as individual or small granite blocks, concrete or sandy mortar, at the surface of the remains, will likely be subject to movement, should there be external disturbance, such as winds, stormwater, surface runoff or groundwater / tidal movement etc. Therefore, it is recommended that these loose fragments should be properly secured and protected before permanent preservation method is confirmed and implemented. To protect the bridge remains and secure the fragments, it is suggested that the remains should first be covered with a layer of geotextile. It is then overlaid with a minimum 300mm thick layer of sand layer which shall not contain any rocks or sharp objects. No compaction shall be conducted for this layer. The trench above the 300mm thick sand fill layer shall be backfilled with generally fine fill materials without any large rocks, boulders or sharp objects. Only light compaction with close supervision should be allowed. The area after backfilling should be fenced off to prevent vehicles and construction plant passing onto the area.

7.2.5 The possible sources of impacts on the structural integrity of the remains of Longjin Bridge and Former Kowloon City Pier have been identified. These include the following:

- Disturbance due to adjacent infrastructure projects/developments;
- Stormwater and surface runoff;
- Groundwater / tidal water; and
- Disturbance due to illegal access by humans to the remains.

7.2.6 In view of the archaeological interest of the remains, it is recommended that AMO should be consulted if any development proposals might affect this Site. The Heritage Impact Assessment may be required to assess any adverse impact on the archaeological remains by the project proponents of future development.

8 SIGNIFICANCE OF ARCHAEOLOGICAL FINDINGS

8.1 Archaeological and Historical Significance

- 8.1.1 Archaeological heritage constitutes the basic record of past activities. Archaeological remain is also widely recognized as a physical evidence of historic event.
- 8.1.2 The Bridge was used by Chinese navy, Chinese custom vessel and ferry service among Hong Kong, Kowloon, Macau and Guangzhou in the late 19th to mid 20th centuries. The remains of the Longjin Bridge and the Former Kowloon City Pier are the physical evidences of remains of Qing dynasty, British colonial and Japanese occupation eras.
- 8.1.3 In terms of historical significance, the Longjin Bridge was built in 1873 providing not only service to Chinese customs but also Chinese troop between the 1873 and the 1899.

8.2 Architectural and Technological Significance

- 8.2.1 The archaeological findings provide useful information to understand the technology and skill of masonry works in late 19th century. These remains are also relevant examples for studying construction method of similar masonry piers in Hong Kong and the region.
- 8.2.2 The Bridge consists of three main components as follows:
- the decking with granite slabs;
 - the solid supporting mass; and
 - hexagonal pillars (or supporting pillars, SP).
- 8.2.3 The Longjin Bridge was an example of masonry works of the second half of the 19th century. Review of historic photography and maps of similar piers in Hong Kong Island of late 19th century revealed that the Longjin Bridge has merit not only of Chinese traditional masonry work but also adopted western pier design elements. It is a useful case to show the cross-cultural influence on pier construction.
- 8.2.4 Longjin Bridge was constructed of pre-shaped dressed granite blocks and cobbles and mortar infills. Review of historic photographs indicates that the Pavilion for Greeting Officials was constructed of dressed granite blocks, green bricks and some cobbles. The masonry works and material of construction for the Bridge, Pavilion, cause way and Former Kowloon City Pier are described in **Table 8.1** below.

Table 8.1 Summary of Masonry and Concrete Works of Longjin Bridge, causeway, Former Kowloon City Pier and Pavilion for Greeting Officials

Trench	Remains	Top Elevation (mPD)	Dimensions of Excavated Remains (m)	Masonry and concrete works
T1 (at original excavat-ed trench of March to June 2008)	Seaward end of Longjin Bridge	+2.66	(1) Overall dimensions: 6.90(L) x 4.94(W). (2) granite slab: 1.4(L) x 0.3(W) x 0.3(H); or 0.9(L) x 0.45(W) x 0.3(H)	1. Pre-shaped dressed granite blocks; 2. two landing steps of granite blocks. 3. cobble and mortar infills; 4. concrete pavement covering seaward end.

Trench	Remains	Top Elevation (mPD)	Dimensions of Excavated Remains (m)	Masonry and concrete works
T1 (at original excavat-ed trench of March to June 2008)	SP1, SP2 and SP6	+2.47 (SP1) +2.65 (SP2) +2.26 (SP6) Uppermost of SP6 footing stone; -0.8; Bottom elevation of cobble layer: about -2.0.	(1) Overall dimensions of SP2 and SP6: 4.2(L)x 3.0(W) x about 2.6(H); (2) others are similar to SP2 and SP6.	1. 7 layers of pre-shaped dressed granite blocks, hexagonal in plan, each block: 1.2m x 0.3m(H) x 0.2m(W) or 1.4m x 0.3m(H) x 0.2m(W); 2. cobble and mortar infills; 3. 3 layers of footing dressed granite blocks, each block: 1.5m(L) x 0.3m(W) x 0.2m(L). 4. 1 layer of undressed cobble, about 1m from the footing stone edge, depth about 1m.
T1 (at original excavat-ed trench of March to June 2008)	Decking of Bridge seaward portion (GD2)	+2.62	(1) GD2: overall dimensions: 4.5m(L) x 2.4m (W) (2) GD2: granite slab: 4.4(L) x 0.44(W) x 0.4(H).	1. 5 layers of pre-shaped longitudinal dressed granite slabs parallel placed along centerline of the Bridge; 2. both ends of 5 slabs are placing in the supporting pillar. 3. concrete pavement covering some part of decking.
T1 (at original excavat-ed trench of March to June 2008)	Causeway (in form of seawall)	+3.32	Overall length: 20.4m, approximately 4m width	1. The causeway clearly reflected the design of a granite rubble core/foundation faced with rough-dressed granite blocks which were mostly sub-square. 2. The full cross-section of the causeway was not exposed.
T1 (at original excavat-ed trench of March to June 2008)	Former Kowloon City Pier	+ ca.3.2	1. The total length of Pier are 65m, 2. northern portion : 29m long and 4.8m width, 3. southern portion: 36m long and 9.7m wide.	1. The pier construct of concrete. 2. A ramp (5m long) was built between the Pier and seaward end of Longjin Bridge.

Trench	Remains	Top Elevation (mPD)	Dimensions of Excavated Remains (m)	Masonry and concrete works
T3a (northern part within at original excavat-ed trench of March to June 2008)	Landing end of Longjin Bridge	+2.81	(1) overall dimensions: 4.8(W) x 5.25(L) (2) dressed granite blocks; 1.4(L) x 0.3(W) x 0.2(H)	1. Few dressed pre-shaped granite blocks; 2. cobble and mortar infills; 3. no footing stone identified.
T3a	Pavilion for Greeting Officials	Top elevation: +2.21; Bottom elevation: +1.41.	(1) Overall dimensions: 6.4(W) x 3.4(L) (2) dressed granite blocks: 1.4(L) x 0.3(W) x 0.2(H) (3) two granite slabs are found within site of Pavilion: approximately 1.4m (L)x 0.2m(W)x 0.1m(H).	Pre-shaped dressed granite blocks found in southern, eastern and western edge and granite slab within Pavilion site.
T3b	Landward portion of Longjin Bridge	Top elevation: +2.23; Bottom elevation (footing stone): +0.60.	(1) Overall dimensions: 5.2(W) x 2.6(L) x 1.69(H) (2) dressed granite blocks: 2.2(L) x 0.3(W) x 0.2(H) or 2.0(L) x 0.3(W) x 0.2(H) or 1.5(L) x 0.3(W) x 0.2(H) or 1.4(L) x 0.3(W) x 0.2(H) or 1.3(L) x 0.3(W) x 0.2(H) or 1.0(L) x 0.3(W) x 0.2(H)	1. 5 layers of pre-shaped dressed granite blocks for construction of eastern side wall discovered; 2. 1 layer of pre-shaped transverse dressed granite block, others are longitudinal dressed granite blocks; 3. due to limited excavation, western side wall is uncertain; 4. 1 layer of pre-shaped footing stone discovered, some of them are dressed granite blocks, others are undressed granite block.
T3c	Landward portion of Longjin Bridge	+1.22	(1) Overall dimensions: 1.4 (L) about 2.6m (W); (2) dressed granite blocks: 1.2(L) x 0.3(W) x 0.2(H).	1. 2 layers of pre-shaped dressed granite blocks for construction of eastern side wall discovered; 2. due to concrete solid mass, western side wall not identified yet.

Trench	Remains	Top Elevation (mPD)	Dimensions of Excavated Remains (m)	Masonry and concrete works
T3d	Landward portion of Longjin Bridge	Top elevation: +2.37; Bottom elevation: +1.17	(1) overall dimensions: 10.2 (L) x 2.6 (W) (2) dressed granite blocks: 2.2(L) x 0.3(W) x 0.2(H) or 2.0(L) x 0.3(W) x 0.2(H) or 1.9(L) x 0.3(W) x 0.2(H) or 1.5(L) x 0.3(W) x 0.2(H) or 1.4(L) x 0.3(W) x 0.2(H) or 1.3(L) x 0.3(W) x 0.2(H), or 1.2(L) x 0.3(W) x 0.2(H)	1. 4 layers of pre-shaped dressed granite blocks for construction of western side wall discovered; 2. 1 layer of pre-shaped transverse dressed granite block, others are dressed longitudinal granite blocks; 3. due to limited excavation, footing stones are uncertain yet.

8.2.5 Based on the review of historic photography review¹⁹, two types of pier of late 19th century are identified in the Victoria Harbour. The first is “column structure pier”. For this type of pier, the pier decking is supported by concrete or timber columns and the columns are fixed by triangular beams. These beams also shared the loading of the decking. The second type is “solid mass pier”. This type of pier is constructed of stone blocks and stone and mortar infill. Column structure piers are identified in Central, Admiralty, Stonecutters Island and Yau Ma Tei (**Figures 102 to 107**). Solid mass piers are identified in Central and Sheung Wan.

8.2.6 The Longjin Bridge is a mixture of these types of piers. Its seaward portion is identified as column structure, with 20 supporting pillars as recorded in Longjin Stone Bridge Tablet (龍津石橋碑) of 1873. The landward portion of the Bridge is identified as a solid mass. The supporting pillars, or columns, are designed as hexagonal shape in plan in order to eliminate wave and tidal effects on the stability of the Bridge. Such design is similar to the Chinese column bridge²⁰, so it was named as “Bridge” although its original function is pier.

8.2.7 The arrangement of granite blocks of the side walls of the Bridge at its landward portion is the same as the walls of Kowloon Walled City (**Figure 108**). Pre-shaped dressed transverse blocks are placed between each five layers of pre-shaped dressed longitudinal blocks as identified in a few historic photographs²¹. Such arrangement can provide stability for the wall structure. Similar arrangement was also adopted in the brick walls of Chinese traditional house.

¹⁹ 鄭寶鴻等 2000 《九龍街道百年》，香港，三聯書店，頁 19、21。丁新豹等 1994 《四環九約》，香港，市政局，頁 76。香港博物館 1982 《香港歷史圖片》，香港，市政局，頁 46。劉潤和等 2007 《香港走過的道路》，香港，三聯書店，頁 49、59、101。沈嘉蔚 2005 《莫理頓眼裡的中國·目擊變革》，福州，福建教育出版社，頁 91。

²⁰ 廣東省文物考古研究所 1987 《中國文物地圖集·廣東省分冊》，北京，文物出版社。

²¹ 鄭寶鴻等 2000 《九龍街道百年》，香港，三聯書店，頁 10、11。

- 8.2.8 The seaward end of the Bridge was constructed of pre-shaped dressed granite blocks with two landing steps at both sides. It is a solid mass and filled of granite blocks. Similar forms of seaward end were observed in masonry piers of Sheung Wan, Central, Admiralty and Wanchai.

9 CONCLUSION

- 9.1.1 As per the recommendation of the Kai Tak Development EIA Report, further archaeological investigation and preservation *in situ* will be required for the extant sections of the Longjin Bridge identified in the archaeological investigation completed in 2nd June 2008.
- 9.1.2 The overall objective of the further archaeological excavation works is to ascertain the extent of the possible remains of the Longjin Bridge and Former Kowloon City Pier within Kai Tak Development area, in order to facilitate formulation of Conservation Management Plan (CMP), including the option of preservation of the remains of the monuments *in-situ*. The further archaeological excavation works were carried out during the period from 31 October 2008 to 20 February 2009 with the field recording and land surveying works completed on 23 February 2009.
- 9.1.3 The historic and archaeological background of the Longjin Bridge has been reviewed. According to the Convention between Britain and China Respecting an Extension of Hong Kong Territory of 1898, the Longjin Bridge and Kowloon Walled City were reserved for Chinese official, military and customs use. However, British troop occupied Walled City in 16th May 1899 and the Longjin Bridge was then no longer in its normal service for the Chinese officials and army.
- 9.1.4 Based upon the desktop study results, Trenches T1, T2 and T3a to T3d were excavated along the anticipated footprint of Longjin Bridge, Pavilion for Greeting Officials and Former Kowloon City Pier. An additional grid was also dug in order to assess the existing condition of a supporting pillar SP6 of Longjin Bridge.
- 9.1.5 In Trench T1, 47 supporting concrete pillars and two landing steps of the Former Kowloon City Pier were unearthed. This finding agrees with the information presented in historic map. The 1930s' causeway was discovered next to the seaward end of Longjin Bridge. Remains of concrete pavement with iron fence holes and a suspected base of a lighting post were observed on the causeway. It is possible that the causeway might be used as an alternative ramp for passengers and lorries to the Former Kowloon City Pier.
- 9.1.6 In Trench T2, no evidence of remains of the 1892 timber extension or the 1910 concrete extension was revealed. A new concrete extension (Former Kowloon City Pier) was built in the 1920s to link with the southern end of the Longjin Bridge. For the safety of vessel mooring at the Pier, it is believed that any previously constructed structures in the seabed in the vicinity of the Pier would have been removed. Therefore, it is considered reasonable that no remains of the previous extension were discovered in this trench.
- 9.1.7 An additional grid was excavated at the granite supporting pillar SP6 down to near the bottom of the pillar's footing stones at -2.0mPD. The pillar is hexagonal shape in plan. It is a solid mass with rocks and sandy mortar infills and its side walls were constructed of longitudinal and transverse granite blocks. The wall blocks were bonded together by sandy mortar in orange colour. Based on the findings in this grid, it is considered that the condition of other pillars of Longjin Bridge would be similar to that of SP6.
- 9.1.8 In Trench 3a, pre-shaped dressed granite blocks were identified at the western, eastern and southern edges of the site of the Pavilion. Two horizontal granite slabs were also discovered within the site of the Pavilion. The top elevation of the remains of granite blocks of the Pavilion is at +2.21mPD.
- 9.1.9 A huge concrete solid mass of the former Terminal Building underground structure was identified at the northern part of Trench 3a which restricted further excavation to the north. It is therefore believed that most of the remains of the northern edge structure of the Pavilion would have been disturbed or no longer exists.

- 9.1.10 Northern sections of the Longjin Bridge were discovered beneath the basement floor of the Former Terminal Building between +0.60mPD to +2.81mPD at Trenches T3a, T3b, T3c and T3d. Only the solid mass and the side walls of the Bridge were revealed and no decking of the Bridge was discovered at these trenches.
- 9.1.11 Based on elevation levels of the remains discovered in this investigation, it is noted that the Bridge remains would likely exist between -2.0 mPD and +2.81mPD at area between Trench T1 and T3. Based on the observation in this investigation, it is anticipated the remains of the Bridge would likely exist below the existing ground surface of the area between T1 and T3d and have not been destroyed by the construction of the former Terminal Building.
- 9.1.12 The assessment for the visual structural integrity of the remains of Longjin Bridge and Former Kowloon City Pier was conducted. Inspections were carried out on site. As observed on site, all the remains identified are standalone elements resting on soils individually. Complicated structures involving structural member(s) supported on another member(s) (such as a bridge deck wholly supported by supporting pillars or abutments) were not discovered.
- 9.1.13 In general, all the items of remains identified on site are currently in a stable condition. However, the loose fragments, such as individual or small granite blocks, concrete or sandy mortar, at the surface of the remains, will likely be subject to movement, should there be external disturbance, such as winds, stormwater, surface runoff or groundwater / tidal movement etc. Therefore, it is recommended that these loose fragments should be properly secured and protected before permanent preservation method is confirmed and implemented. To protect the bridge remains and secure the fragments, it is suggested that the remains should first be covered with a layer of geotextile. It is then overlaid with fine materials with no rocks and sharp objects. The area after backfilling should be fenced off to prevent vehicles and construction plant passing onto the area.
- 9.1.14 The possible sources of impacts on the structural integrity of the remains of Longjin Bridge and Former Kowloon City Pier have been identified. These include disturbance due to adjacent developments, stormwater and surface runoff, groundwater / tidal water; and disturbance due to illegal access by humans to the remains.
- 9.1.15 In view of the archaeological interest of the remains, it is recommended that AMO should be consulted if any development proposals might affect this Site. The Heritage Impact Assessment may be required to assess any adverse impact on the archaeological remains by the project proponents of future development.
- 9.1.16 The archaeological, historical, architectural and technological significance of the remains identified were reviewed. With reference to historic maps and photographs, Longjin Bridge has the merit of Chinese traditional masonry works. In addition, it also adopted western pier design elements. It is a case to interpret cross-cultural influence on the pier construction.

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Figures

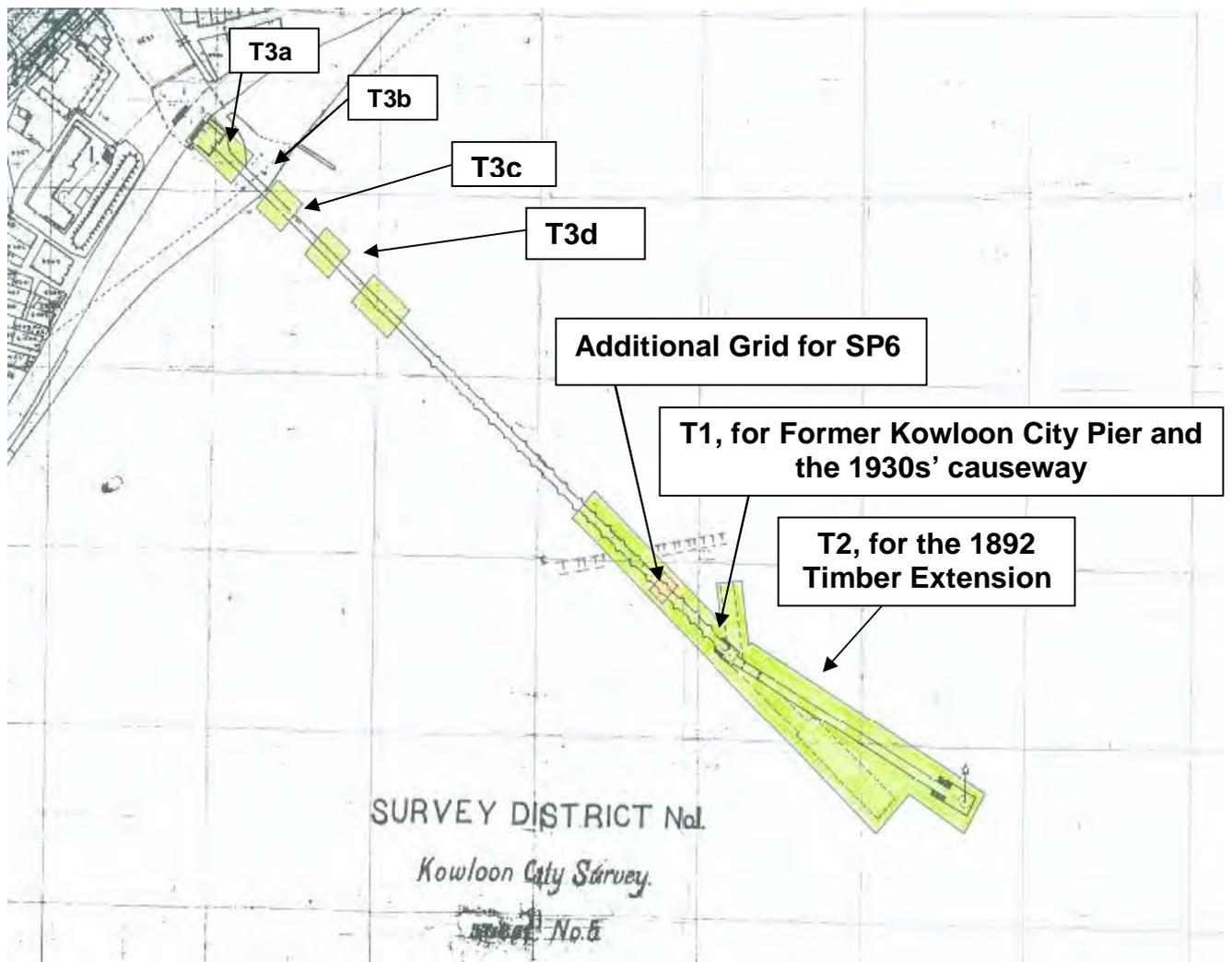


Figure 1 Scope of Works for Further Archaeological Excavation
(Detail Overview of Trenches Refers to Appendix)

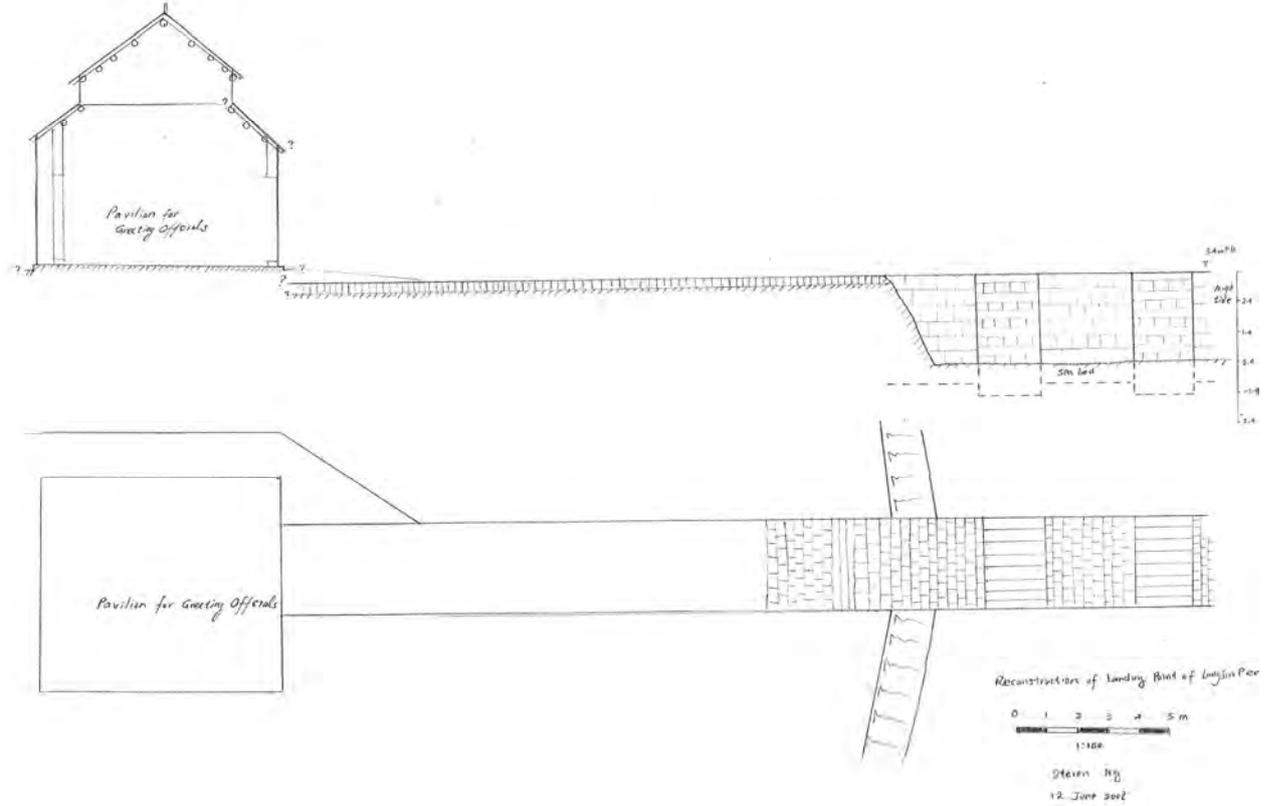


Figure 2 Reconstruction of Side and Top Views of Landing Portion of Longjin Bridge and Pavilion for Greeting Officials

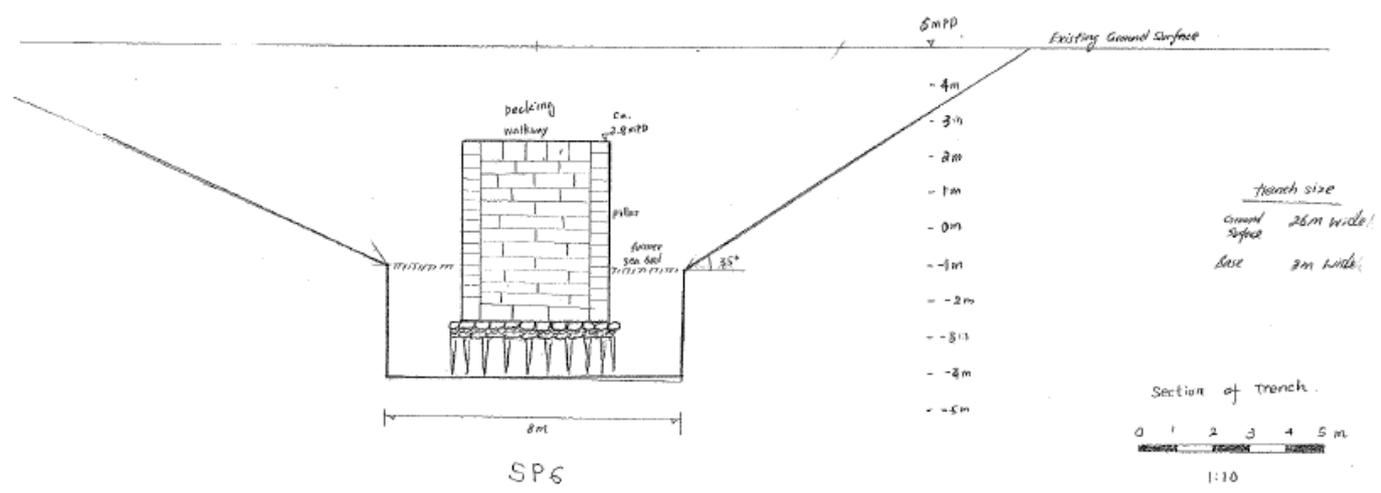


Figure 3 Reconstruction of Side view of Supporting Pillar SP6 of Longjin Bridge

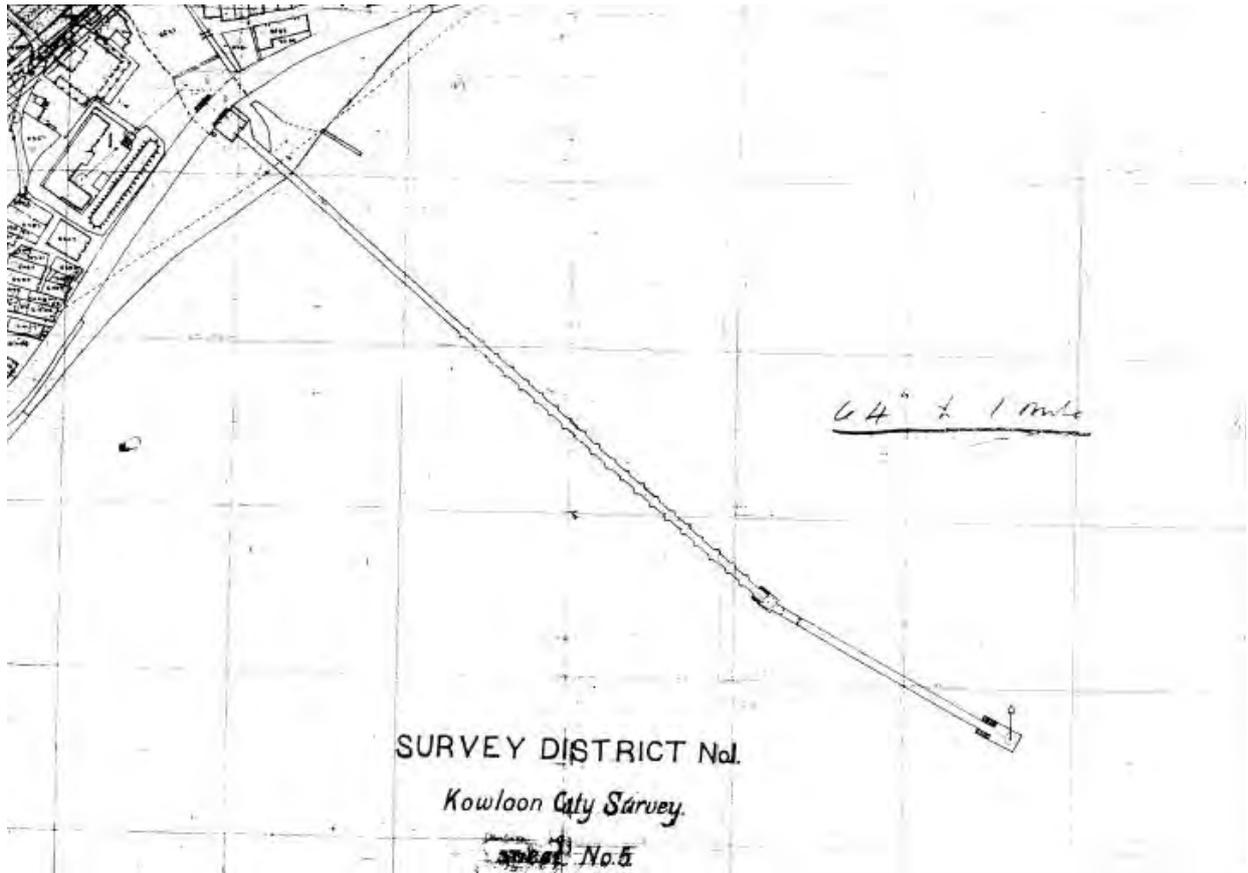


Figure 4 Longjijn Bridge (After Kowloon City Survey, Sheet No. 5, ca.1903, original scale 1:1,000, Public Archive Office)

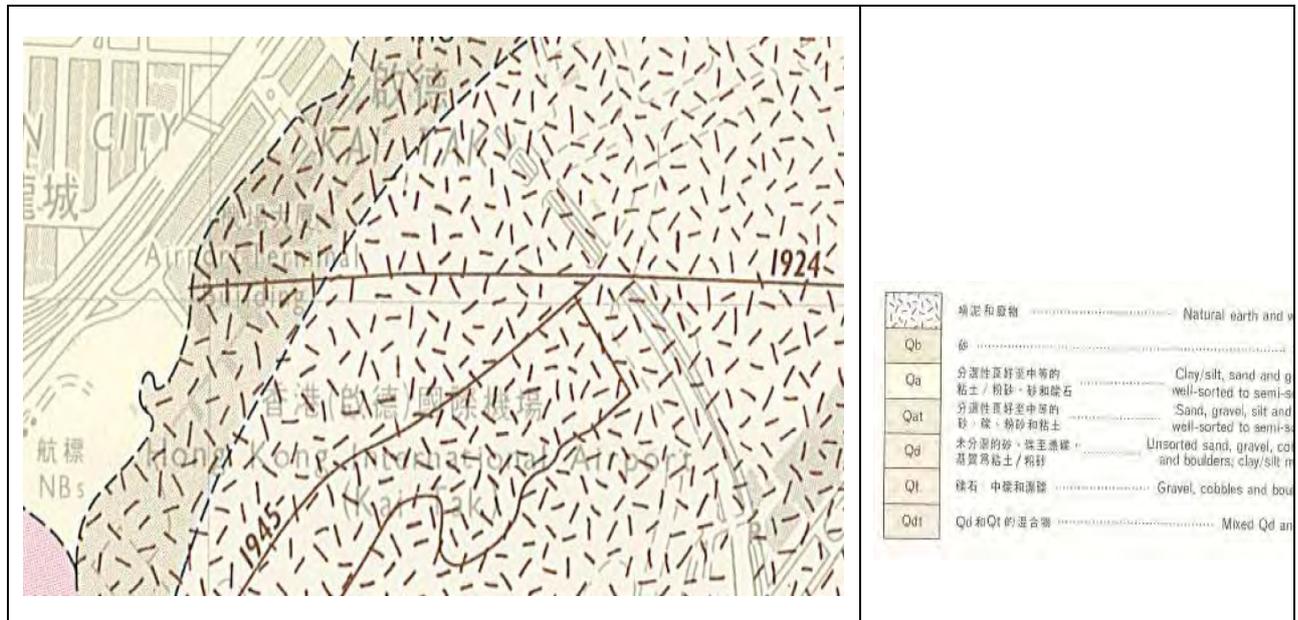


Figure 5 Geological Map of Kowloon Bay (After Hong Kong Geological Survey Sheet 11: Hong Kong and Kowloon, 1:20,000, 1986, Hong Kong, Geotechnical Control Office)

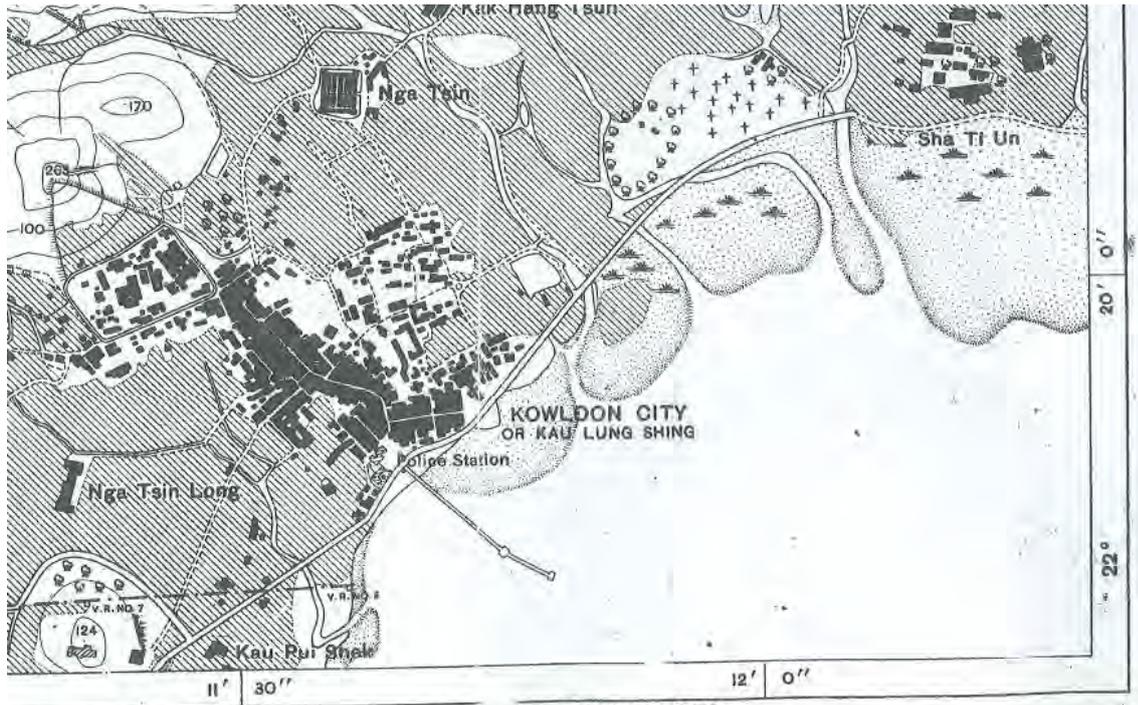


Figure 6 Pre-reclamation Kowloon Bay Landscape
 (After China---Kowloon and part of New Territory, Ordnance Survey 1903,
 Mapping Office of Lands Department)



Figure 7a Landing Portion of Longjin Bridge and Pavilion for Greeting Officials (Central)
 (Imperial Chinese Customs Station on the left side) (After Report on Extension of
 The Colony of Hong Kong, 10 Oct 1898, Public Archive Office)



Figure 7b The 1900s Longjin Bridge



Figure 10 Kowloon City Pier (a section of Longjin Bridge was remaining), 1932
(After 吳詹士 2007 《從啓德出發》，香港，經濟日報出版社。)



Figure 11 Aerial Photography of Kai Tak Airport, 1954
(Mapping Office of the Lands Department)



Figure 12 A Nullah of Kai Tak Airport, 1949 (Mapping Office of Lands Department)

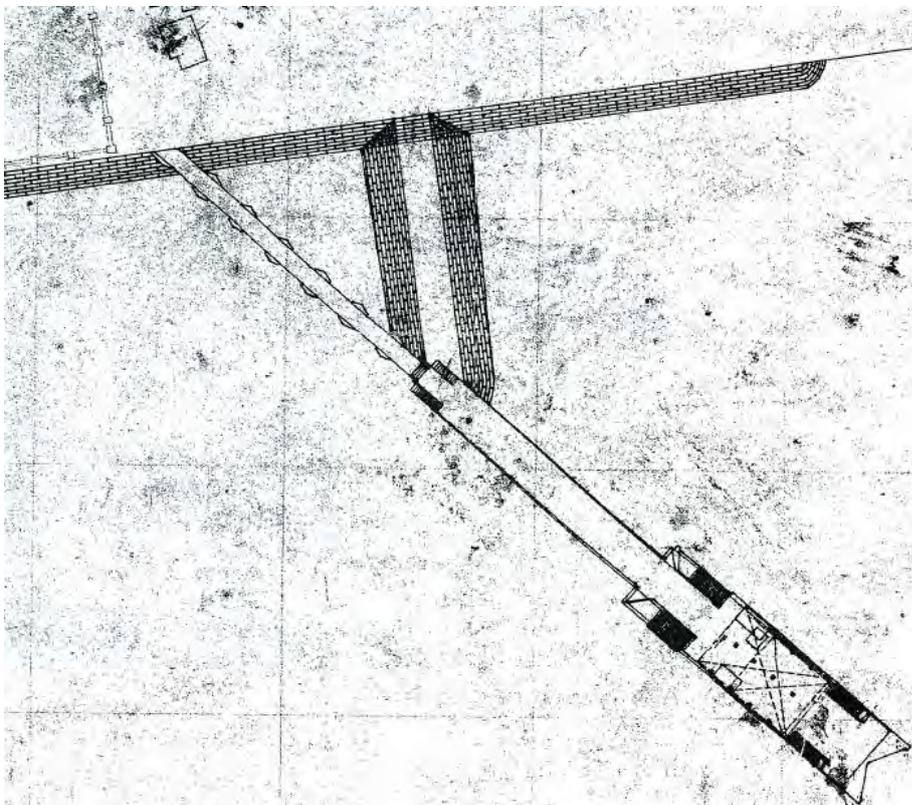


Figure 13 Kowloon City Pier and Its 1930's causeway (Mapping Office of Lands Department, original scale 1:600)

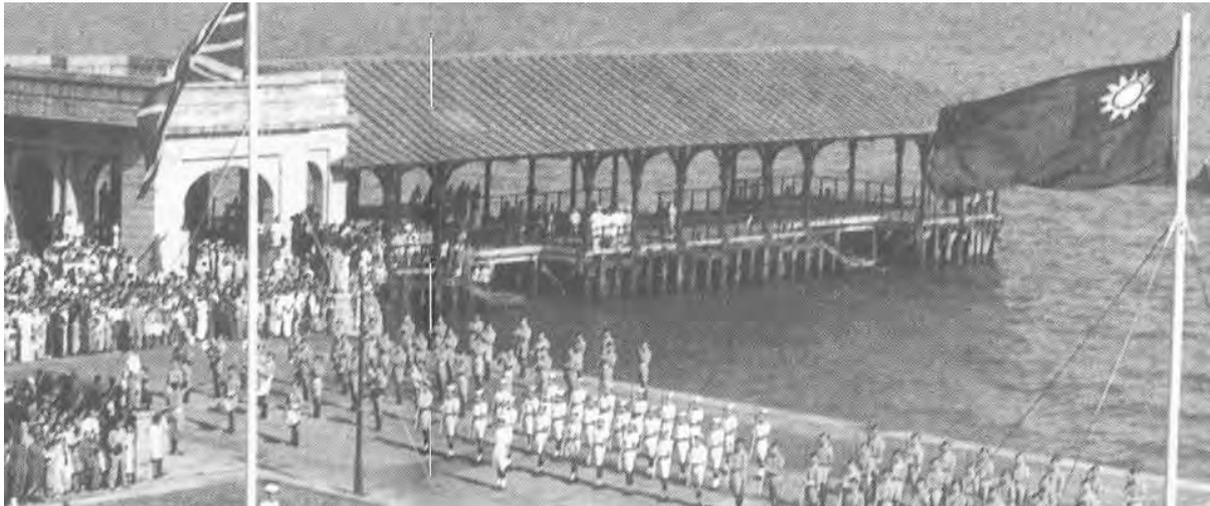


Figure 14 Queen's Pier, Central, 1945 (After 劉潤和 等 2007 《香港走過的道路》，香港，三聯書店。)

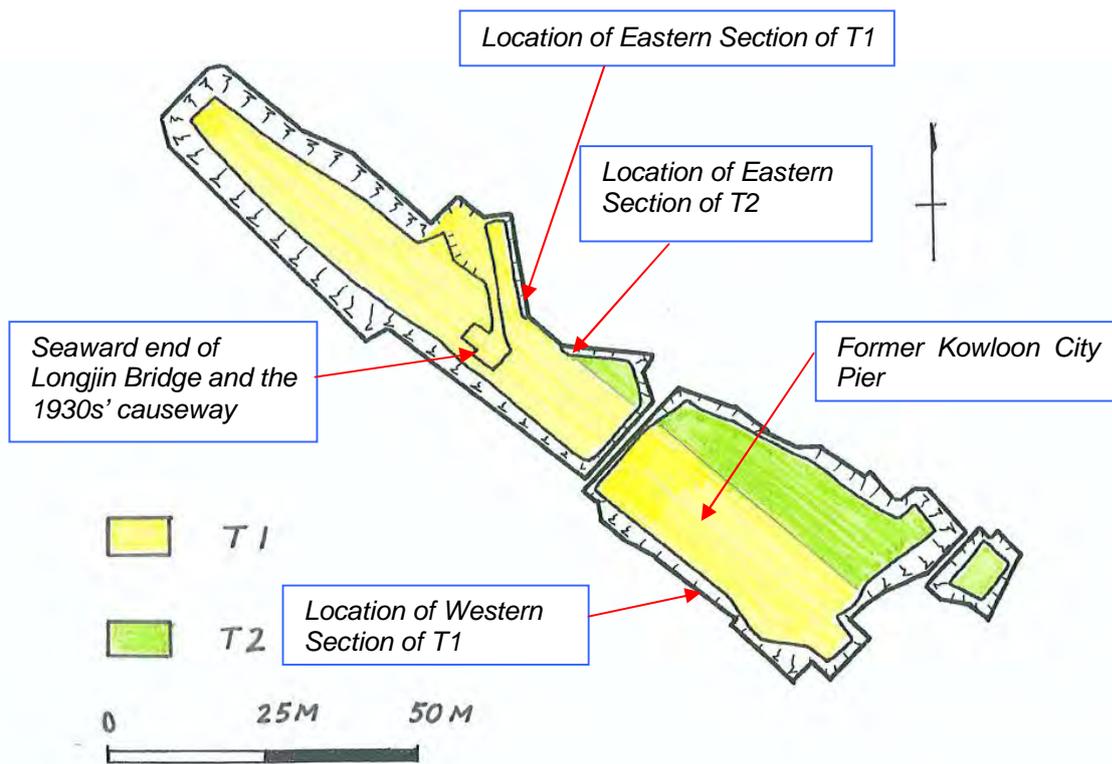


Figure 15 Over View of T1 and T2

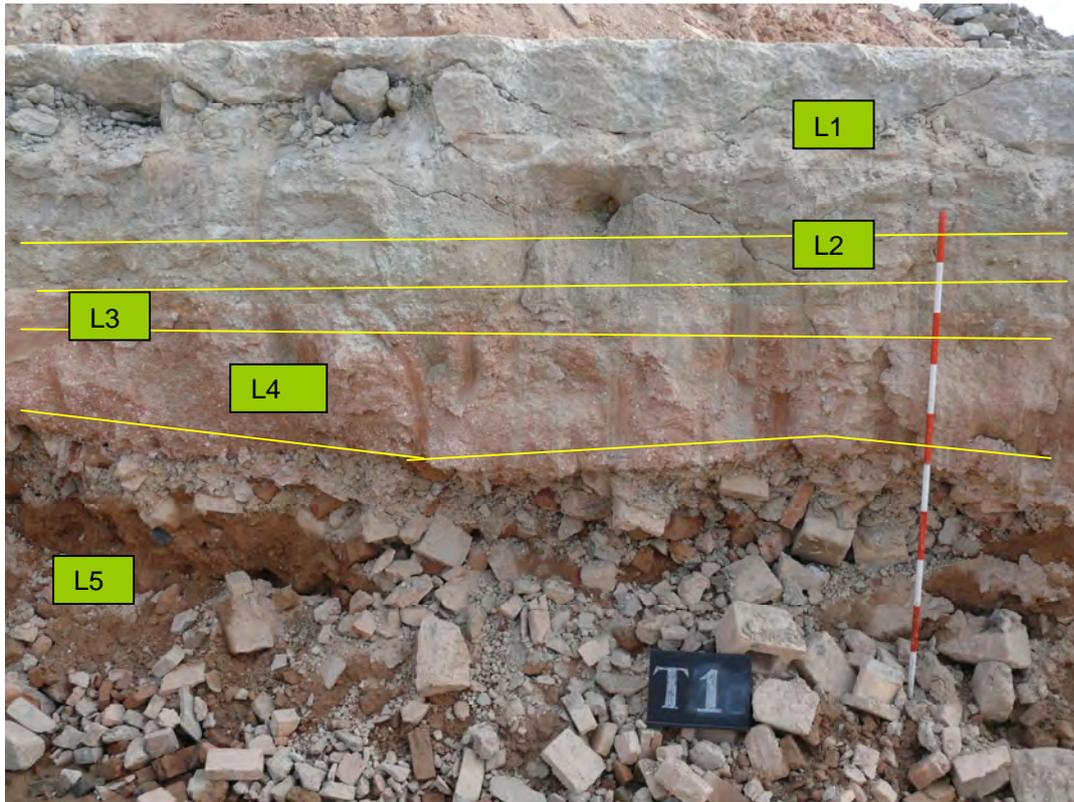


Figure 16 Eastern Section of T1 (Northern Portion)

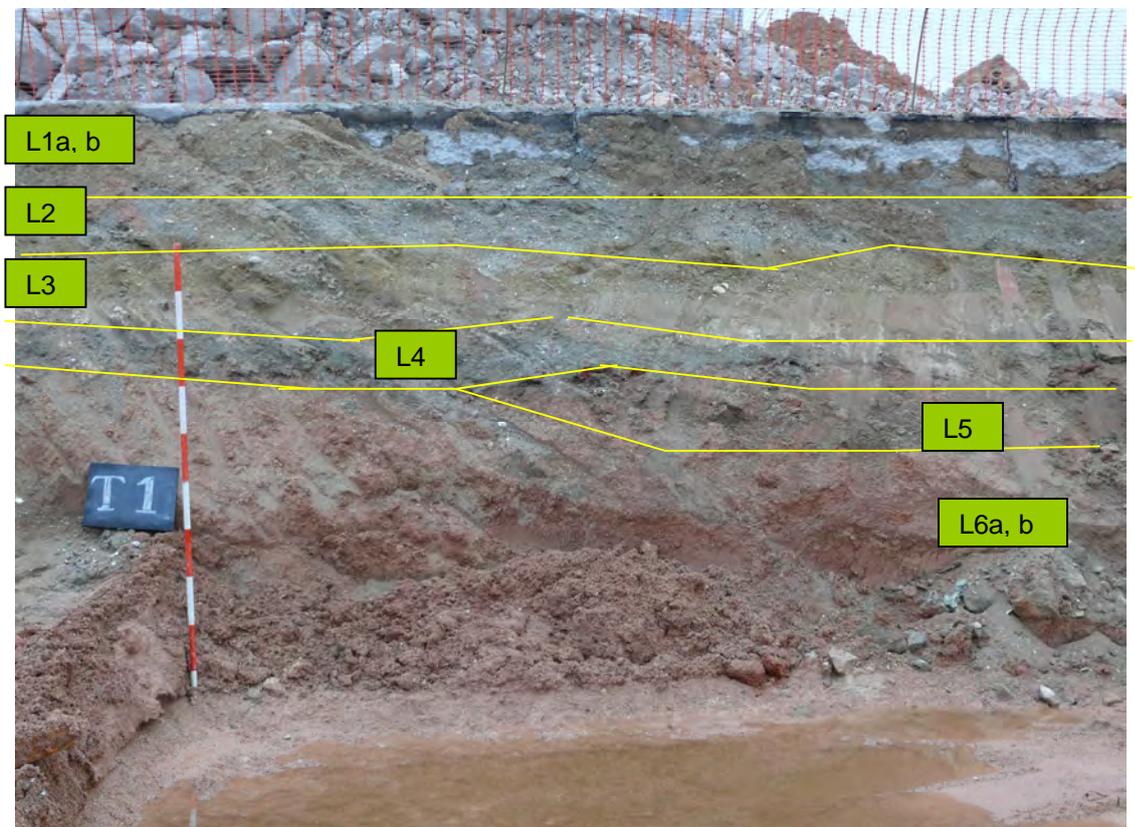


Figure 17 Western Section of T1 (Southern Portion)



Figure 18 1930's causeway (right) and Seaward End of Longjin Bridge (view from south) and Aerial Photograph of 1930's causeway (right) and Seaward End of Longjin Bridge (right side)

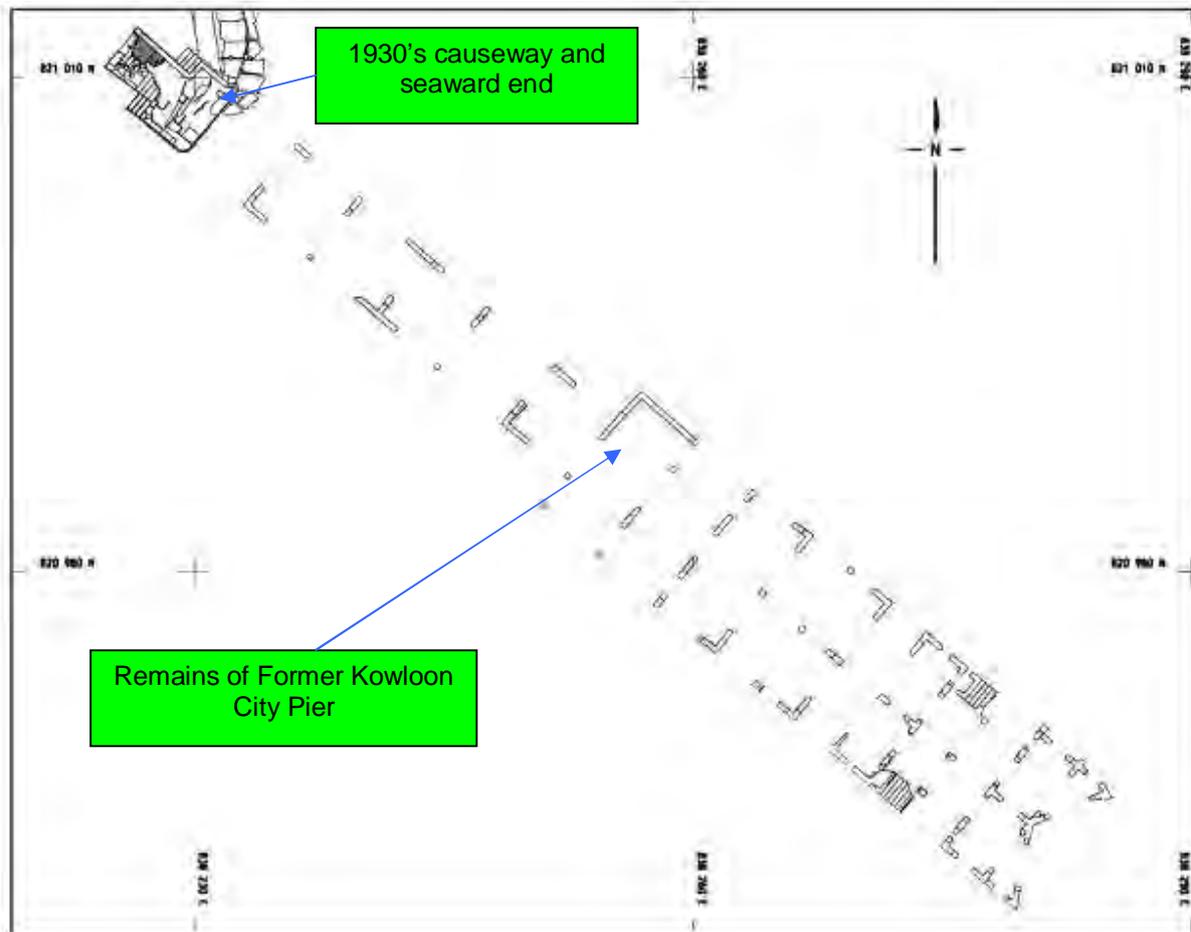


Figure 19 Plan of Seaward End of Longjin Bridge, 1930's causeway, Supporting Pillars and Landing Steps of Former Kowloon City Pier



Figure 20 Supporting Pillars of Former Kowloon City Pier (View from south)



Figure 21 Landing Steps and Supporting Pillars



Figure 22 Top View of Landing Steps (southern portion) and Supporting Pillars (northern portion) of Former Kowloon City Pier



Figure 23 Seaward End of Longjin Bridge and Supporting Pillars of Former Kowloon City Pier



Landing Steps of Wide Portion



Pillar of Wide Portion



Pillar of Narrow Portion



Pillar of Wide Portion



Pillar of Wide Portion



Pillar with Timber Fender of Narrow Portion

Figure 24 Selected Pillars of Former Kowloon City Pier



Figure 25 Top View of Seaward End of Longjin Bridge



Figure 26 Side View from West of Seaward End of Longjin Bridge



Figure 27 Side View from South of Seaward End of Longjin Bridge

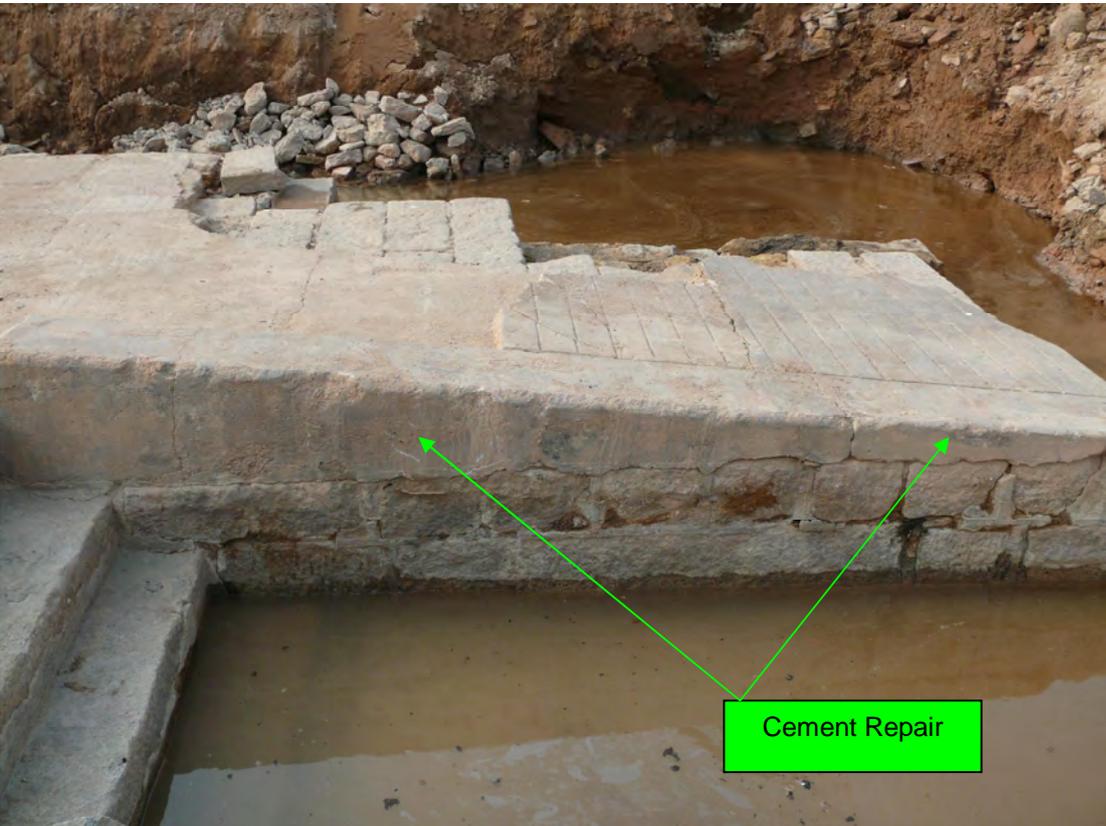


Figure 28 Side View from East of Seaward End of Longjin Bridge



Figure 29 Side View from North of Seaward End of Longjin Bridge



Figure 30 Three Layers of Seaward End of Longjin Bridge

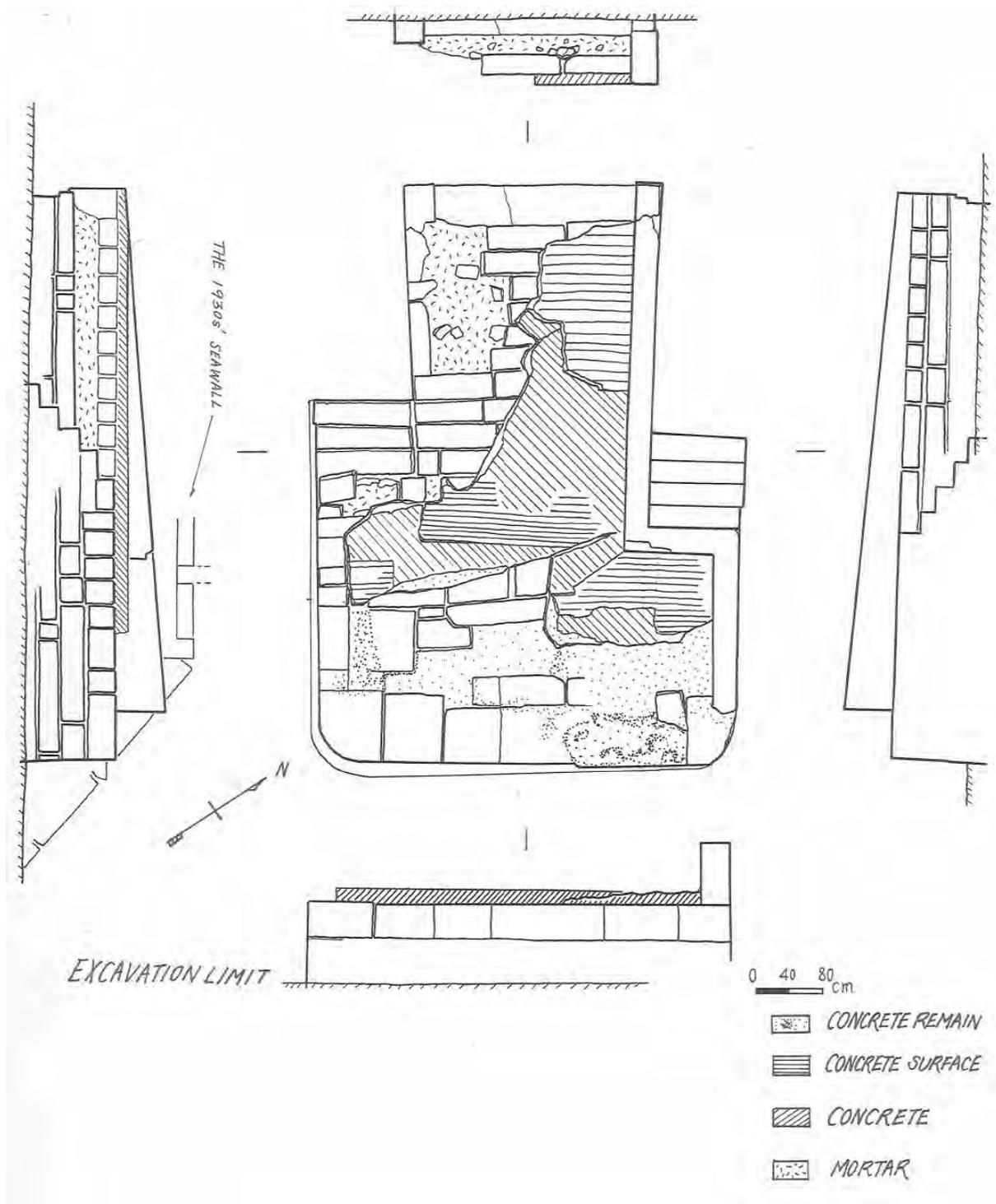


Figure 31 Plan and Four Side Views of Seaward End of Longjin Bridge

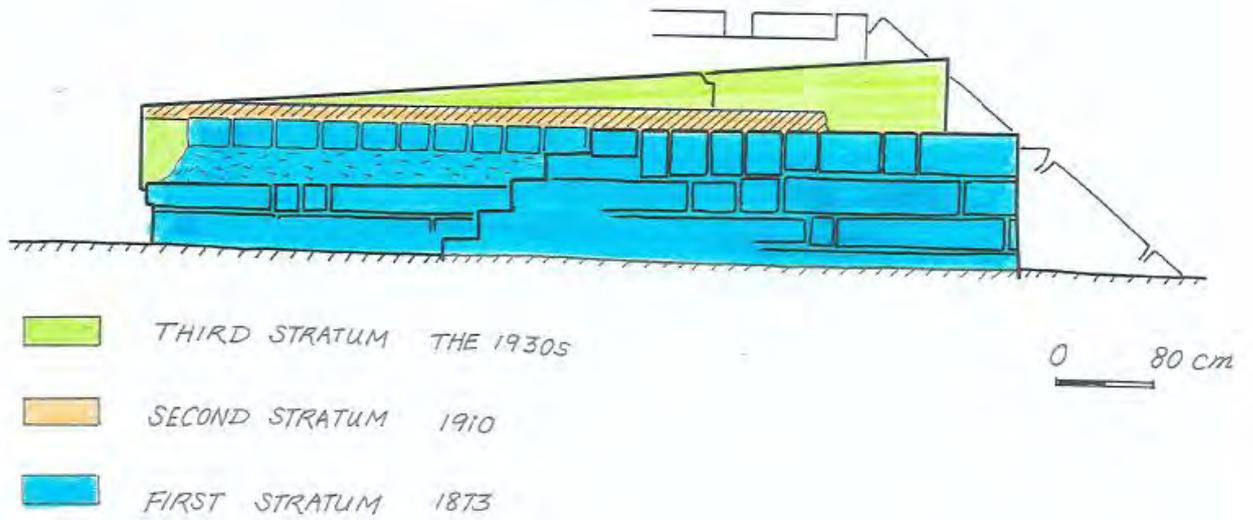


Figure 32 Side View from West and Three Layers of Seaward End of Longjin Bridge

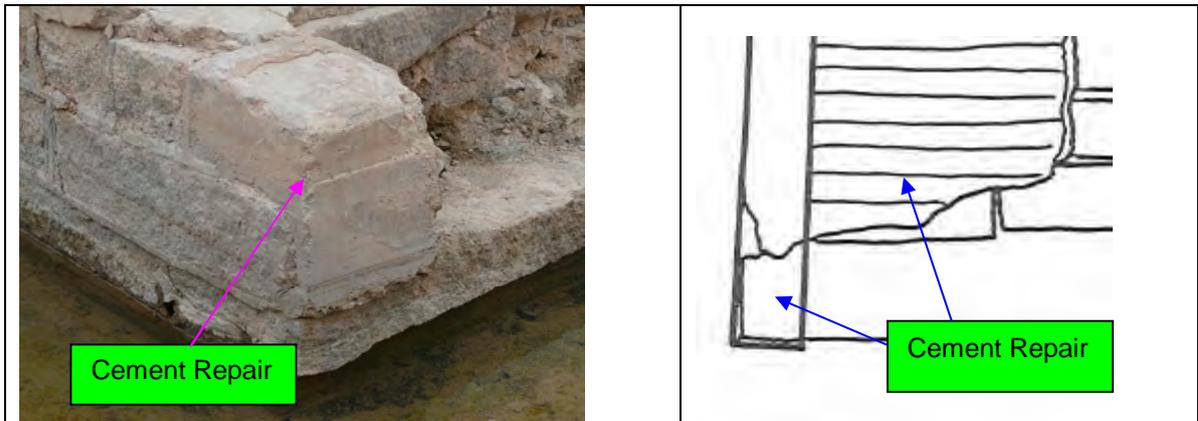


Figure 33 Cement Repair of Seaward End of Longjin Bridge



Figure 34 Eastern Section of T2



Figure 35 Hand Digging of Supporting Pillar SP6

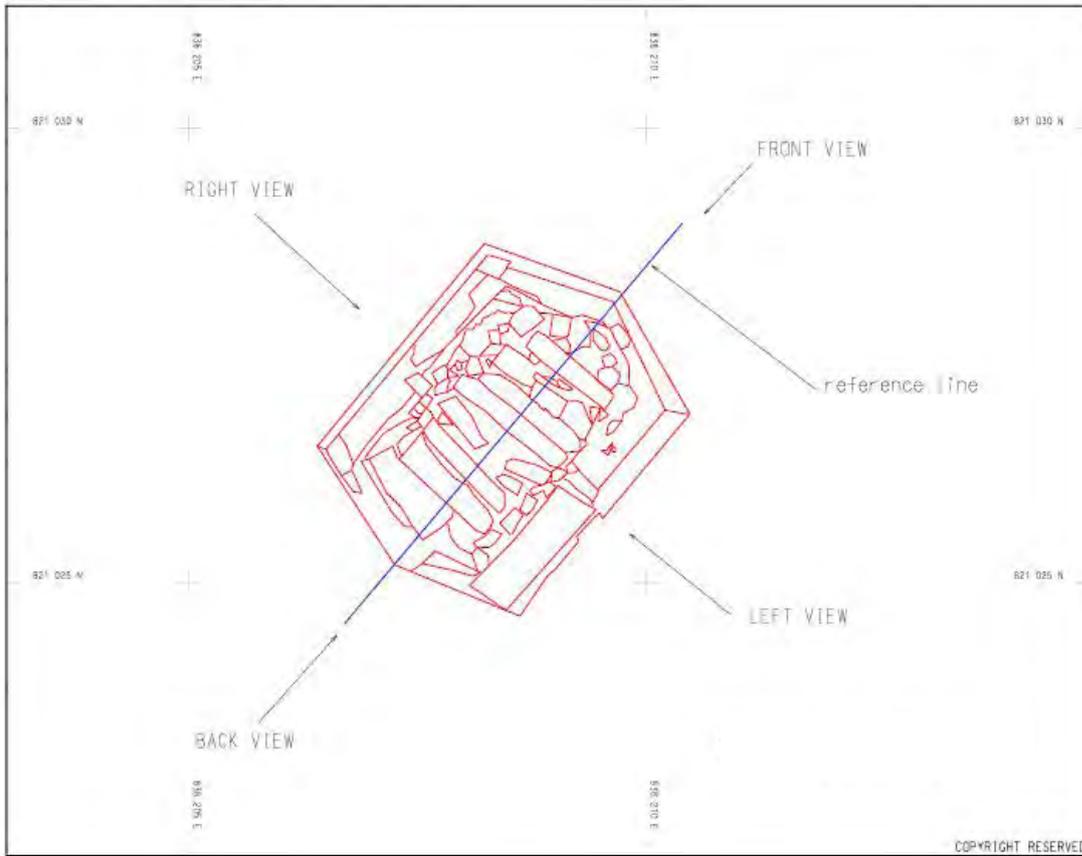


Figure 36 Plan of Supporting Pillar SP6 of Longjin Bridge

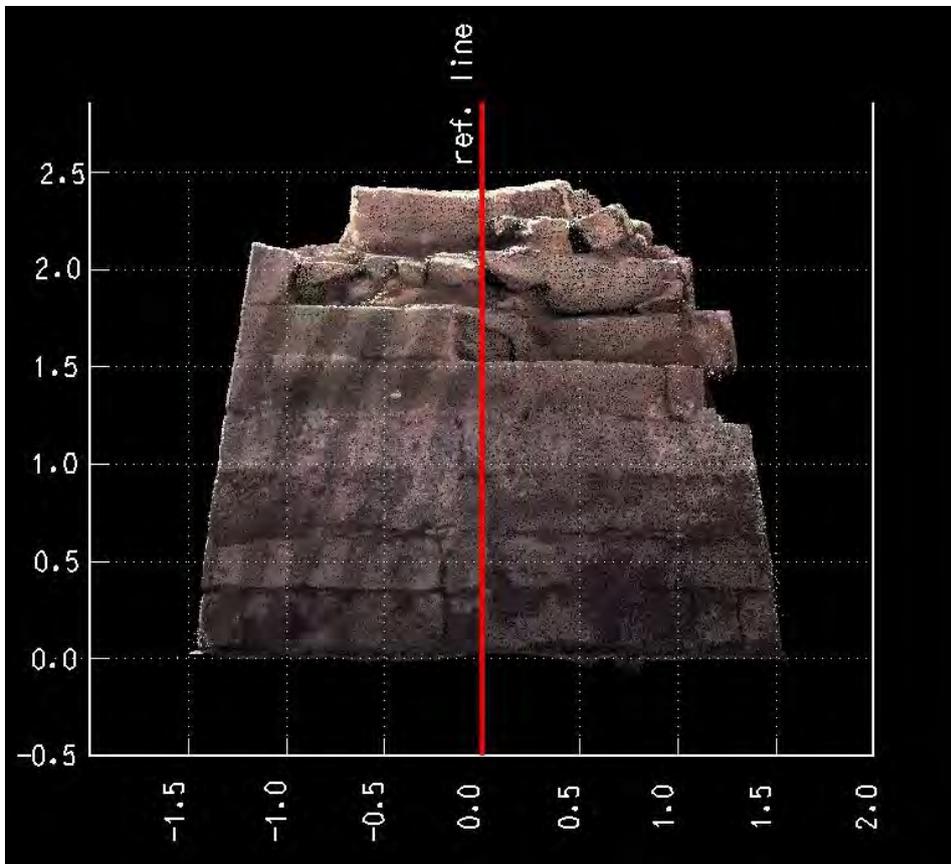


Figure 37 Photographic Survey of Front View of SP6

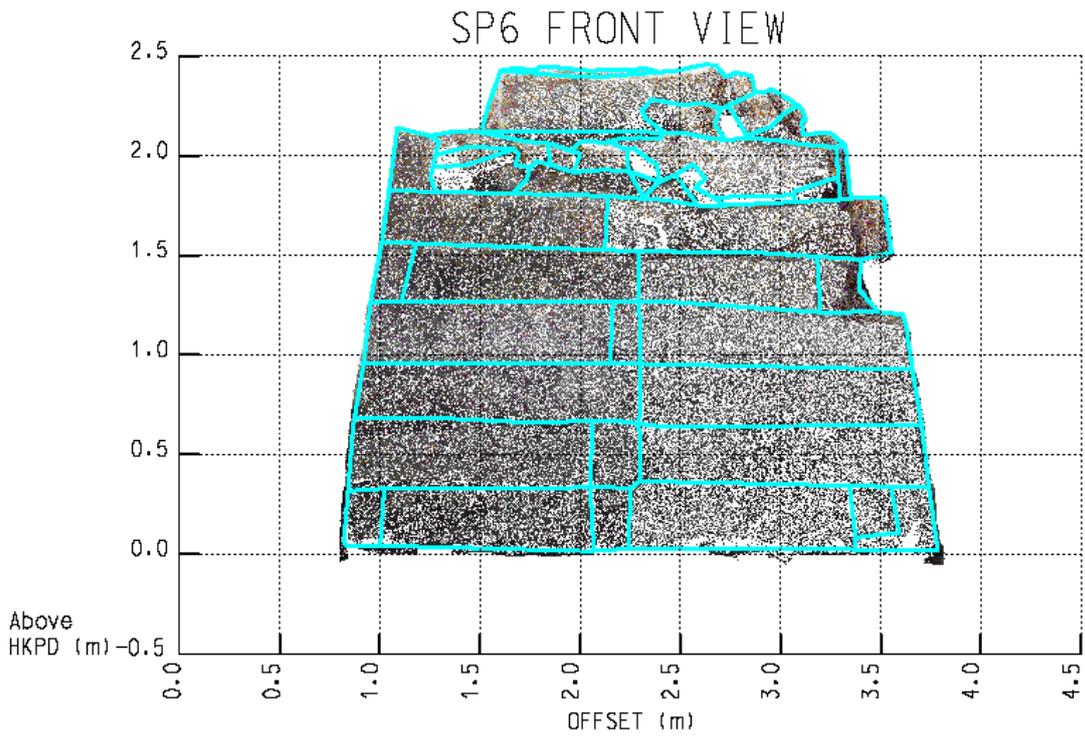


Figure 38 Photographic Survey of Front View of SP6

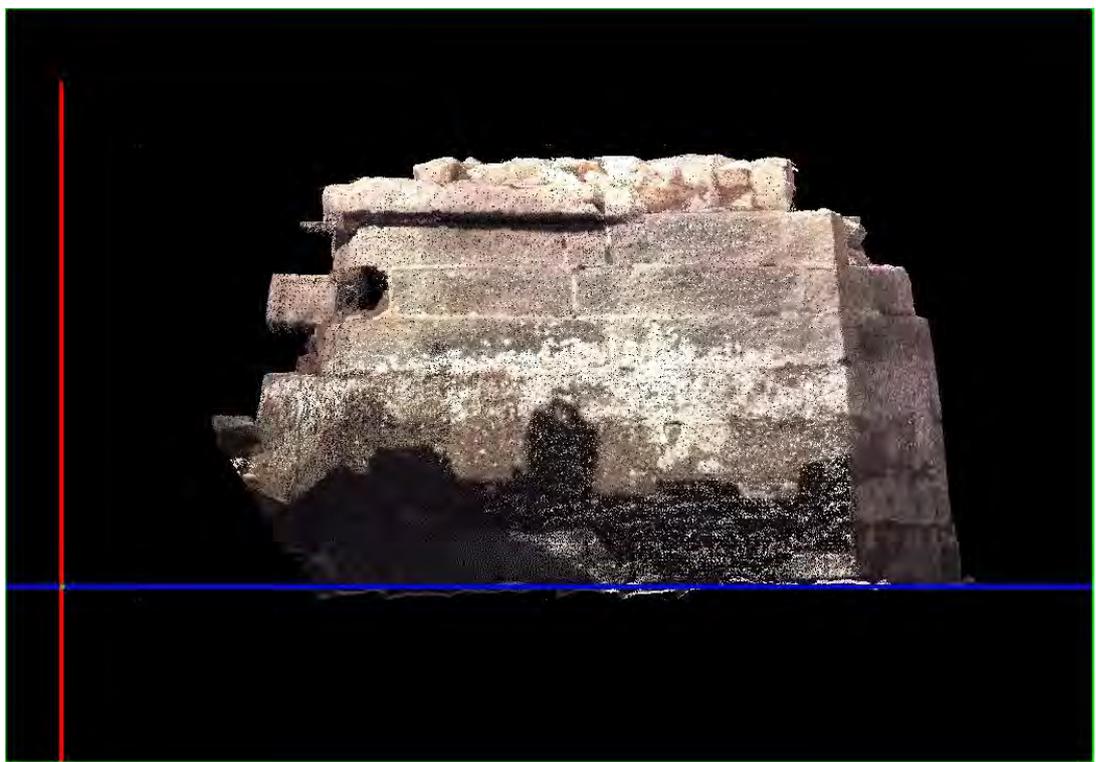


Figure 39 Photographic Survey of Left View of SP6

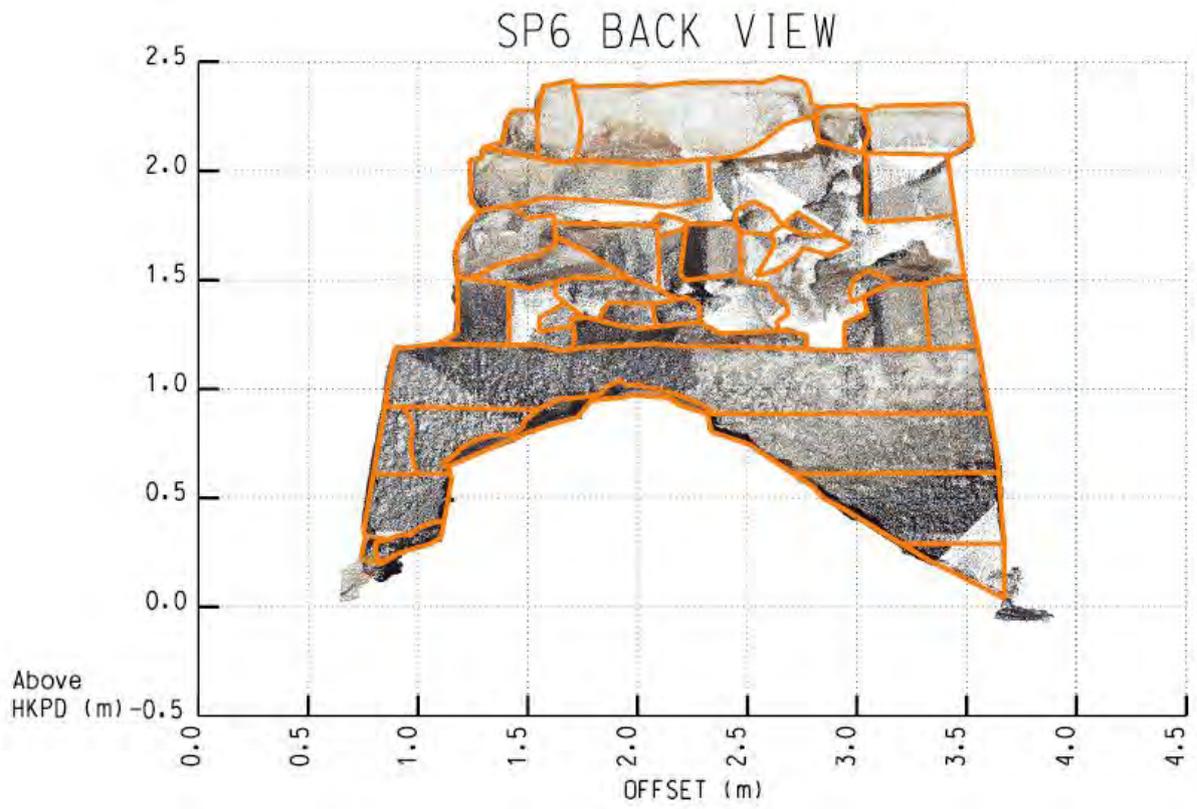


Figure 40 Photographic Survey of Back View of SP6

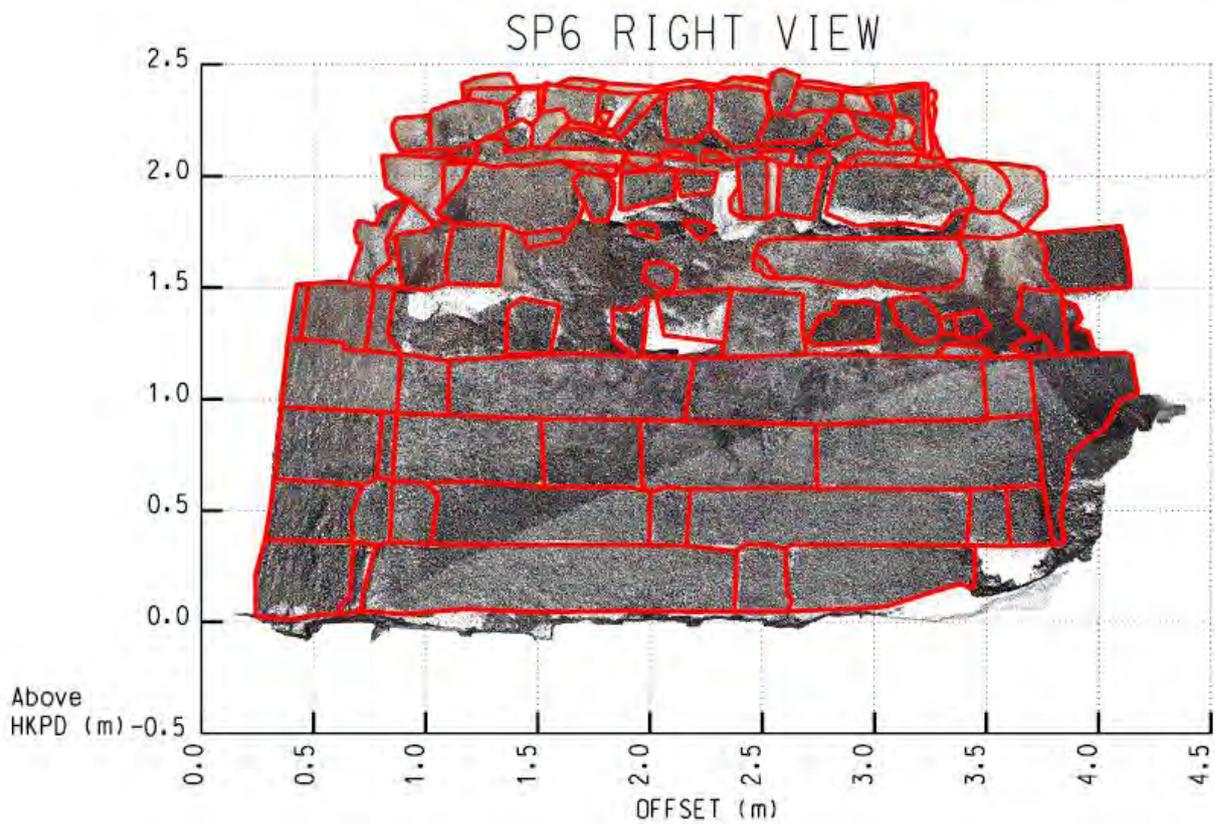


Figure 41 Photographic Survey of Right View of SP6

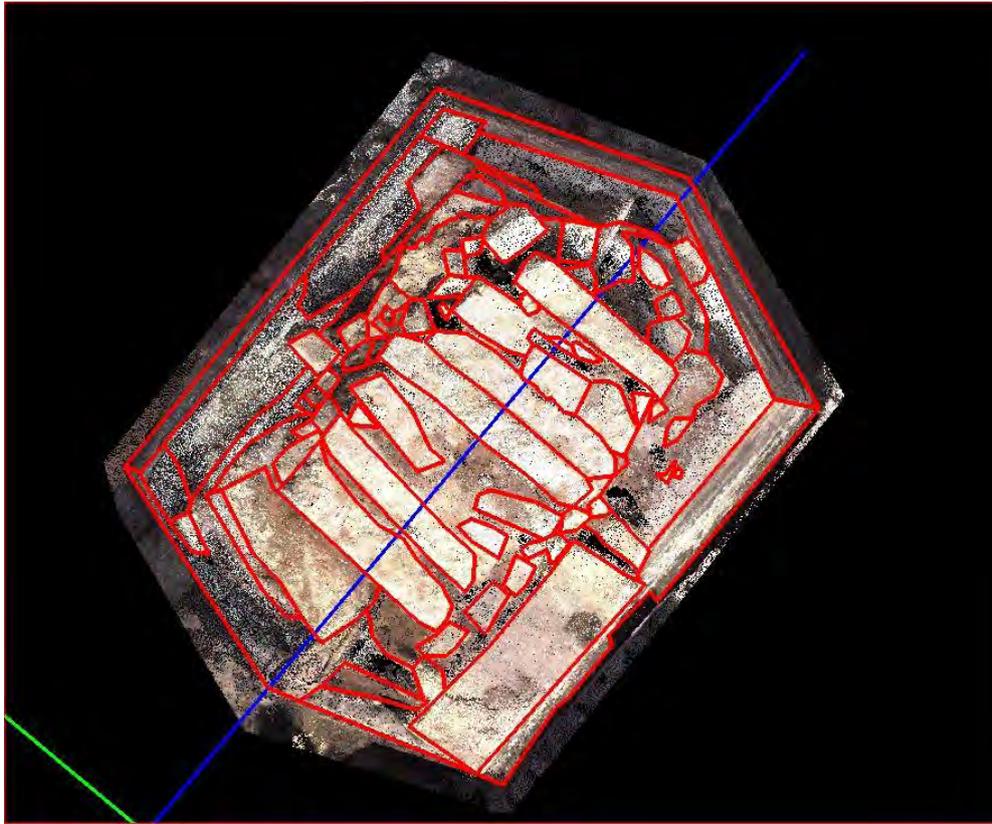


Figure 42 Photographic Survey of Top View of SP6



Figure 43 Supporting Pillar SP6 of Longjin Bridge



Figure 44 Internal Structure of SP6 (View From West)



Figure 45 Rocks and Sandy Mortar Infill of SP6 (View From North)



Figure 46 Top View of SP6



Figure 47 Three Layers of Footing Stones of SP6 (View From East)



Figure 48 Close-up of Footing Stones of SP6

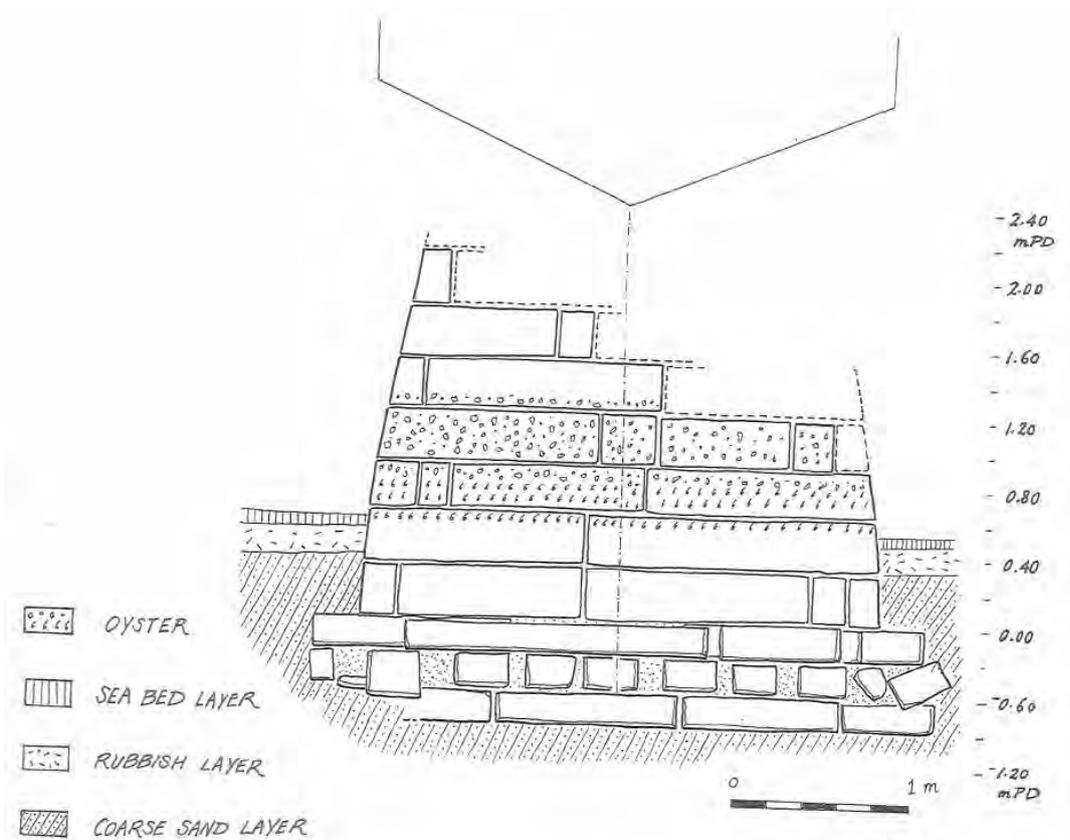


Figure 49 Side View of Three Layers of Footing Stones of SP6

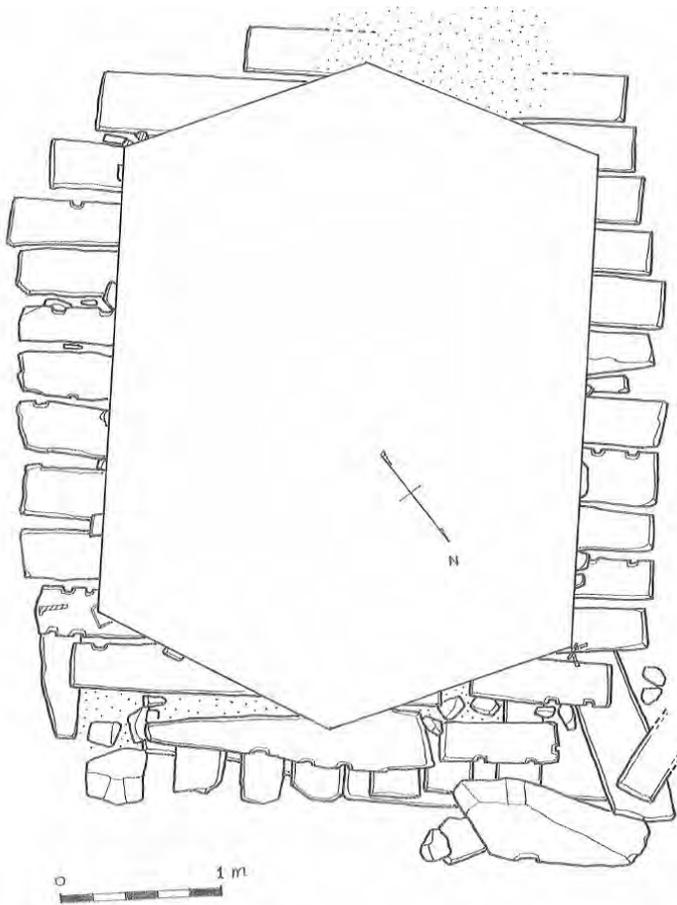


Figure 50 Plan of Footing Stones of SP6

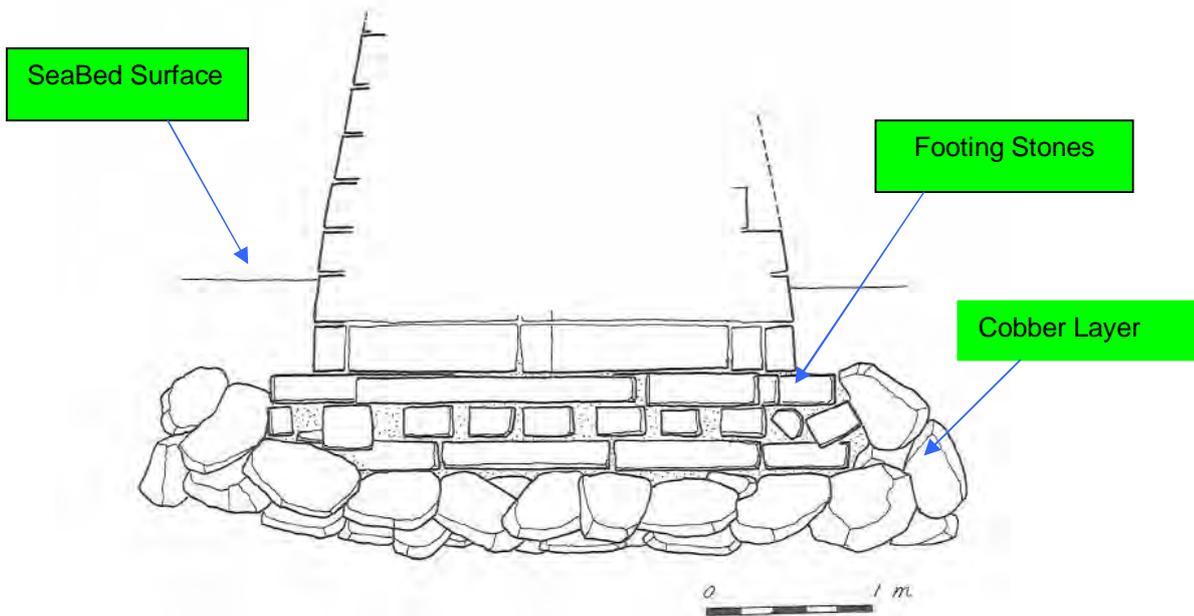


Figure 51 Side View of Cobble Layer of SP6 (indicative)

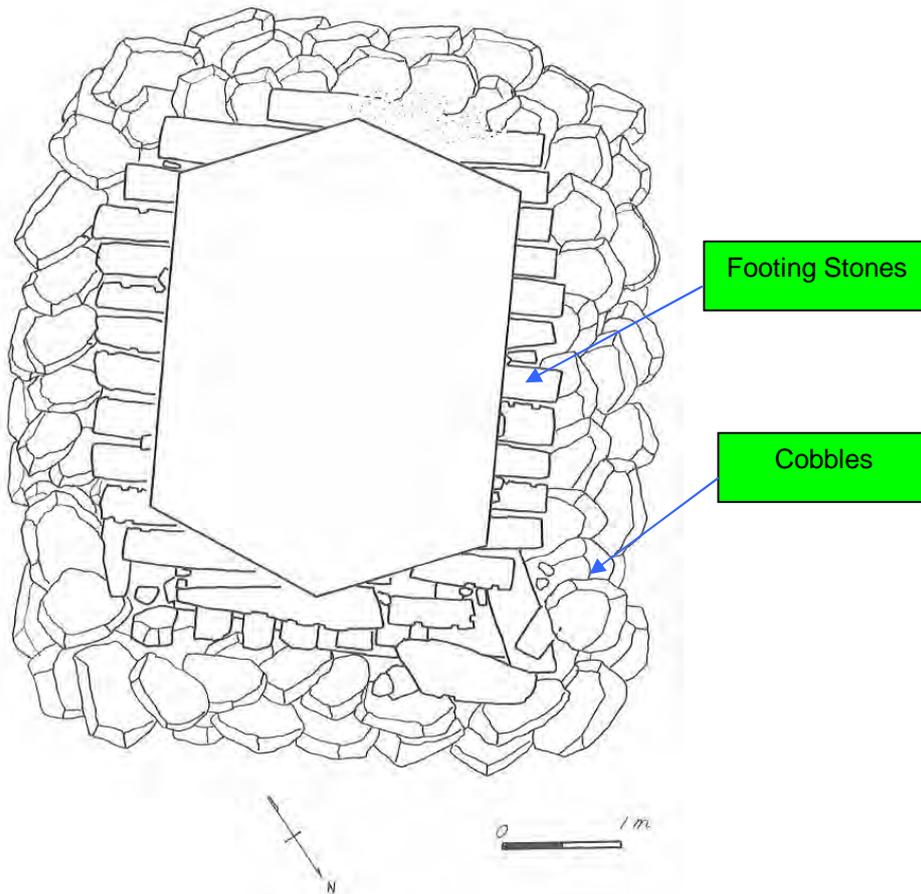


Figure 52 Plan of Cobble Layer of SP6 (Indicative)



Figure 53 Cobber Layer of SP6



Figure 54 Marine Coarse Sand Layer of SP6

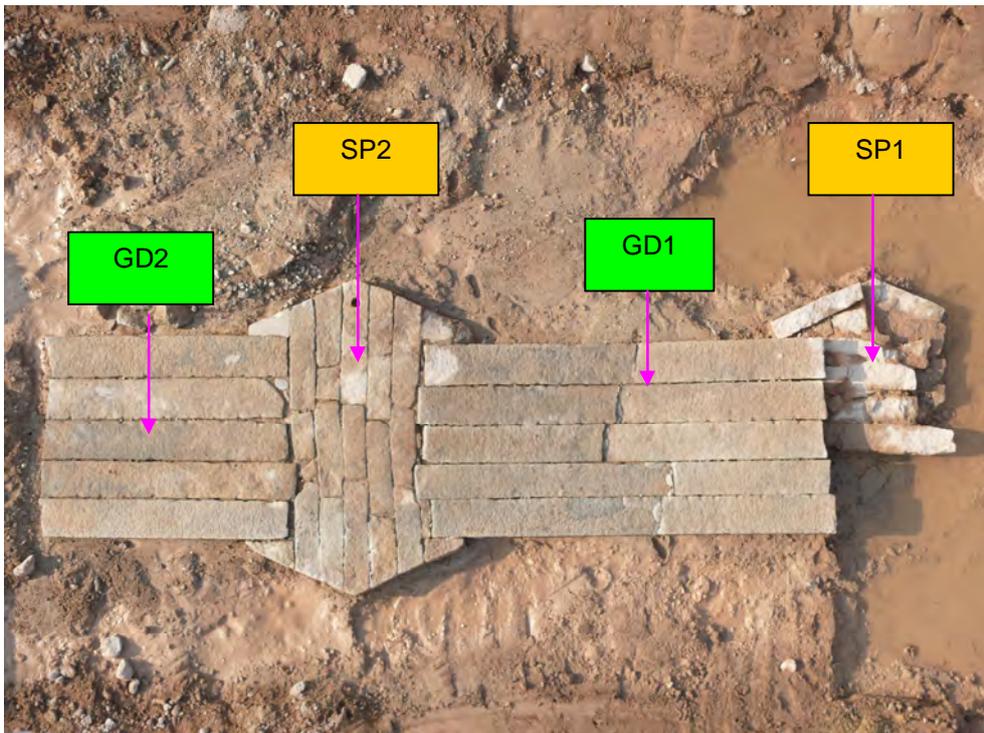


Figure 55 Top View of SP1, SP2, GD1 and GD2

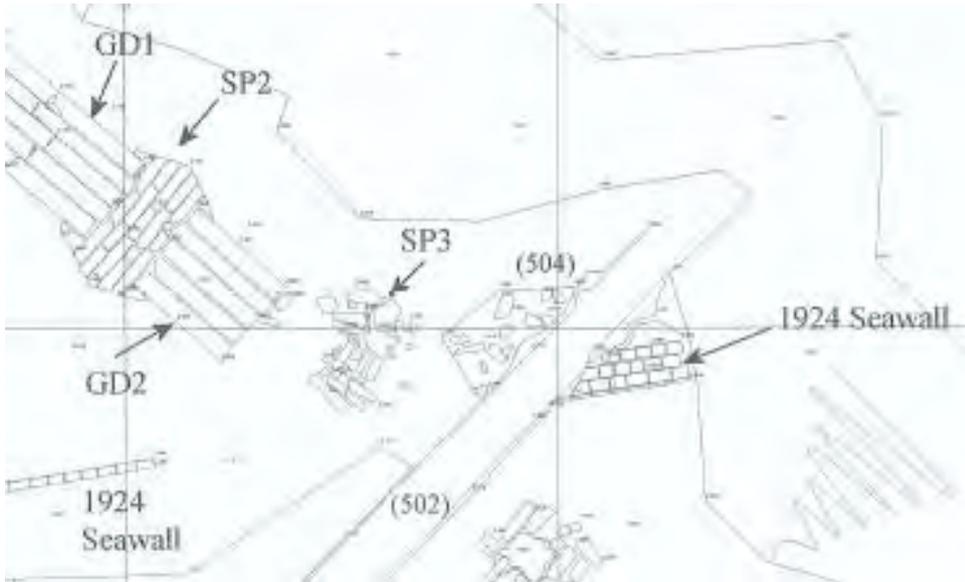


Figure 56 SP2, GD1 and GD2

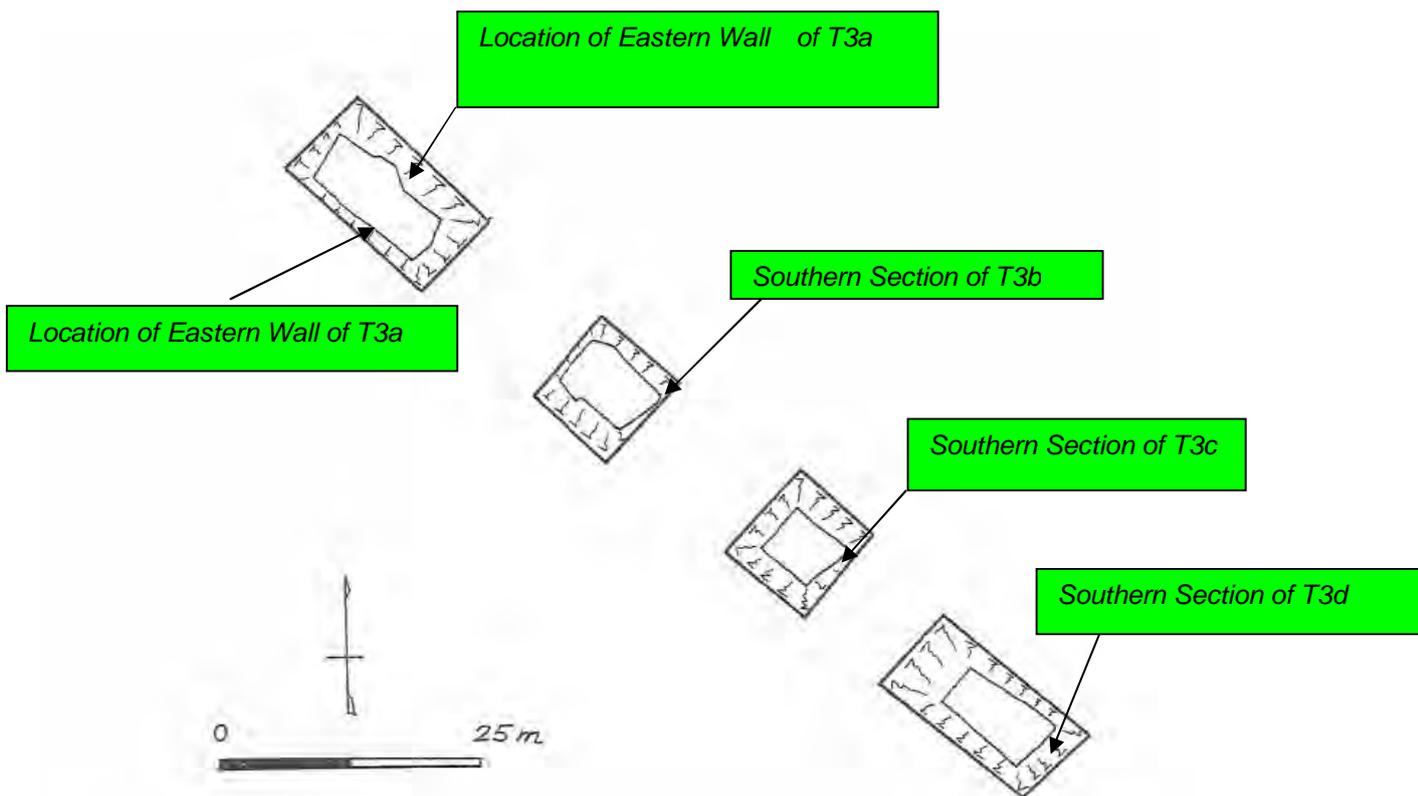


Figure 57 Plan of T3a, T3b, T3c and T3d

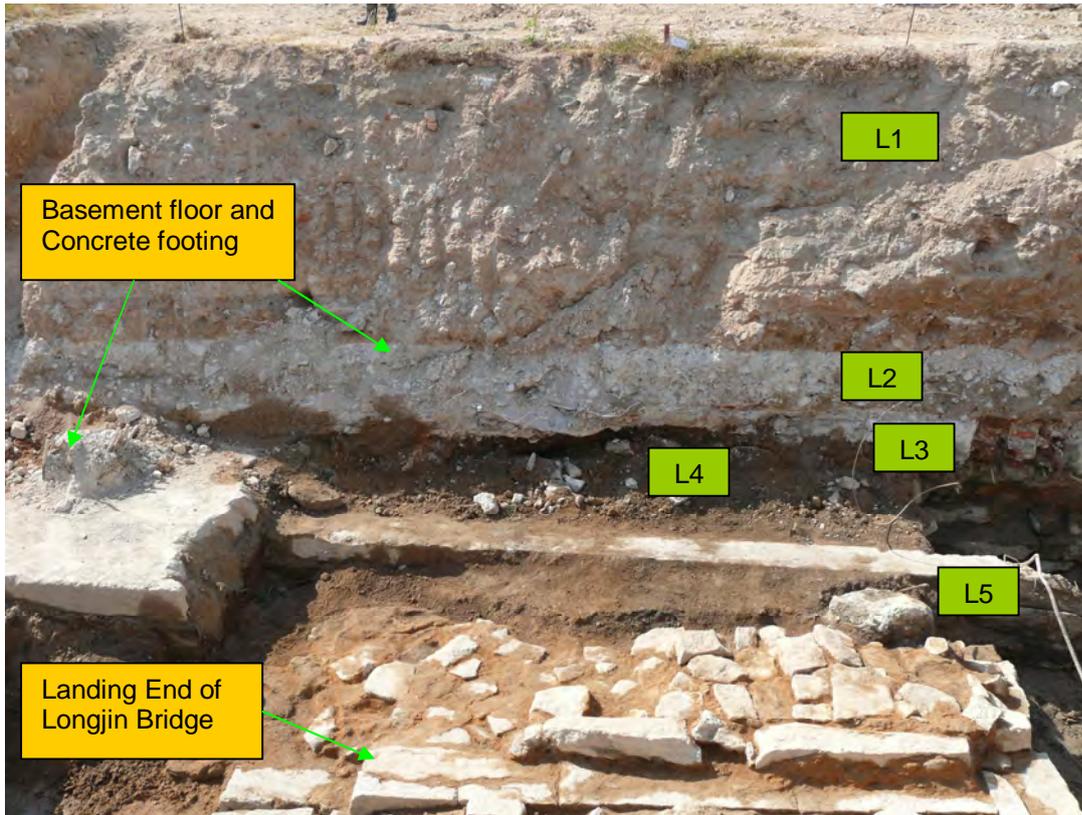


Figure 58 Western Wall of TP3a

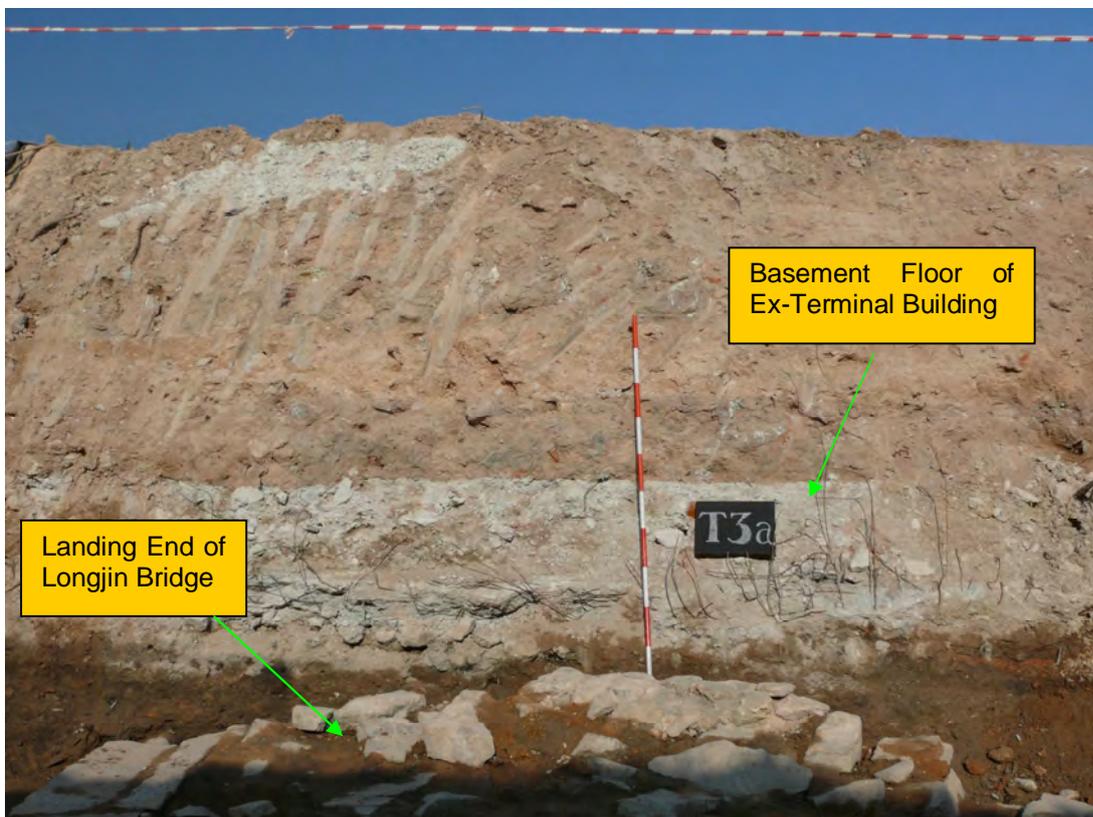


Figure 59 Eastern Wall of TP3a

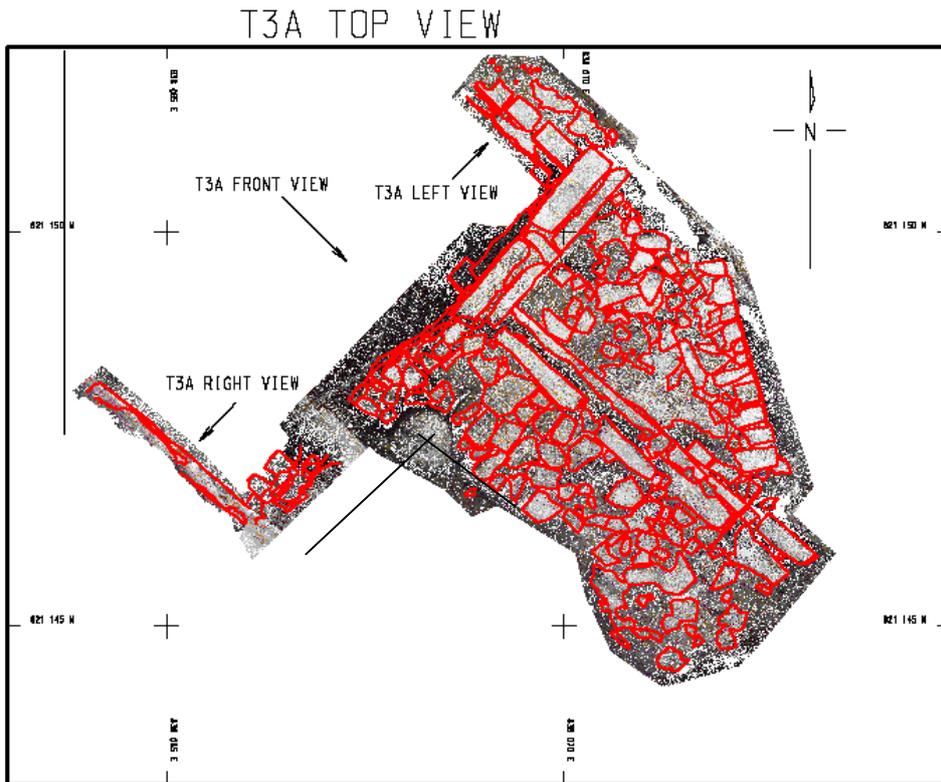


Figure 60 Photographic Survey Image of Pavilion for Greeting Officials and Landing End of Longjin Bridge

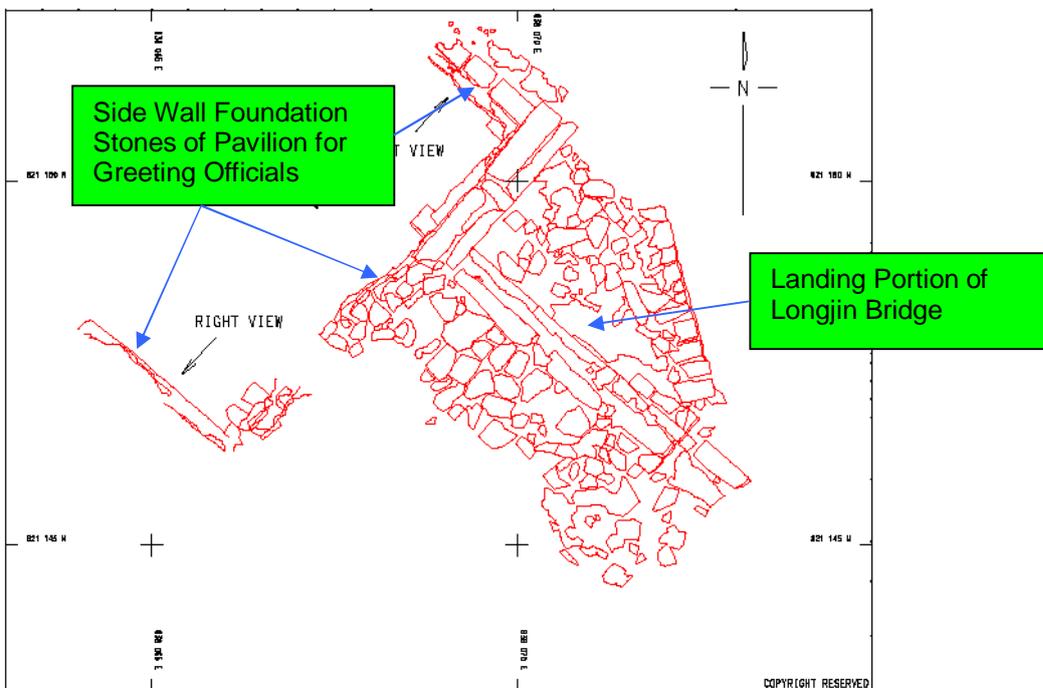
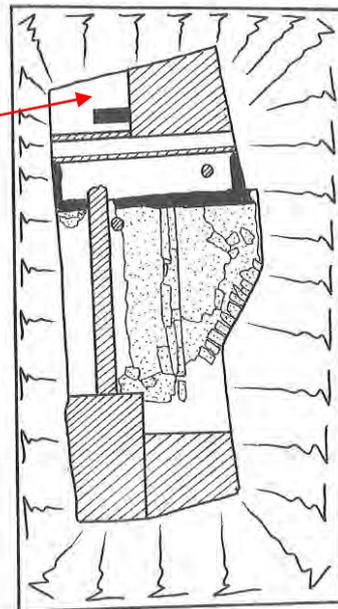


Figure 61 Plan of Pavilion for Greeting Officials and Landing End of Longjin Bridge



Figure 62 Top View of Landing End of Longjin Bridge and Wall Foundation Stones of Pavilion for Greeting Officials



-  REMAINS OF PAVILION
-  LONGJIN BRIDGE REMAINS
-  BASEMENT STRUCTURE

Plan of T3a

Figure 63 Two Granite Slabs of Pavilion for Greeting Officials



Figure 64 Three Side Wall Foundation Stones of Pavilion for Greeting Officials (View from North)



Figure 65 Wall Edge Stones of Pavilion of Greeting Officials in T3a

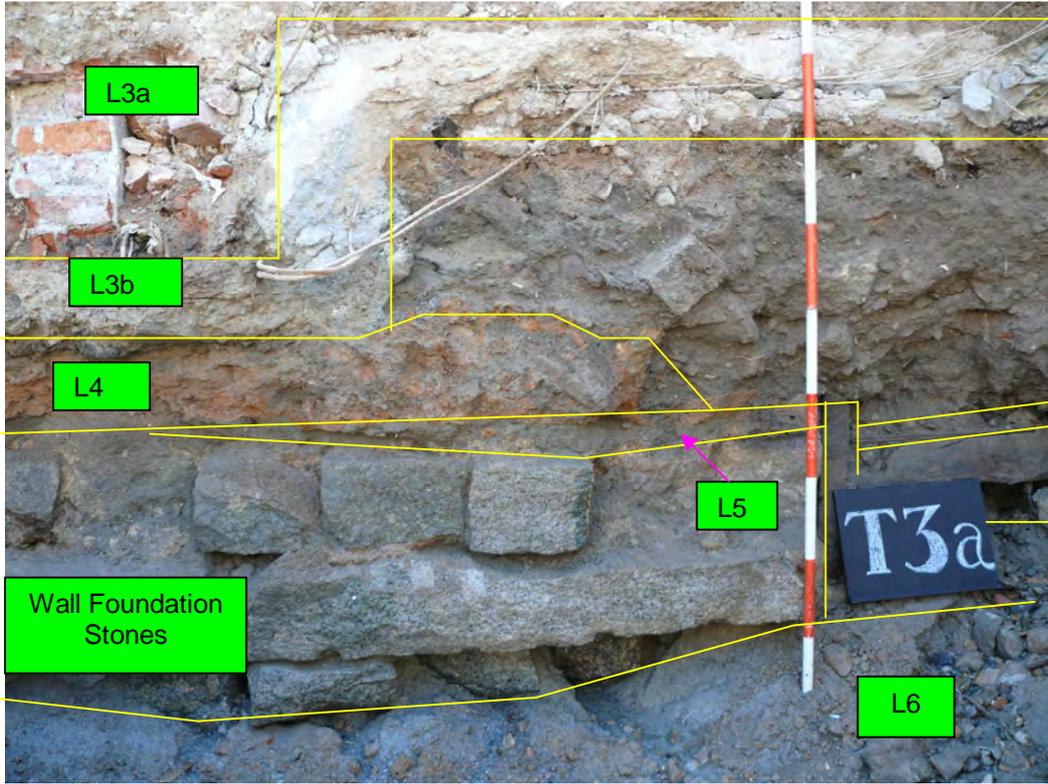


Figure 66 Western Section of Wall Foundation Stones of Pavilion for Greeting Officials

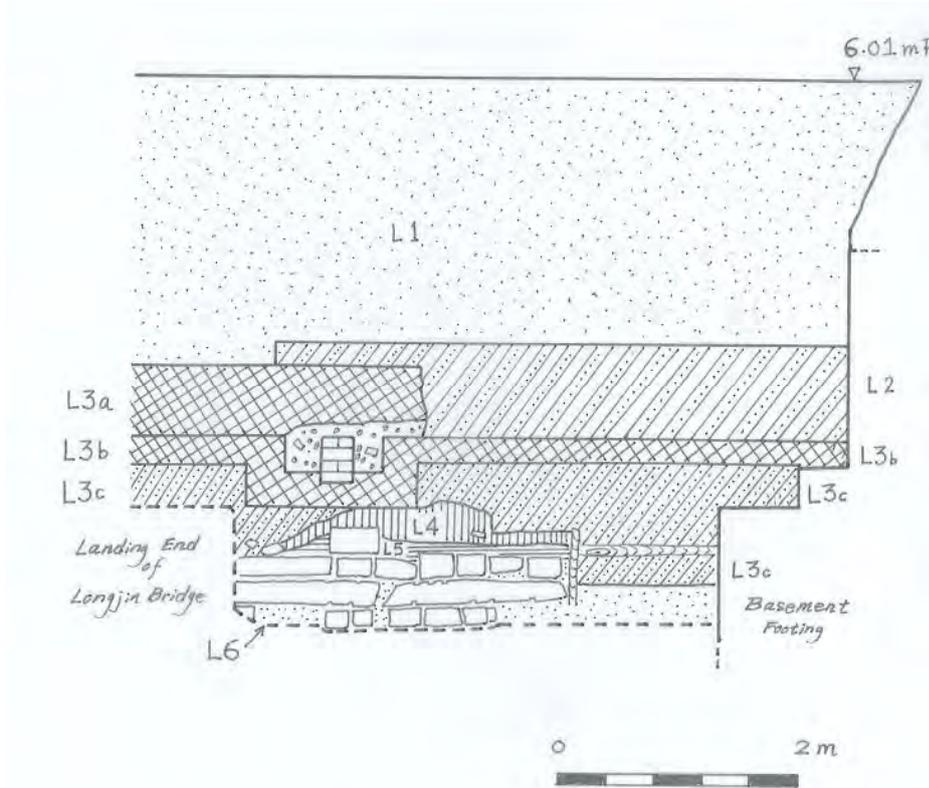


Figure 67 Western Section of Wall Foundation Stones of Pavilion for Greeting Officials

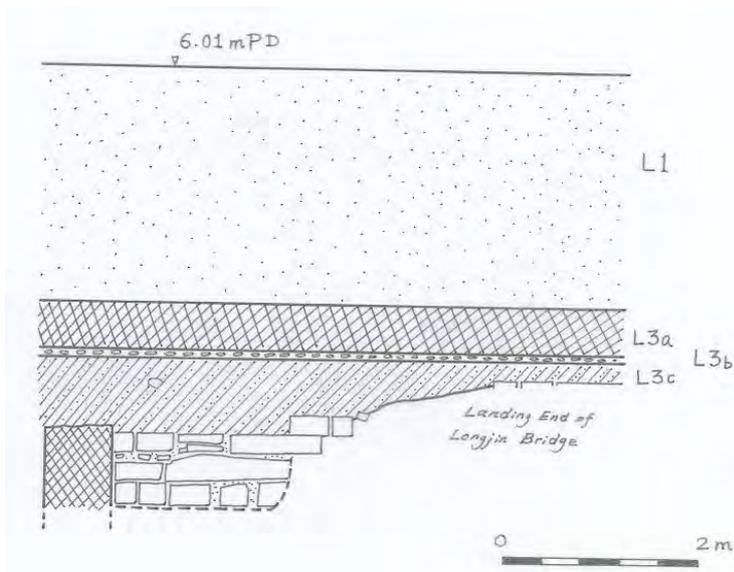


Figure 68 Eastern Section of Wall Foundation Stones of Pavilion for Greeting Officials



Figure 69 Porcelain Plate With Make of Reign of Tongzhi (同治年製 1862-1873)

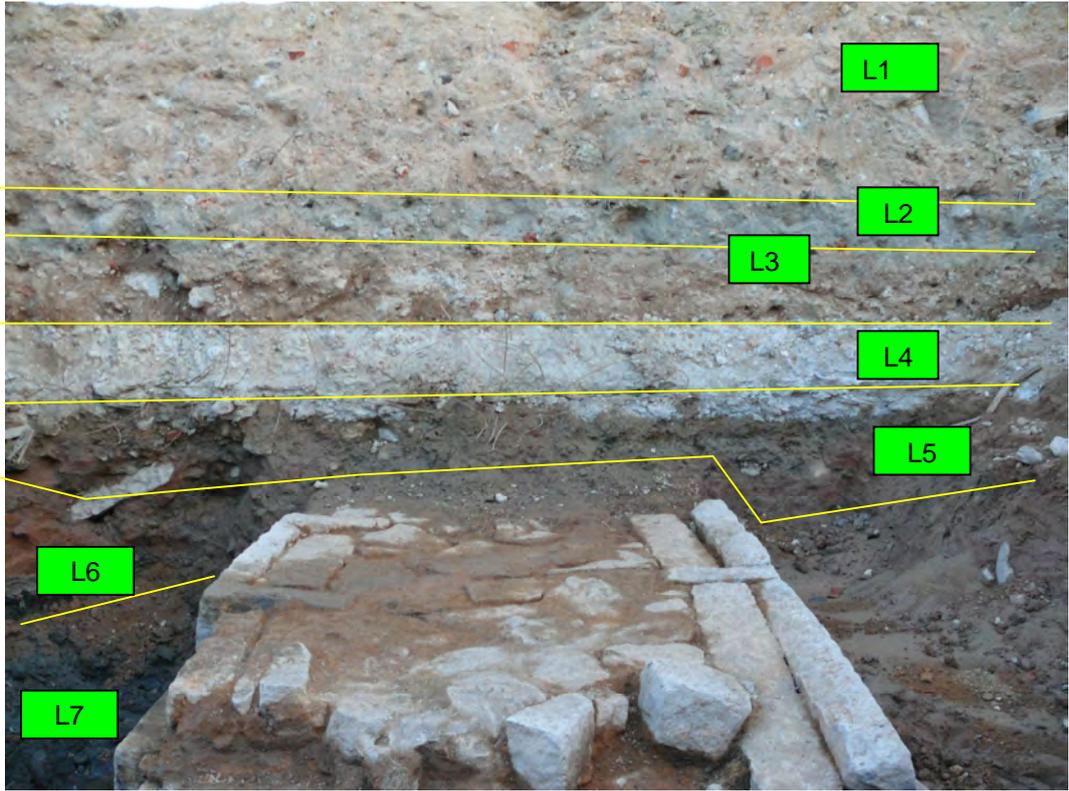


Figure 70 Southern Section of T3b



Figure 71 Top View of Remains of Longjin Bridge in T3b



Figure 72 Plan of Remain of Longjin Bridge in T3b



Figure 73 Close-up of Granite Blocks Bonded Together by Sandy Mortar



Figure 74 Eastern Side Wall of Longjin Bridge in T3b



Figure 75 Eastern Side Wall and Footing Stones of Longjin Bridge in T3b

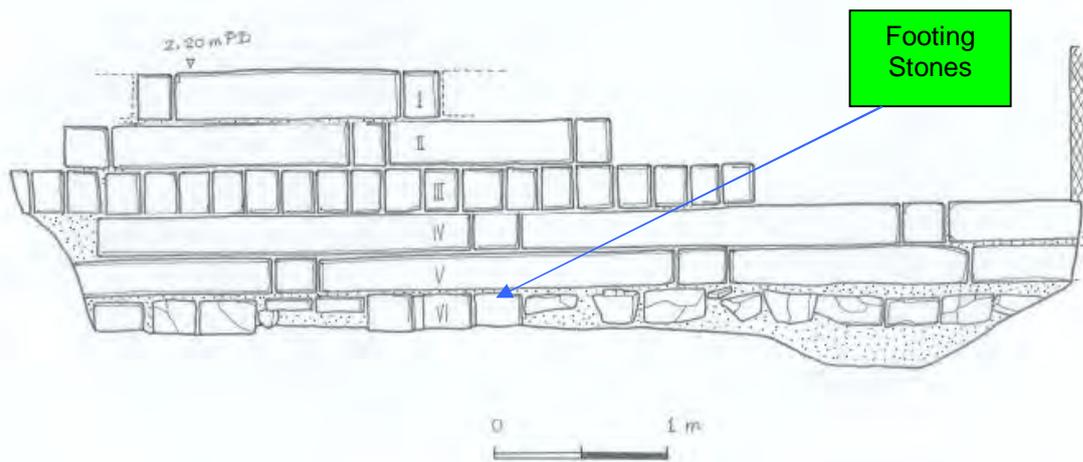


Figure76 Eastern Side Wall and Footing Stones of Longjin Bridge in T3b

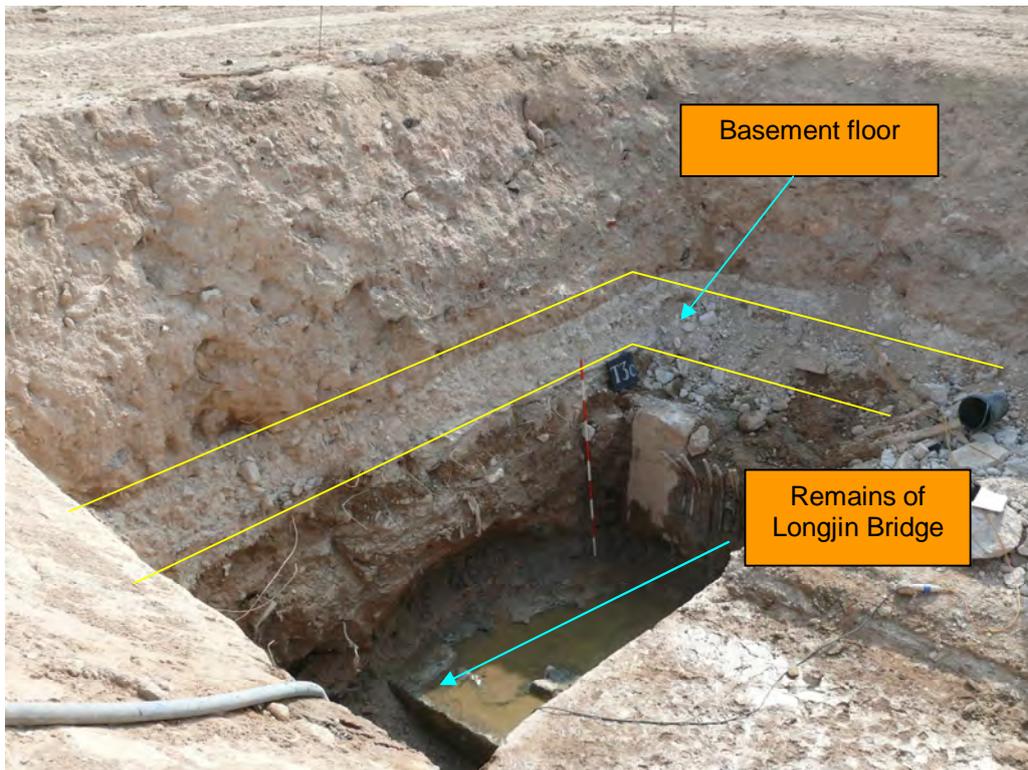


Figure 77 Southern Section of T3c



Figure 78 Top View of Remain of Longjin Bridge in T3c

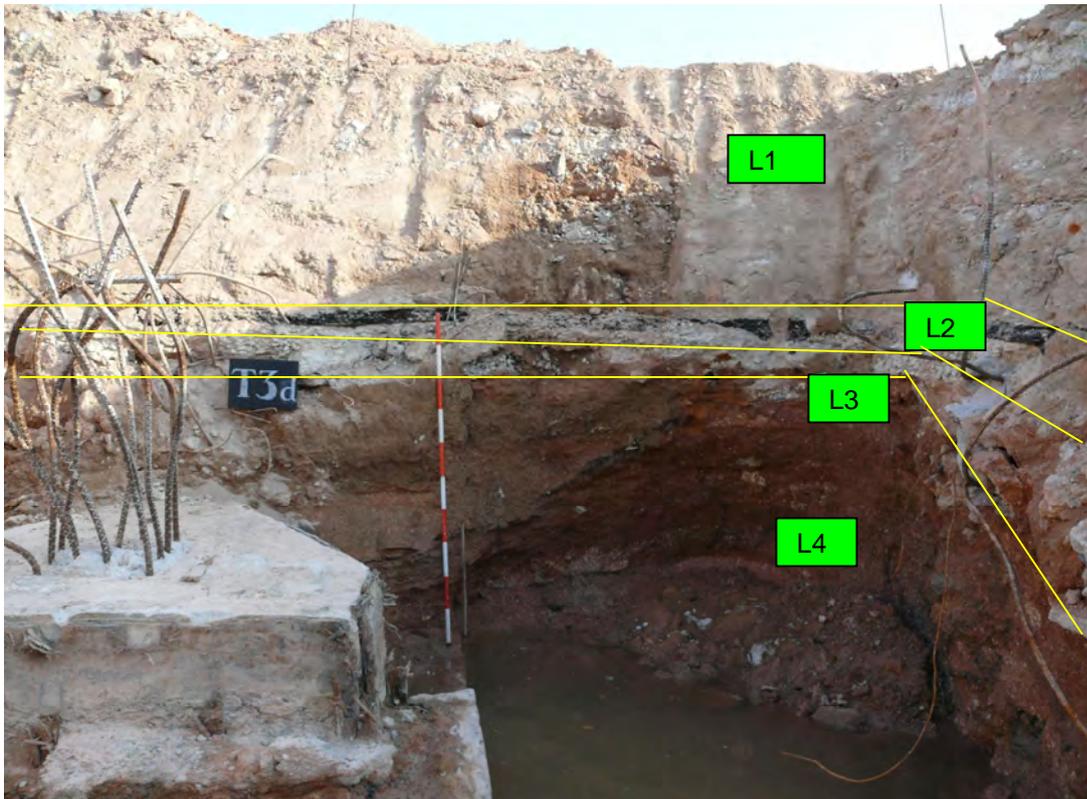


Figure 79 Southern Section of T3d



Figure 80 Top View of Remains of Longjin Bridge in T3d

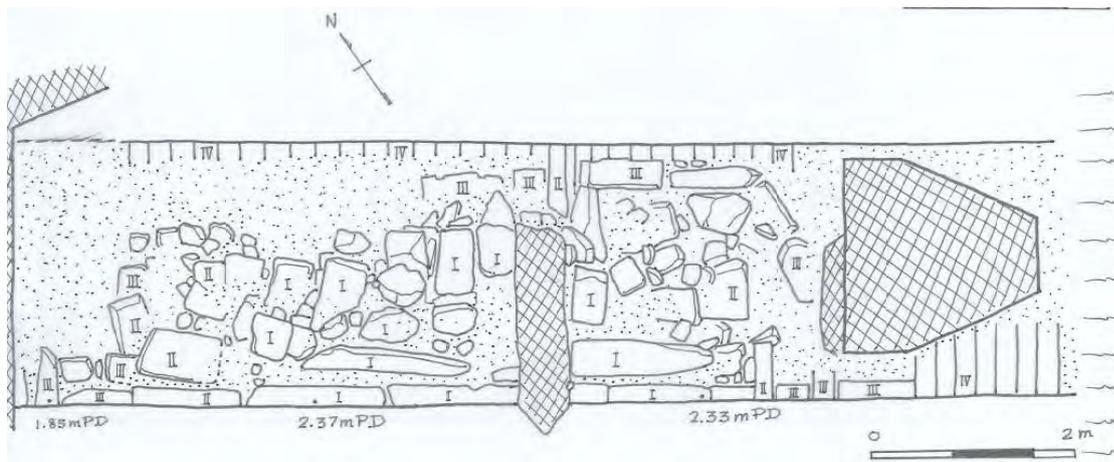


Figure 81 Plan of Remains of Longjin Bridge in T3d

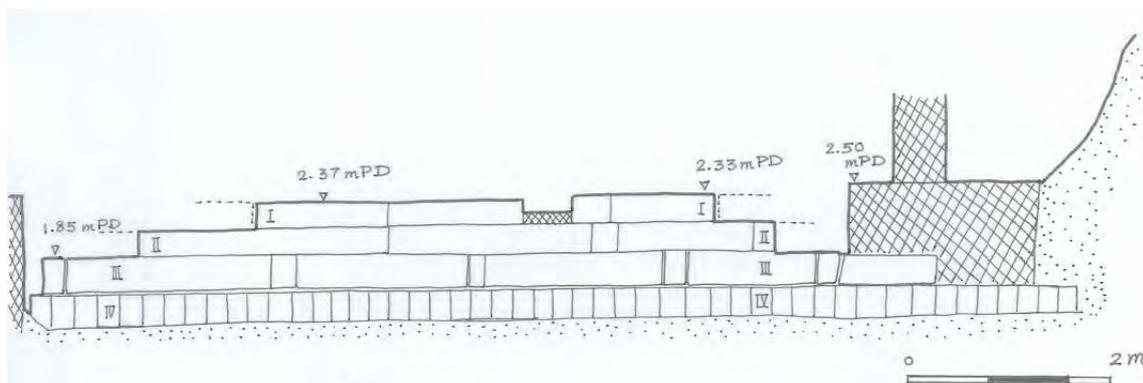


Figure 82 Western Side Wall of Longjin Bridge Remains in T3d

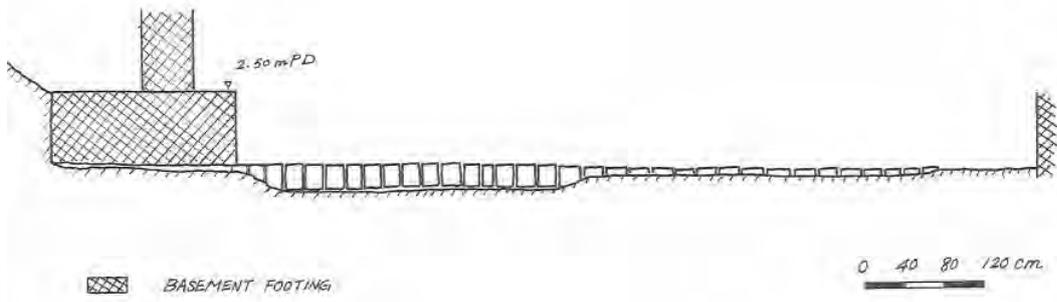


Figure 83 Eastern Side Wall of Longjin Bridge Remains in T3d



Figure 84 The Western Side Wall of Remain of Longjin Bridge Discovered in T3d



Figure 85 Porcelain Bowl, Cup, Plate and Spoon Fragment



Figure 86 Porcelain Double Happiness and Floral Pattern Bowls



Figure 87 Porcelain Tea Cups



Figure 88 Porcelain Pillow



Figure 89 Small Pottery Opium Containers



Figure 90 Front (left) and Back View of Porcelain Plate with Made in the Reign of Tongzhi



Figure 91 Marks of Porcelain Bowls



Figure 92 Marks of Porcelain Bowls



Figure 93 Glass Bottle Cover



Figure 94 Trader Mark "Dr. JSB Siegert & Sons" Bitters Bottle



Figure95 Medicine Glass Bottle



Figure 96 Pottery Pot and Broken Candle Stand



Figure 97 Pottery Pot Cover



Figure 98 Bone Point



Figure 99 Seeds revealed from T3b



Figure 100 Iron Slag revealed from T3b

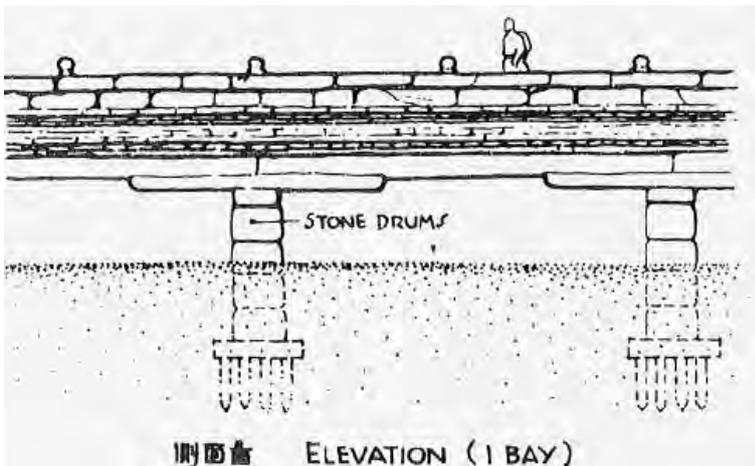


Figure 101 Elevation of Chinese Horizontal Bridge
(After Liang Ssu-sheng 2001 A Pictorial History of Chinese Architecture, Hong Kong, Joint Publishing Co., Ltd.)



Figure 102 A Masonry Pier of Central, 1874
(After Endacott, G.B 1973, A History of Hong Kong, Hong Kong, Oxford University Press)



Figure 103 Concrete Pier of Central, the 1880s, (After 劉潤和 等 2006 《香港走過的道路》，香港，三聯書店。)



Figure 104 Pier of Stonecutters Island, 1915
(After 鄭寶鴻 2000 《九龍街道百年》，香港，三聯書店。)



Figure 105 Pedder Wharf of Central, 1867 (After Hong Kong Museum of History 1982 The Hong Kong Album, Hong Kong, Urban Council)



Figure 106 Seaward End of a Masonry Pier of Sheung Wan , late 19th century, (After 鄭寶鴻 2000 《九龍街道百年》，香港，三聯書店。)

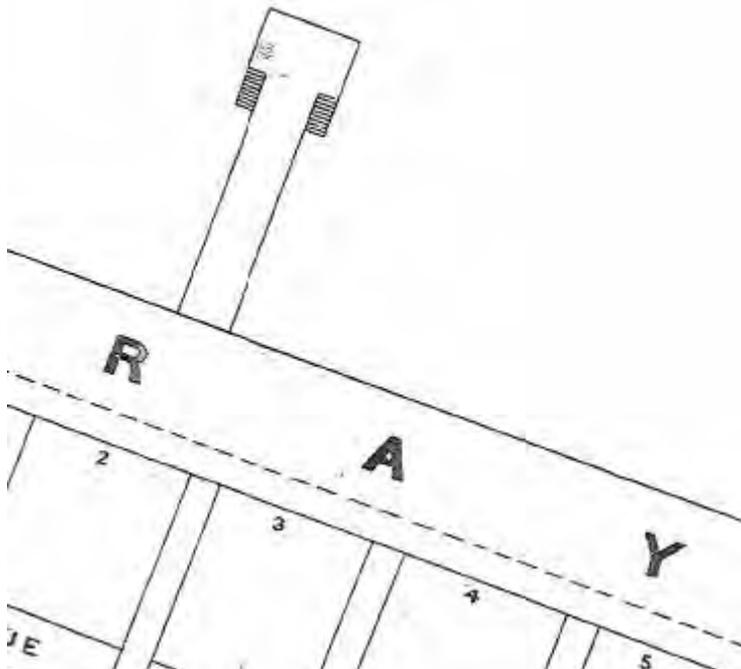


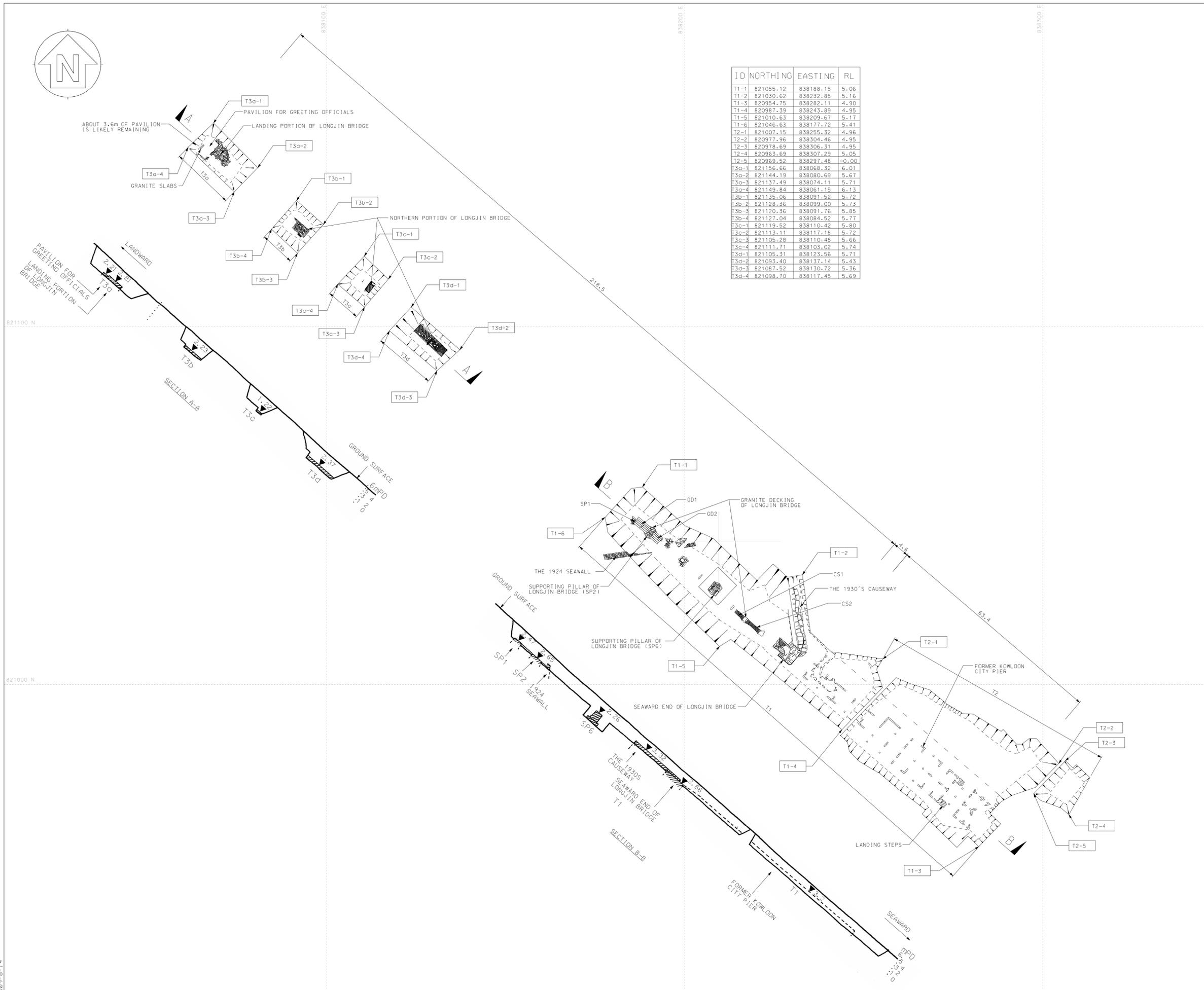
Figure 107 Pier of Wanchai (After Map of Victoria, Hong Kong, Sheet no.17, 1901)



Figure 108 Stone Block Arrangement of Northern Wall of Kowloon Walled City

Appendix A

General Layout Plan of Trench Location



ID	NORTHING	EASTING	RL
T1-1	821055.12	838188.15	5.06
T1-2	821030.62	838232.85	5.16
T1-3	820954.75	838282.11	4.90
T1-4	820987.39	838243.89	4.95
T1-5	821010.63	838209.67	5.17
T1-6	821046.63	838177.72	5.41
T2-1	821007.15	838255.32	4.96
T2-2	820977.96	838304.46	4.95
T2-3	820978.69	838306.31	4.95
T2-4	820963.69	838307.29	5.05
T2-5	820969.52	838297.48	-0.00
T3a-1	821156.66	838068.32	6.01
T3a-2	821144.19	838080.69	5.67
T3a-3	821137.49	838074.11	5.71
T3a-4	821149.84	838061.15	6.13
T3b-1	821135.06	838091.52	5.72
T3b-2	821128.36	838099.00	5.73
T3b-3	821120.36	838091.76	5.85
T3b-4	821127.04	838084.52	5.77
T3c-1	821119.52	838110.42	5.80
T3c-2	821113.11	838117.18	5.72
T3c-3	821105.28	838110.48	5.66
T3c-4	821111.71	838103.02	5.74
T3d-1	821105.31	838123.56	5.71
T3d-2	821093.40	838137.14	5.43
T3d-3	821087.52	838130.72	5.36
T3d-4	821098.70	838117.45	5.69

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- LEGEND:
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 - - - - TRENCH BOTTOM LINE
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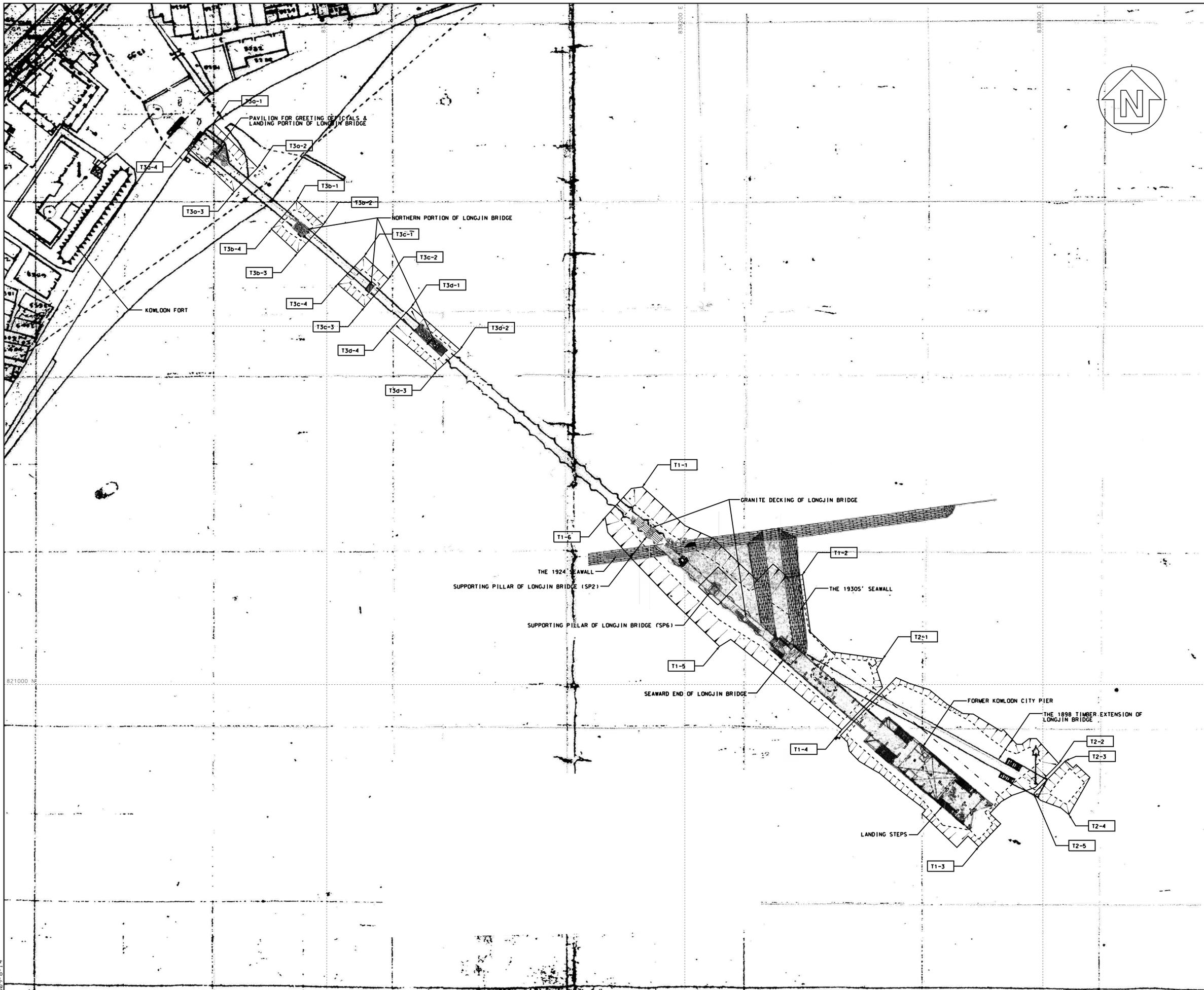
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**GENERAL LAYOUT PLAN OF
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Approved	-	Scale	A1 1:500 A3 1:1000
Sketch no	FIGURE 1.1A	Date	08-04-2009

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- HISTORICAL MAP SOURCES :
1. SURVEY DISTRICT NO.1, KOWLOON CITY SURVEY, NO. 5 CA. 1903 (ORIGINAL SCALE 1:1000) (PUBLIC ARCHIVE OFFICE)
 2. PLAN OF KOWLOON CITY PIER, CA.1936 (ORIGINAL SCALE 1:600) (LANDS DEPARTMENT)

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Sketch no	FIGURE 1.1B	Date	08-04-2009

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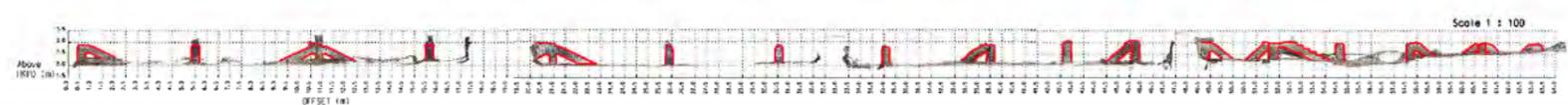
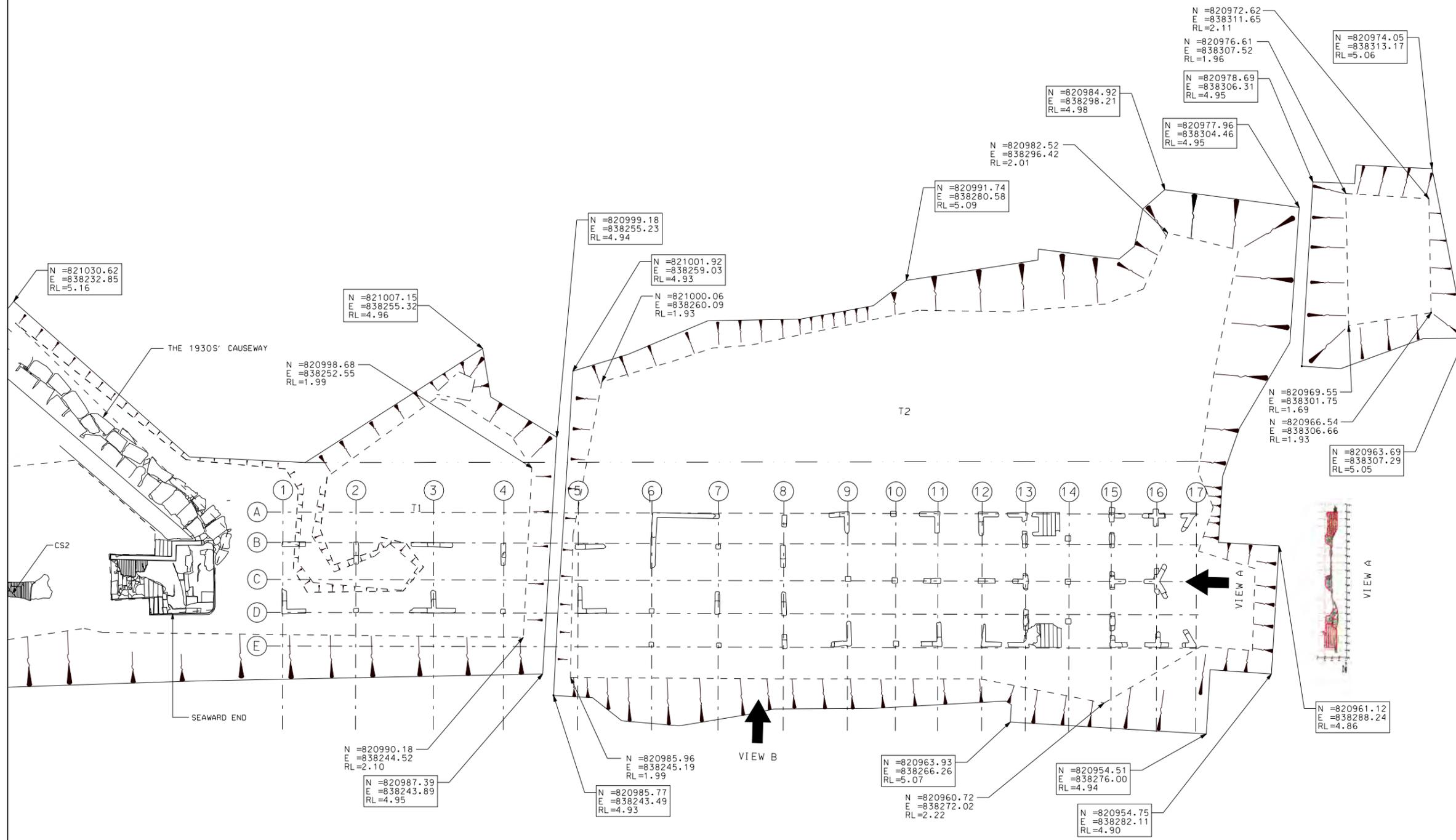
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- LEGEND:
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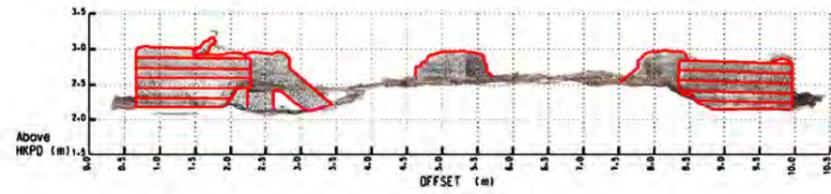
OVERVIEW OF TRENCH LOCATION
 OF LONGJIN BRIDGE AND
 FORMER KOWLOON CITY PIER- T1

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Sketch no.	FIGURE 1-2	Date	08-04-2009

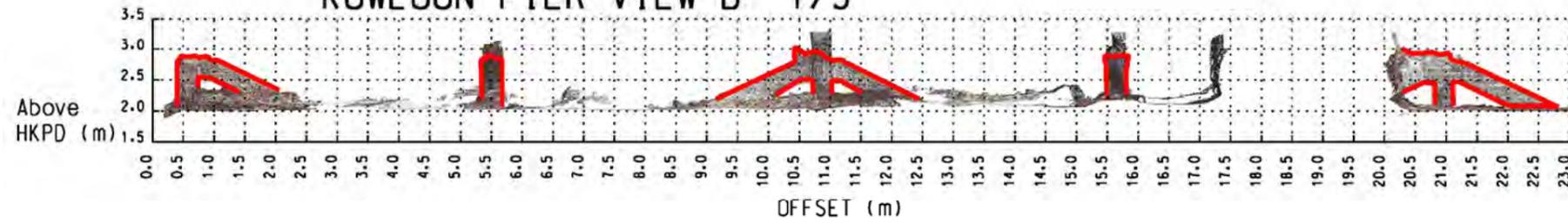
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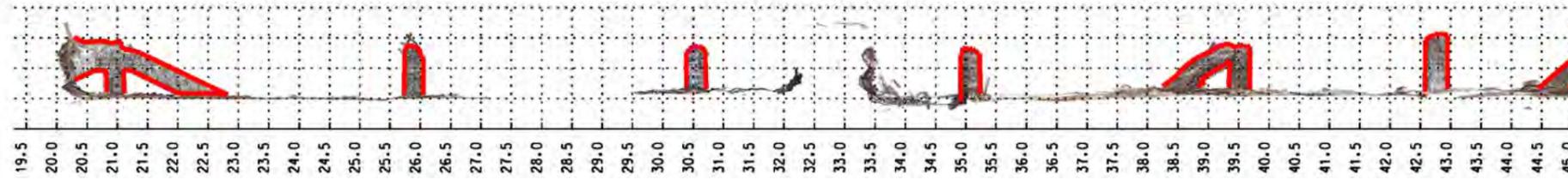
KOWLOON PIER VIEW A



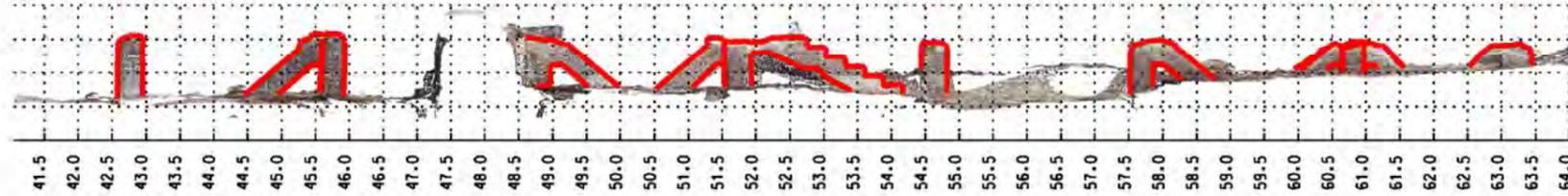
KOWLOON PIER VIEW B 1/3



KOWLOON PIER VIEW B 2/3



KOWLOON PIER VIEW B 3/3



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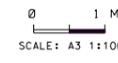
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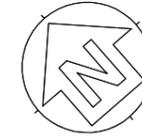
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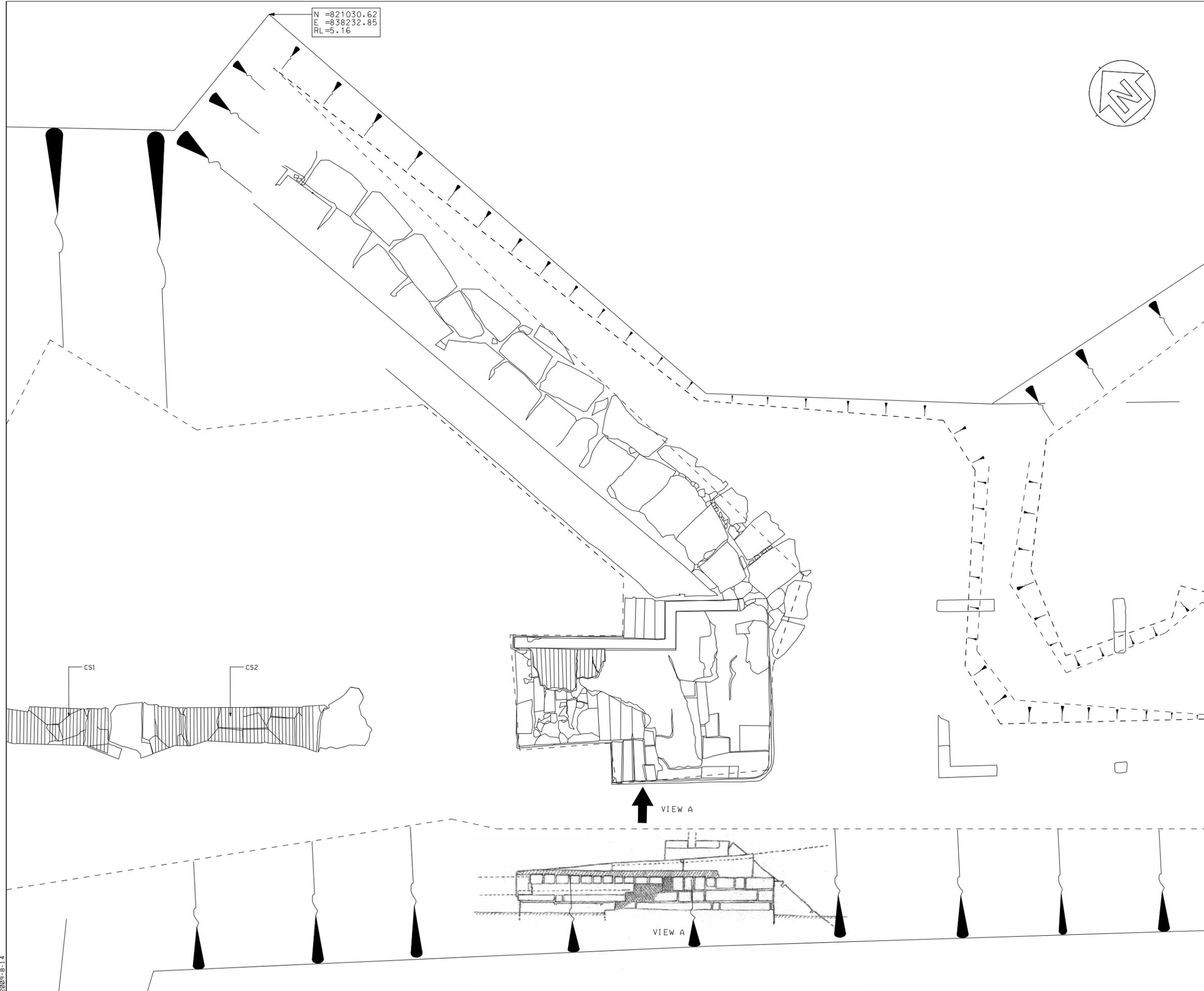
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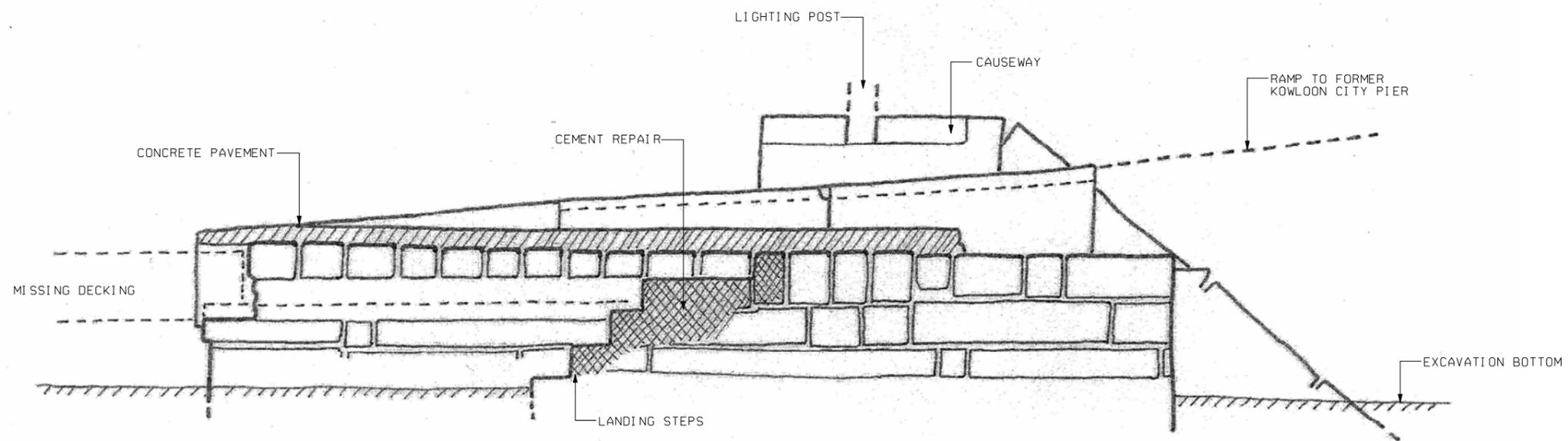
OVERVIEW OF TRENCH LOCATION
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VIEW A

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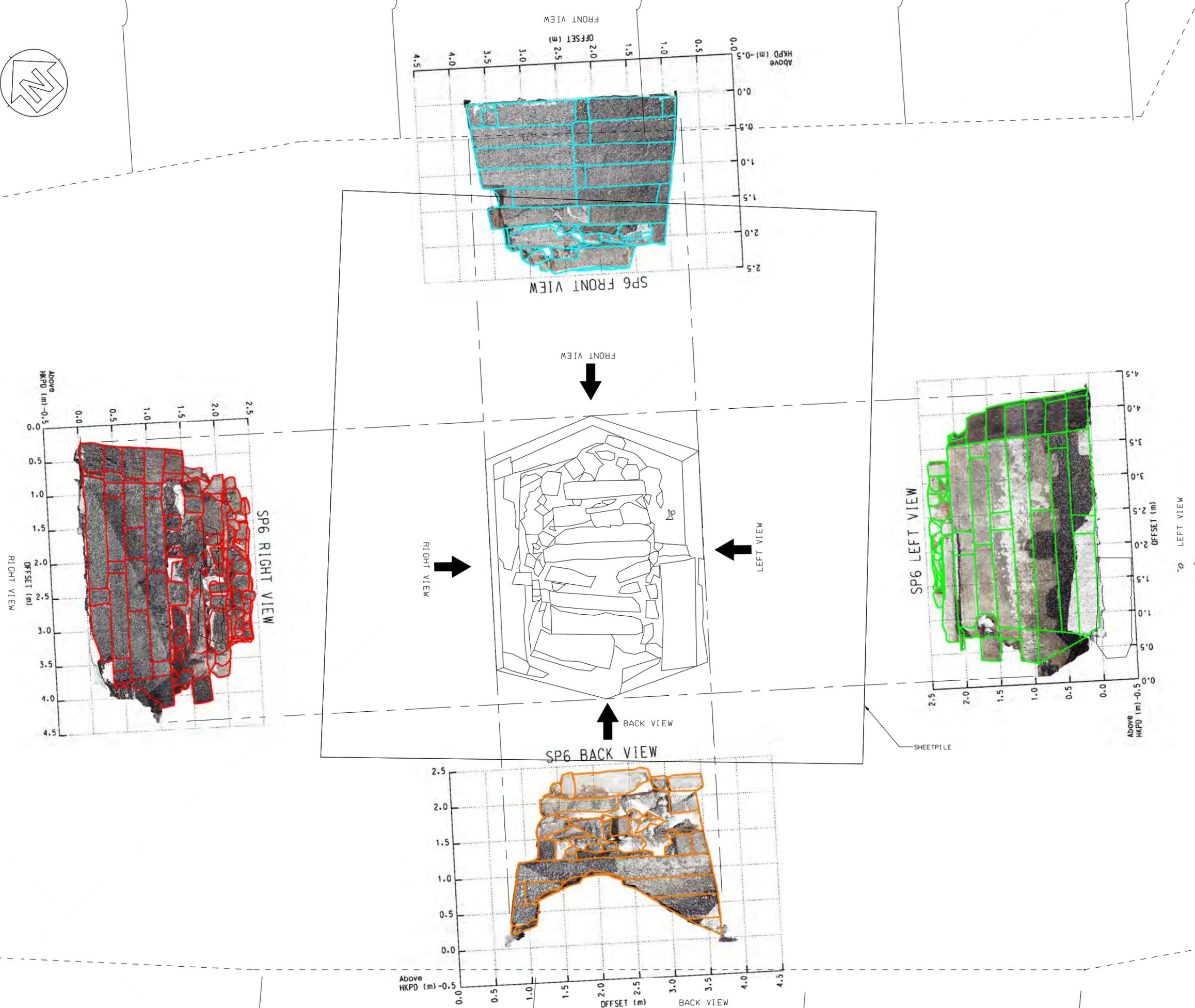
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Sketch no.	FIGURE 1.4	Date	08-04-2009

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- 5 THE REMAINS OF SP4 AND 1924 SEAWALL WERE UNEARTHED IN MAY 2008, BUT NOT EXCAVATED IN THE FURTHER EXCAVATION.

LEGEND:

- TRENCH TOP LINE
- - - - TRENCH BOTTOM LINE
- ||| EXCAVATION SLOPE

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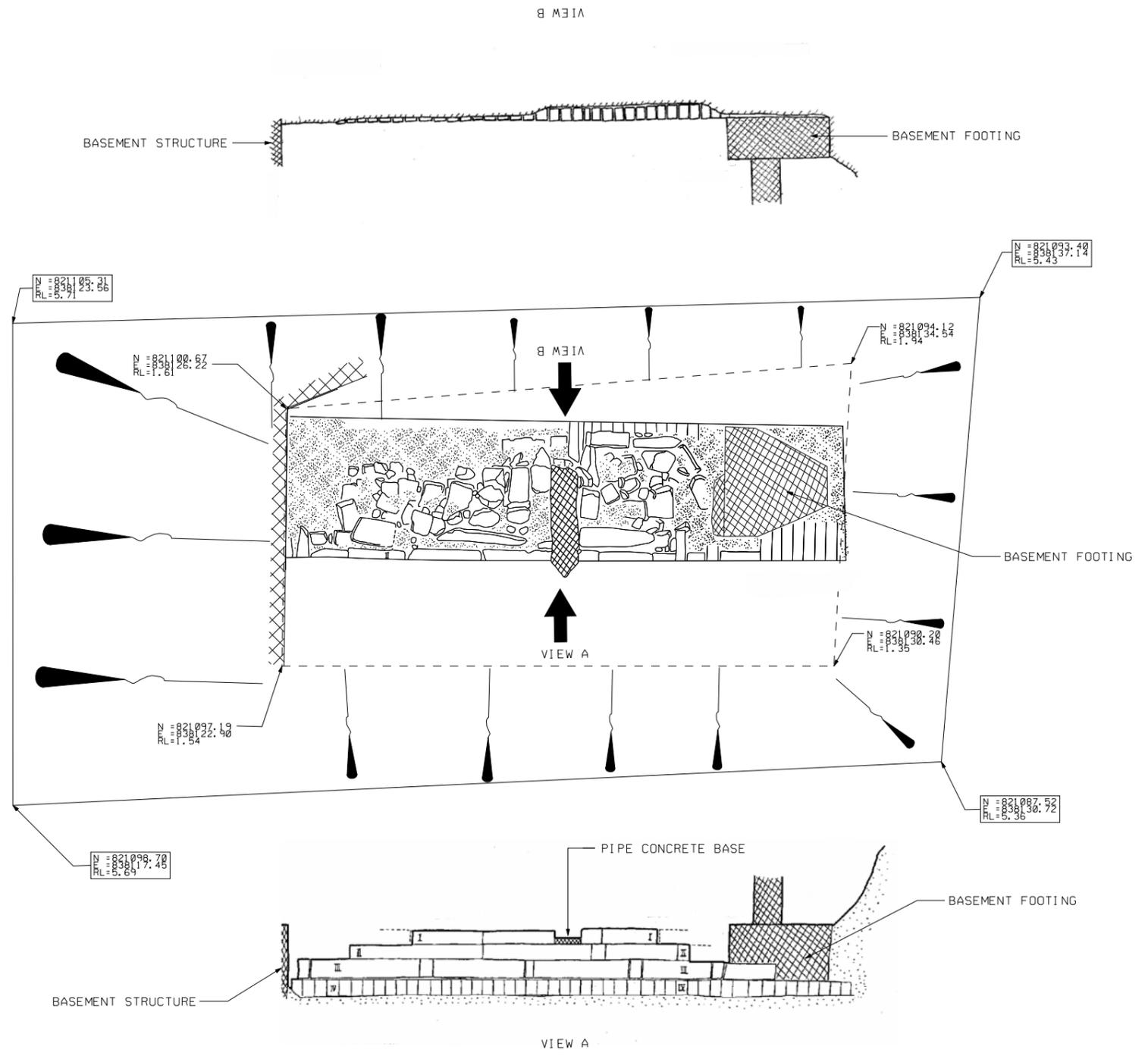
Drawing title
**OVERVIEW OF TRENCH LOCATION
OF LONGJIN BRIDGE & 1924 SEAWALL**

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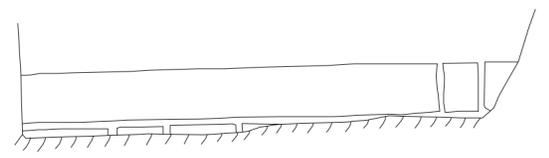
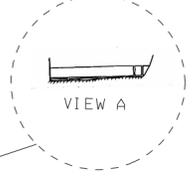
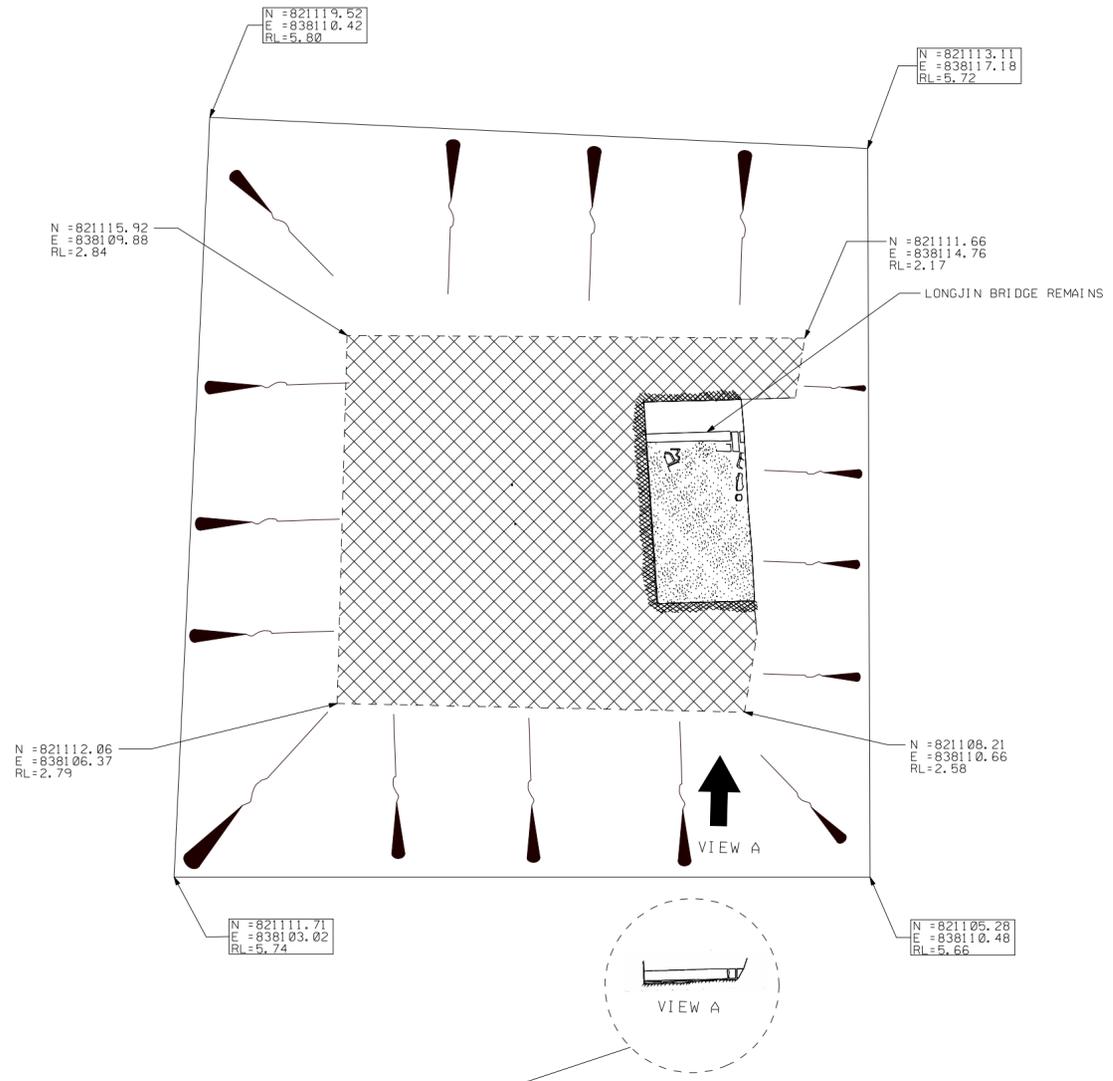
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 OVERVIEW OF TRENCH LOCATION
 OF LONGJIN BRIDGE - T3D

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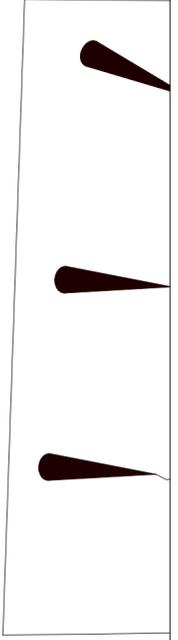




ENLARGED VIEW A
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- LEGEND:
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 - - - - TRENCH BOTTOM LINE
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OVERVIEW OF TRENCH LOCATION
OF LONGJIN BRIDGE - T3C

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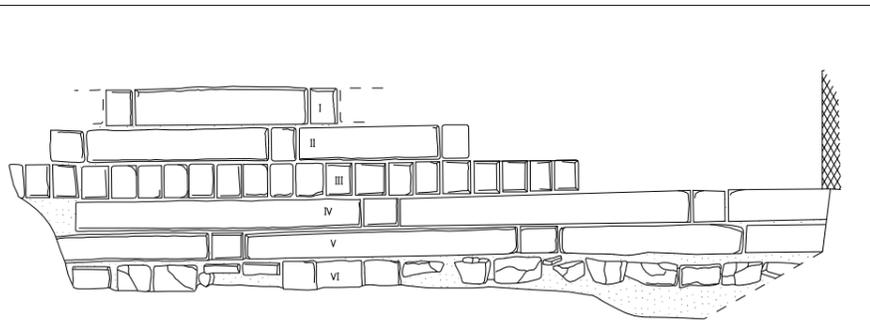
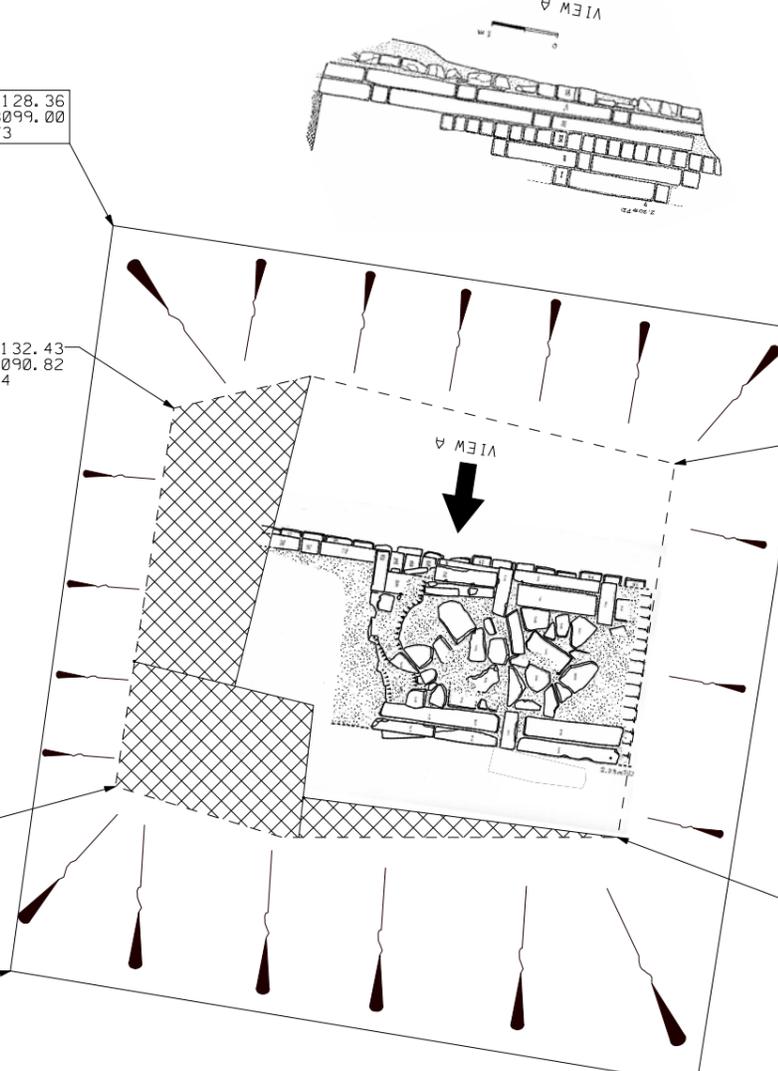
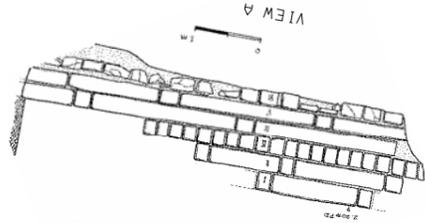
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ENLARGED VIEW A
SCALE: A3 1:50

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- LEGEND:
- TRENCH TOP LINE
 - - - TRENCH BOTTOM LINE
 - ▨ BASEMENT STRUCTURES OF FORMER TERMINAL BUILDING

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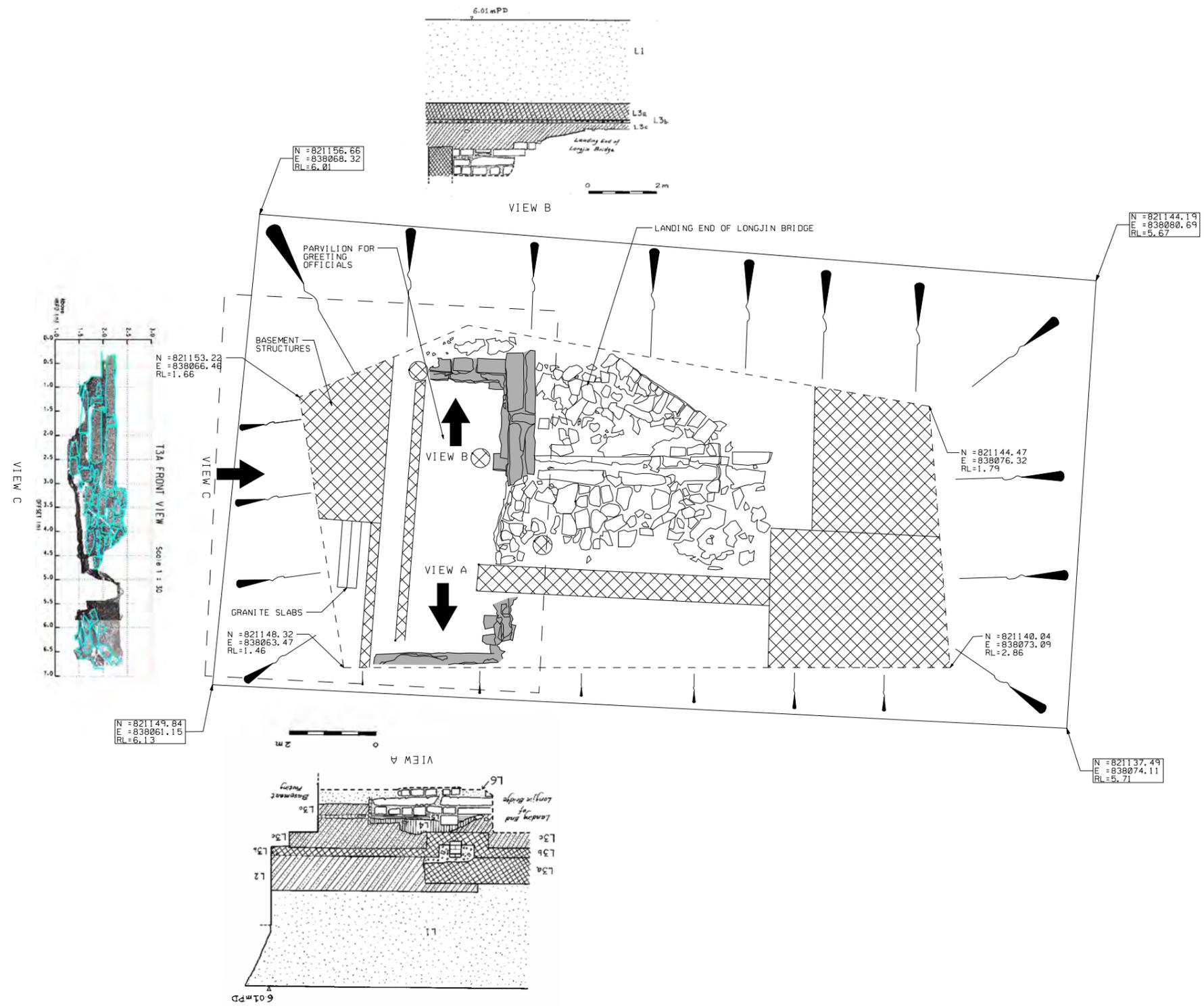
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OVERVIEW OF TRENCH LOCATION
OF LONGJIN BRIDGE - T3B

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Sketch no.	FIGURE 1.8	Date	08-04-2009

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- LEGEND:
- TRENCH TOP LINE
 - - - TRENCH BOTTOM LINE
 - ▣ BASEMENT STRUCTURES OF FORMER TERMINAL BUILDING
 - ▨ PAVILION EDGE
 - ↕ EXCAVATION SLOPE

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 OVERVIEW OF TRENCH LOCATION
 OF LONGJIN BRIDGE - T3A

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Appendix B

***Longjin Bridge and Formation Kowloon City Pier
Locations in Outline Zoning Plan***

Appendix C

Further Archaeological Excavation – Structural Assessment Report

**Agreement No. CE 35/2006(CE)
Kai Tak Development Engineering Study
cum Design and Construction of Advance Works
– Investigation, Design and Construction**

**FURTHER ARCHAEOLOGICAL EXCAVATION –
STRUCTURAL ASSESSMENT REPORT**

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ABSTRACT

Inspections were conducted on site to assess the structural integrity of the remains of Longjin Bridge and Former Kowloon City Pier listed below:

As observed on site, all the remains identified are standalone elements resting on soils individually. Complicated structures involving structural member(s) supported on another member(s) (such as a bridge deck wholly supported by supporting piers or abutments) were not discovered.

The granite decking composed of 5 nos. and 9 nos. of granite slabs placed longitudinally are found in the seaward side and landward side of the Bridge respectively. The supporting pillars are solid mass granite structures in hexagonal shape supported by granite footing stones and cobble layer. The seaward end structure of Longjin Bridge, the wall sections of Longjin Bridge and the foundation of Pavilion for Greeting Officials are also found to be solid mass granite structures. The landing steps and supporting pillars of Former Kowloon City Pier are concrete structures, with rebars found in some of the remains.

In general, all the items of remains identified on site are currently in a stable condition. However, the loose fragments, such as individual or small granite blocks, concrete or sandy mortar, at the surface of the remains, will likely be subject to movement, should there be external disturbance, such as winds, stormwater, surface runoff or groundwater/tidal movement etc. Therefore, it is recommended that these loose fragments should be secured by proper means.

The possible sources of impacts on the structural integrity of the remains of Longjin Bridge and Former Kowloon City Pier have been identified. These include disturbance due to adjacent developments, stormwater and surface runoff, groundwater / tidal water and disturbance due to illegal access by humans to the remains.

In view of the possible impacts identified above, and with reference to the Development Bureau Technical Circular (Works) No.11/2007 "Heritage Impact Assessment Mechanism for Capital Works projects", it is recommended to delineate a buffer zone of 50m measured horizontally away from the identified remains of Longjin Bridge and Former Kowloon City Pier (which shall include the space vertically above and the ground below the plan area of the control zone) for better control over the potential impacts arising from the developments adjacent to the remains.

1 INTRODUCTION

1.1 Background

- 1.1.1 In order to ascertain the possible remains of the Longjin Bridge and archaeological potential in the North Apron area of the former Kai Tak Airport, the archaeological investigation of the environmental impact assessment under Agreement No. CE 35/2006(CE) Kai Tak Development Engineering Study was completed in May 2008. During the archaeological investigation, the survived sections of Longjin Bridge were successfully identified in the Trench AA5.
- 1.1.2 The Longjin Bridge represents a unique and valuable historical structure in the 19th century Hong Kong history. Therefore, it has been recommended that the survived sections of the Longjin Bridge be preserved in-situ and integrated into the future Kai Tak Development.
- 1.1.3 As stipulated in the Section 13.5 of the Revised Archaeological Impact Assessment Report (the Revised Report) for the Schedule 3 Designated Project “Kai Tak Development” undertaken under Agreement No. CE 35/2006(CE), the mitigation measures in form of further archaeological investigations are recommended to be carried out along the known and predicted alignment of the Longjin Bridge and the Old Kowloon City Pier.
- 1.1.4 Maunsell Consultants Asia Limited (MCAL) was instructed by Civil Engineering and Development Department (CEDD) of the Government of the Hong Kong Special Administrative Region to undertake the further archaeological excavation at the North Apron area of the former Kai Tak Airport under an Additional Services of Agreement No. CE 35/2006(CE). Under the Additional Services, MCAL was required to conduct an assessment of the visual structural integrity of the remains of Longjin Bridge identified during the further archaeological excavation.
- 1.1.5 The further archaeological excavation works were carried out during the period from 31 October 2008 to 20 February 2009 under supervision of archaeologist Mr. Steven Ng. The field recording and land surveying of the archaeological remains identified were completed on 23 February 2009.

1.2 Objective and Structure of Report

- 1.2.1 The objective of this report is to present the findings of the assessment of visual structural integrity of the Longjin Bridge and Former Kowloon City Pier remains identified during the further archaeological excavation.
- 1.2.2 Following this introductory section, the structure of this Further Archaeological Excavation Report is set out below:
- Section 2 reviews the documents examined for carrying out the structural assessment and provides a description of the structure of Longjin Bridge and Former Kowloon City Pier;
 - Section 3 presents the details and findings of the visual inspections of the remains identified on site;
 - Section 4 identifies possible impacts on the structural integrity of the remains and presents recommendation; and
 - Section 5 presents a summary of the report and recommendation.

2 DESKTOP STUDY

2.1 Documents Examined

2.1.1 Reference has been made to the following documents in carrying out the assessment of visual structural integrity of the Longjin Bridge remains identified during the further archaeological excavation:

- Territory Development Department, 2000 *Comprehensive Feasibility Study for the Revised Scheme of South East Kowloon Development* (Agreement No. CE 32/99), Section 12.4.2 .3, Hong Kong, Hong Kong SAR Government.
- Archaeological Assessments Ltd. 2002 *Comprehensive Feasibility Study for the Revised Scheme of Southeast Kowloon Development – Archaeological investigation*, Territory Development Department.
- ERM HK Ltd. 2003 *Southeast Kowloon Development, Site Investigation at North Apron of Kai Tak Airport: Archaeological Investigation – Findings for Trenches AT1-AT10*.
- Ove Arup & Partners HK Ltd 2001. *Comprehensive Feasibility Study for the Revised Scheme of South East Kowloon Development – Cultural Heritage Impact Assessment*. Territory Development Department.
- Maunsell Consultants Asia Limited. 2008. *Archaeological Impact Assessment Report of Engineering Study cum Design and Construction of Advance Works –Investigation, Design and Construction*.
- Poul Beckmann and Robert Bowles, 2004. *Structural Aspects of Building Conservation*.
- 魯金 1991 《九龍城寨史話》，香港，三聯書店。科大衛、陸鴻基、吳倫霓霞 1986 《香港碑銘彙編》，第一冊，香港，市政局。 1903 *Map of Survey District No.1 of Kowloon City Survey No.5* .
- 科大衛、陸鴻基、吳倫霓霞 1986 《香港碑銘彙編》，第一冊，香港，市政局。
- 何佩然 2004 《地換山移：香港海港及土地發展一百六十年》，香港，香淘商務印書館。

2.2 Description of structure

2.2.1 The history of the construction and modifications phases of the Longjin Bridge and Former Kowloon City Pier has been reviewed. The Longjin Bridge and Former Kowloon City Pier were built in 1873 and 1920s respectively. Longjin Bridge underwent four phases of modification. Details are described in the paragraphs below.

2.2.2 Construction: in 1873, the original Bridge was built of granite, measuring 199.998m long and 1.998m wide, and was laid in the direction of N131°. The works were completed in 1875¹.

2.2.3 At the landward end of the Bridge, there was a substantial two-storey pavilion. It was used to greet Chinese imperial officials. Locals named it as the “Pavilion for Greeting Officials”. Two stone tablets were erected inside the pavilion with inscriptions on them recording the 1873 and 1892 works of the Bridge. The pavilion was demolished during the reclamation of Kai Tak residential development between 1916 and 1920. The entrance stone tablet of the pavilion which reads as “Longjin (龍津)” still remained at headquarter of Lok Sin Tong (樂善堂) in Kowloon City.

¹ 魯金 1991 《九龍城寨史話》，香港，三聯書店。科大衛、陸鴻基、吳倫霓霞 1986 《香港碑銘彙編》，第一冊，香港，市政局。 1903 *Map of Survey District No.1 of Kowloon City Survey No.5* .

- 2.2.4 Phase 1 modification: in 1892, a timber extension was added to the seaward end of this Bridge, measuring 79.99m long. The seaward end was extended, measuring 3.999m wide. The extension works were funded by Lok Sin Tong, a local charitable organization of Kowloon City Market, established in the 1880s. The timber extension was laid in the direction of N118°. ²
- 2.2.5 Phase 2 modification: Longjin Bridge was repaired by timber works and the works were completed in 1900. ³
- 2.2.6 Phase 3 modification: in 1910, the timber extension of the Bridge was replaced by a concrete structure. A wooden shelter was built at the seaward end of the timber extension. ⁴
- 2.2.7 Phase 4 modification: between 1916 and the early 1920s, the granite section of the Bridge was demolished during past site works associated with reclamation for the residential development in Kowloon City. ⁵
- 2.2.8 Kowloon City Pier: the Longjin Bridge was given a new name, the Kowloon City Pier, upon completion of the final extension works in the early 1920s. The 1892 original timber extension of the Bridge was demolished and a new concrete extension of about 60m length was added to the seaward end of the original Longjin Bridge. The distance of the seaward end of the Former Kowloon City Pier to the 1924 seawall measured 112m which is based on the early 1930s historic map in scale of 1:2,400. A causeway in form of seawall was constructed for the Former Kowloon City Pier in 1933 and the Pier was rebuilt between 1936 and 1937⁶. The duration of service of the Former Kowloon City Pier is from the early 1920s to August 1942.
- 2.2.9 Buried Period: the buried history of the Bridge and the Pier reflects the progress of urban development of Kowloon Bay since 1916. The northern section of the Bridge was buried in reclamation land due to development of Kai Tak Bund. However, the southern section of the Bridge in this time remained exposed and a new concrete extension of Bridge, namely Former Kowloon City Pier, was constructed and linked with the southern section of the Bridge. For Japanese military reason, both the southern section of the Bridge and the Pier were demolished and buried in a new reclamation land of Kai Tak Airport in 1942. Due to increase in demand for civil aviation in the late 1950s, a new Kai Tak Terminal Building was opened in 1960s. During construction of the Terminal Building basement, the decking of the northern section of the Bridge was demolished.

² 科大衛、陸鴻基、吳倫霓霞 1986 《香港碑銘彙編》，第一冊，香港，市政局。

³ Ove Arup & Partners HK Ltd 2001 *Comprehensive Feasibility Study for the Revised Scheme of South East Kowloon Development* (Agreement No. CE 32/99), Section 12.6.6.6, Hong Kong, Territory Development Department of Hong Kong SAR Government.

⁴ Territory Development Department, 2000 *Comprehensive Feasibility Study for the Revised Scheme of South East Kowloon Development* (Agreement No. CE 32/99), Section 12.4.2 .3, Hong Kong, Hong Kong SAR Government.

⁵ 魯金 1988, 1997 《九龍城寨史話》，香港，三聯書店。

⁶ 何佩然 2004 《地換山移：香港海港及土地發展一百六十年》，香港，香港商務印書館。

3 INSPECTION FINDINGS

3.1 Details of Inspections

3.1.1 The further archaeological excavation works were carried out during the period from 30 October 2008 to 20 February 2009.

3.1.2 The items of remains identified during the archaeological excavation are listed below:

- Granite decking (GD1, GD2);
- Supporting pillars (SP1, SP2 and SP6);
- Seaward end (also as Pier-end-structure, PES) of Longjin Bridge;
- Wall sections of Longjin Bridge;
- Landing steps and supporting pillars of Former Kowloon City Pier; and
- Foundation stones of side walls of Pavilion for Greeting Officials.

3.1.3 Inspections were conducted on site to assess the structural integrity of the remains of Longjin Bridge identified. Initial inspection was first conducted on 27 November 2008 to provide an overview of the remains identified as well as to identify key structures. Detailed inspections were then conducted on 13 December 2008 and 22 January 2009 to examine the structural integrity of each item of the remains identified. Details of the inspections are summarized in **Table 3.1** below:

Table 3.1 Details of Site Inspections

Date	Form of Inspections	Representatives of the Consultants
27 November 2008	Visual	Steven Ng (archaeologist) Anthony Lok (civil and structural engineer)
13 December 2008	Visual	Steven Ng (archaeologist) Anthony Lok (civil and structural engineer)
22 January 2009	Visual	Steven Ng (archaeologist) Anthony Lok (civil and structural engineer)

3.1.4 As observed on site, all the remains identified are standalone elements resting on soils individually. Complicated structures involving structural member(s) supported on another member(s) (such as a bridge deck wholly supported by supporting piers or abutments) were not discovered. Therefore, the structural assessment of the remains found was conducted based on visual inspection of the structural integrity of the individual items of remains only.

3.1.5 Details of the existing structural conditions of each of the Longjin Bridge remains examined during the inspections on site, as well as discussion of the inspection findings, are presented in the paragraphs below.

3.2 Inspection Findings of Remains of Longjin Bridge

3.2.1 The findings of the visual inspection of the remains of the Longjin Bridge are described and discussed below.

Granite decking (GD1 & GD2) and Supporting Pillar (SP1 & SP2) (Figure C1)

3.2.2 GD1 and GD2 are one and half span of granite decking and two supporting pillars (SP1 and SP2) were discovered adjacent to the 1924 seawall. The granite decking is composed of five nos. of beams placed longitudinally. The GD2 is a half span is loosely supported by one end at the supporting pier (SP2) and its stability currently relies on the soil support beneath the decking. GD1 is a full span loosely supported by the supporting pier (SP2) at one end and some granite blocks of supporting pier (SP1) at the other end.

- 3.2.3 The condition of the granite blocks in the decking GD1 and GD2 are in general intact except that a major crack in transverse direction is found at the mid-span location. Similar to the half span (GD2), the stability of this full span (GD1) also relies on the soil support beneath the decking. Any further removal of the soil beneath or around the granite decking (GD1 & GD2) would likely affect the stability of the granite decking, in particular the joint between the decking and the supporting piers. Therefore, it is important to prevent any ground movement, such as settlement and soil erosion/removal, beneath and adjacent to the granite decking.
- 3.2.4 Based on the findings of the SP6, it is believed that the supporting pillar (SP2) is constructed of 7 layers of granite blocks with rock and sandy mortar infill. The exposed surface area of the supporting pillar is in hexagonal shape with the top of the pillar covered with granite blocks laid in transverse direction. It is believed that the hexagonal shape of the pier is designed in order to reduce the drag force induced by current. As observed on site, the condition of granite blocks on top of the supporting pillar is generally intact. Although it is considered that further removal of the soil on the sides of the supporting pillar should not affect its stability, it is advised not to do so in order to avoid causing possible damage on the adjacent granite decking.
- 3.2.5 In addition to the supporting pillar (SP2), there are some granite blocks which are believed to be part of another supporting pillar (SP1) located at the other end of the full span (GD1). The supporting pillar (SP1) has been disturbed with about half of the pillar, in terms of plan area, observed on site. The surface layer of the granite blocks on top of the pillar was removed exposing the rock and sandy mortar infills. Protection of these rock and sandy mortar infills should be provided to avoid loss of the exposed fine sandy mortar or rock infill materials due to environmental disturbance, such as wind or surface runoff.

Seaward End of Longjin Bridge (Figures C2-C7)

- 3.2.6 Based on the site inspection, the seaward end (pier-end-structure, PES, is constructed of granite blocks on the sides and top surface with rock and sandy mortar infills. On the top of granite blocks of the seaward end, there are three layers of concrete surfacing which were paved subsequent to construction of the granite structures.
- 3.2.7 The seaward end had an overall length of 6.90m and was 4.94m in width. The top of the seaward end is at about +2.66mPD. The structure of the seaward end is believed to be found on coarse marine sand at about elevation of -0.8mPD.
- 3.2.8 The condition of the granite blocks on the top surface and the sides are generally good, except that a small portion of the granite blocks on the top surface at the north-western end was removed, exposing the rocks and sandy mortar infills inside the granite structure. Protection of these rock and sandy mortar infills should be provided to avoid loss of the exposed fine sandy mortar or rock infill materials due to environmental disturbance, such as wind or surface runoff. In addition, a crack was observed at the bottom layer of granite blocks underlying the rock and sandy mortar infills at the northern tip of the seaward end structure. Excavation of the supporting soil, especially underneath the cracked location, should be prohibited to prevent local collapse of the structure.
- 3.2.9 Part of the concrete surfacing on top of the granite structure was demolished in 1942. The remaining concrete surfacing found on site was observed with a few cracks. Signs of cement repair were also observed on the top concrete surfacing. Since the concrete surfacing rests on the granite structure at a very gentle slope, the cracks identified would not have significant impact on the stability of the concrete surfacing.
- 3.2.10 Furthermore, landing steps are found at the eastern and western sides of the seaward end structure. The eastern landing steps are generally in intact condition, while local damage to the surface of the western landing steps was found, exposing the rock and sandy mortar infills. Furthermore, a granite block is currently loosely located on top of the western landing steps which should be secured to prevent possible displacement due to disturbance by environments.

Supporting Pillar at SP6 (Figures C8-C14)

- 3.2.11 Deep excavation was carried out down to sea deposit layer (-2.0mPD) in order to expose the whole structure of supporting pillar SP6. It was found that the side walls of the supporting pillar SP6 is composed of seven layers of granite blocks placed in hexagonal shape. The side walls of the supporting pillar were infilled with granite blocks or rocks arranged in an orderly manner and bound together by sandy mortar in brown.
- 3.2.12 Below this hexagonal pier are three layers of granite blocks arranged in longitudinal and transverse directions respectively which act as the footing for the supporting pillar. The footing of the pillar is then supported by a thick layer of cobbles, which serve as the rubble mound foundation for supporting pillar. The footing together with the rubble mound foundation helps to spread the loading of the supporting pillar onto the underlying stratum.
- 3.2.13 Each of the footing stones measured 300mm (W) x 200mm (H) x 1500mm (L). The footing stones and the supporting cobbles are founded on grey coarse marine sand. The lowermost of the third layer of footing stone are at elevation of -2.0mPD.
- 3.2.14 The granite decking of the Longjin Bridge is believed to rest on the top of this hexagonal supporting pier SP6. As observed on site, the whole structure of the supporting pillar SP6 is in general stable. However, since the surface layer of granite blocks on the top was removed, a large area of the rock and sandy mortar infills was exposed. Individual loose fragments of granite blocks and fine sandy mortar materials were observed on the top portion of the supporting pillar. Excessive vibration should therefore be prevented to avoid displacement of the loose materials which may affect the overall stability of the structure.
- 3.2.15 Furthermore, appropriate protection measure should be adopted to prevent erosion of the exposed sandy mortar or loose fragments of granite blocks and fine sandy mortar materials due to disturbance by environmental disturbance, such as wind or surface runoff. Excavation of the marine sand beneath or adjacent to the supporting pillar SP6 should also be strictly prohibited in order to protect the structure of the supporting pillar SP6 from collapse.

Wall section of Longjin Bridge (Figures C15-C21)

- 3.2.16 The landward portion of Longjin Bridge is a solid mass. A number of the wall sections of the Longjin Bridge were discovered in T3b, T3c and T3d. These wall sections are composed of side walls of granite blocks with rock and sandy mortar infills. The walls are in general in a stable condition but some of the rockfills loosely spread over the area enclosed by the foundation walls and may be subject to movement should there be external disturbance, such as surface runoff or groundwater. Therefore, appropriate protection measures should be adopted to prevent movement of the loose remains on top of the wall sections.
- 3.2.17 It is observed that the wall sections of Longjin Bridge comprise at least seven layers of granite blocks arranged in longitudinal and latitudinal directions respectively which act as the side wall for the landward portion of the Bridge. The range of side wall granite blocks measured between 1000mm (L) x 300mm (W) x 200mm (H) and 2200mm (L) x 300mm (W) x 200mm (H).
- 3.2.18 The landward portion of the Longjin Bridge is found on a layer of granite stones arranged in transverse direction which act as the footing of the structure. The thickness of the footing stones is about 200mm. Below the footing stones is a stratum of grey coarse marine sand. Excavation of the soil below and adjacent to the footings of the wall sections should be prohibited to prevent collapse of the wall sections.

3.3 Inspection Findings of Remains of Former Kowloon City Pier

- 3.3.1 A total of 47 supporting pillars and 2 landing steps of Former Kowloon City Pier were discovered, as shown in **Figures C22 to C25**. The decking structure was demolished already.

- 3.3.2 Based on the remains of the supporting pillars observed on site, the Pier is believed to be piled deck structure, in which a concrete deck slab was supported by vertical and inclined pillars. From structural point of view, the vertical pillar mainly provided vertical support whereas the lateral resistance of the Pier derived from the inclined pillars. The concrete pillars of the Pier were classified into the following four types with the number of each type indicated.
- Type 1: single vertical pillar (14 nos.);
 - Type 2: single vertical pillar with one inclined pillar (11 nos.);
 - Type 3: single vertical pillar with two inclined pillars (15 nos.); and
 - Type 4: single vertical pillar with more than two inclined pillars (7 nos.).
- 3.3.3 The 2 landing steps are in good condition, but the supporting structure at the upper end of the landing steps have been damaged. The stability of the landing stairs currently relies on the soil underneath the stairs.
- 3.3.4 Excavation of the soil beneath the landing steps should therefore be avoided in order to protect the remains from collapse. Backfilling of the soil beneath the landing stairs is proposed to enhance its stability but should be carried out in a careful manner.
- 3.3.5 The 47 nos. of supporting pillars are in stable condition, except for the loose fragments above and around the pillars. Protection measures should be adopted to prevent movement of these loose fragments due to external disturbance.
- 3.3.6 In addition, protruding rebars were observed in some of the remains of concrete structures. Protection measures of the exposed rebar should be adopted to prevent further corrosion of the re-bars.

3.4 Inspection Findings of Remains of Pavilion for Greeting Officials

- 3.4.1 Remains of the three side foundation wall stones and two granite slabs, placed horizontally, of Pavilion of Greeting Officials were identified in T3a, as shown in **Figures C26 & C27**. The foundation consists of walls of granite blocks in rectangular shape infilled with rocks and sandy mortar.
- 3.4.2 The structures, including the foundation walls and infill materials, are in general in a stable condition. However, it is observed that some of the rockfills loosely spread over the top of the area enclosed by the foundation walls. These loose materials may be subject to movement should there be external disturbance, such as surface runoff or groundwater. Therefore, protection measures should be adopted to prevent displacement of these loose materials.
- 3.4.3 In addition to the foundation walls, two granite slabs are found in T3a which are resting on the soil in a stable manner. The present condition of the granite slabs is good. The granite slabs each measured 140cm long, 20cm wide and 20cm thick.

4 IDENTIFICATION OF IMPACTS AND RECOMMENDATION

4.1 Possible Impacts on Structural Integrity of Remains

- 4.1.1 The possible sources of impacts on the structural integrity of the remains of Longjin Bridge and Former Kowloon City Pier are identified as follows:

Disturbance due to adjacent developments

- 4.1.2 Based on the current approved OZP of Kai Tak Development, there would be residential and commercial developments around the remains of the Longjin Bridge. Such developments may involve piling works and construction traffic adjacent to the remains of the pier.

- 4.1.3 The developments will likely cause vibration to the remains of the Longjin Bridge, Pavilion for Greeting Officials and Former Kowloon City Pier affecting its structural integrity. Furthermore, it is anticipated that basements / underground shopping street would be constructed in the adjacent developments which involve massive excavation and dewatering. All these construction activities would likely induce ground movement to the areas where archaeological heritages are located.

Stormwater and surface runoff

- 4.1.4 During wet seasons, heavy rainstorms will result in a large quantity of surface runoff. Since the remains are in local low areas (the uppermost of SP6 is at +2.26mPD and the highest point of northern portion of Longjin Bridge is at +2.81mPD), the surface runoff in adjacent areas will rush down to the exposed trenches and flush away the loose fragments of the archaeological heritages.

Groundwater / tidal water

- 4.1.5 The archaeological heritages are located close to the waterfront and in a low level, so some of the archaeological remains are subject to the influence by groundwater or tidal water variation. The variation of groundwater or tidal water may cause loss of sandy mortar infills of the archaeological heritages. Furthermore, the groundwater / tidal water would also accelerate the corrosion problems of the protruding re-bar of some of the archaeological remains.

Disturbance due to illegal access by humans to the remains

- 4.1.6 The archaeological remains have been publicized to the public. Illegal access by the public and nearby construction workers is possible which may disturb the structural integrity of the archaeological remains.

4.2 Recommendation

- 4.2.1 In view of the possible impacts identified above, and with reference to the Development Bureau Technical Circular (Works) No.11/2007 “Heritage Impact Assessment Mechanism for Capital Works projects”, it is recommended to delineate a buffer zone of 50m measured horizontally away from the identified remains of Longjin Bridge and Former Kowloon City Pier (which shall include the space vertically above and the ground below the plan area of the control zone) for better control over the potential impacts arising from the developments adjacent to the remains.

5 CONCLUSION

5.1 Summary

- 5.1.1 Relevant documents in relation to the remains of Longjin Bridge and Former Kowloon City Pier identified have been reviewed. The history of the construction and modifications phases of the Bridge and the Pier are also presented.
- 5.1.2 Inspections were conducted on site to assess the structural integrity of the remains of Longjin Bridge and Former Kowloon City Pier listed below:
- Granite decking (GD1, GD2);
 - Supporting pillars (SP1, SP2 and SP6);
 - Seaward end (also as Pier-end-structure, PES) of Longjin Bridge;
 - Wall sections of Longjin Bridge;
 - Landing steps and supporting pillars of Former Kowloon City Pier; and
 - Foundation stones of side walls of Pavilion for Greeting Officials.
- 5.1.3 As observed on site, all the remains identified are standalone elements resting on soils individually. Complicated structures involving structural member(s) supported on another member(s) (such as a bridge deck wholly supported by supporting piers or abutments) were not discovered.
- 5.1.4 The granite decking was composed of 5 or 9 nos. of granite slabs placed longitudinally. The supporting pillars are solid mass granite structures in hexagonal shape supported by granite footing stones and cobble layer. The seaward end structure of Longjin Bridge, the wall sections of Longjin Bridge and the foundation of Pavilion for Greeting Officials are also found to be solid mass granite structures. The landing steps and supporting pillars of Former Kowloon City Pier are concrete structures, with rebars found in some of the remains.
- 5.1.5 In general, all the items of remains identified on site are currently in a stable condition. However, the loose fragments, such as individual or small granite blocks, concrete or sandy mortar, at the surface of the remains, will likely be subject to movement, should there be external disturbance, such as winds, stormwater, surface runoff or groundwater/tidal movement etc. Therefore, it is recommended that these loose fragments should be secured by proper means. To protect the bridge remains and secure the fragments, it is suggested that the remains should first be covered with a layer of geotextile. It is then overlaid with a minimum 300mm thick layer of sand layer which shall not contain any rocks or sharp objects. No compaction shall be conducted for this layer. The trench above the 300mm thick sand fill layer shall be backfilled with generally fine fill materials without any large rocks, boulders or sharp objects. Only light compaction with close supervision should be allowed. The area after backfilling should be fenced off to prevent vehicles and construction plant passing onto the area.
- 5.1.6 The possible sources of impacts on the structural integrity of the remains of Longjin Bridge and Former Kowloon City Pier have been identified. These include the following:
- Disturbance due to adjacent developments;
 - Stormwater and surface runoff;
 - Groundwater / tidal water; and
 - Disturbance due to illegal access by humans to the remains.

5.2 Recommendation

- 5.2.1 In view of the possible impacts identified above, and with reference to the Development Bureau Technical Circular (Works) No.11/2007 “Heritage Impact Assessment Mechanism for Capital Works projects”, it is recommended to delineate a buffer zone of 50m measured horizontally away from the identified remains of Longjin Bridge and Former Kowloon City Pier for better control over the potential impacts arising from the developments adjacent to the remains.

Appendix C

Figures

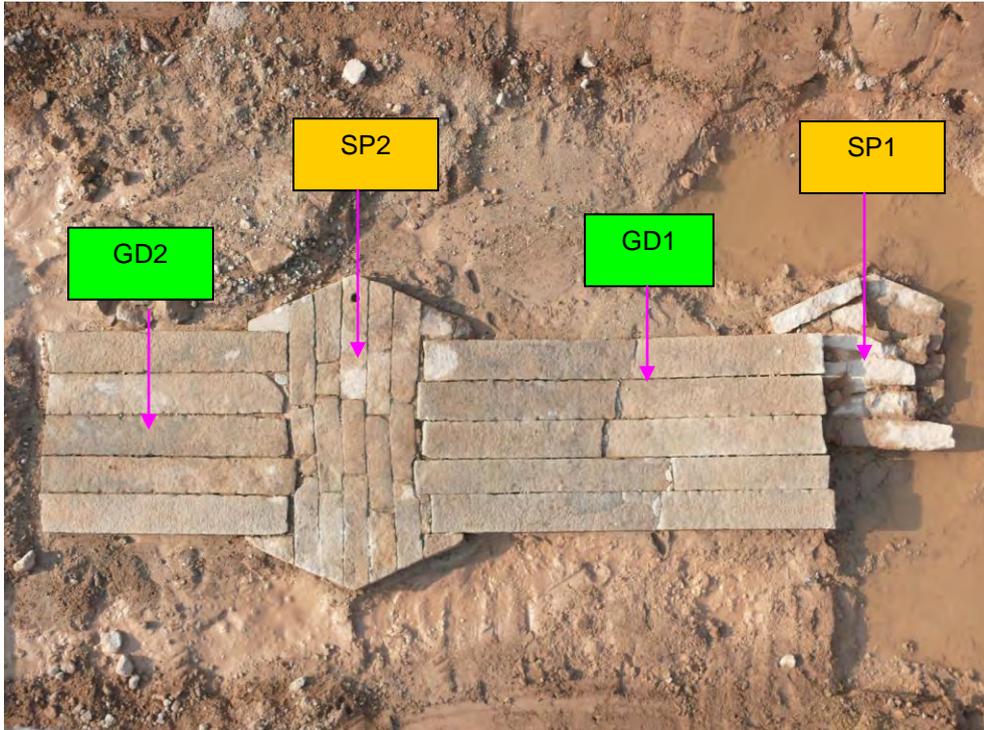


Figure C1 Top View of SP1, SP2, GD1 and GD2

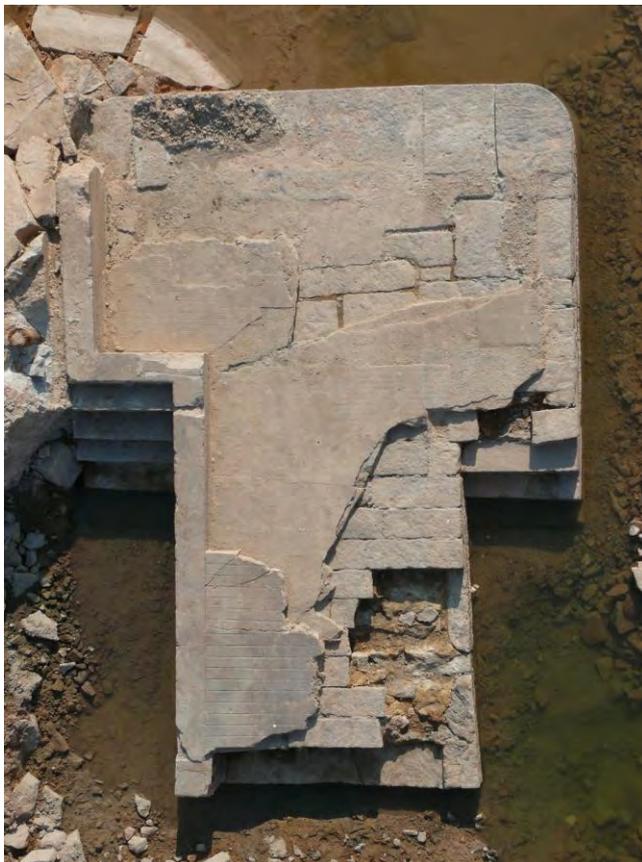


Figure C2 Top View of Seaward End of Longjin Bridge



Figure C3 Side View from West of Seaward End of Longjin Bridge



Figure C4 Side View from South of Seaward End of Longjin Bridge

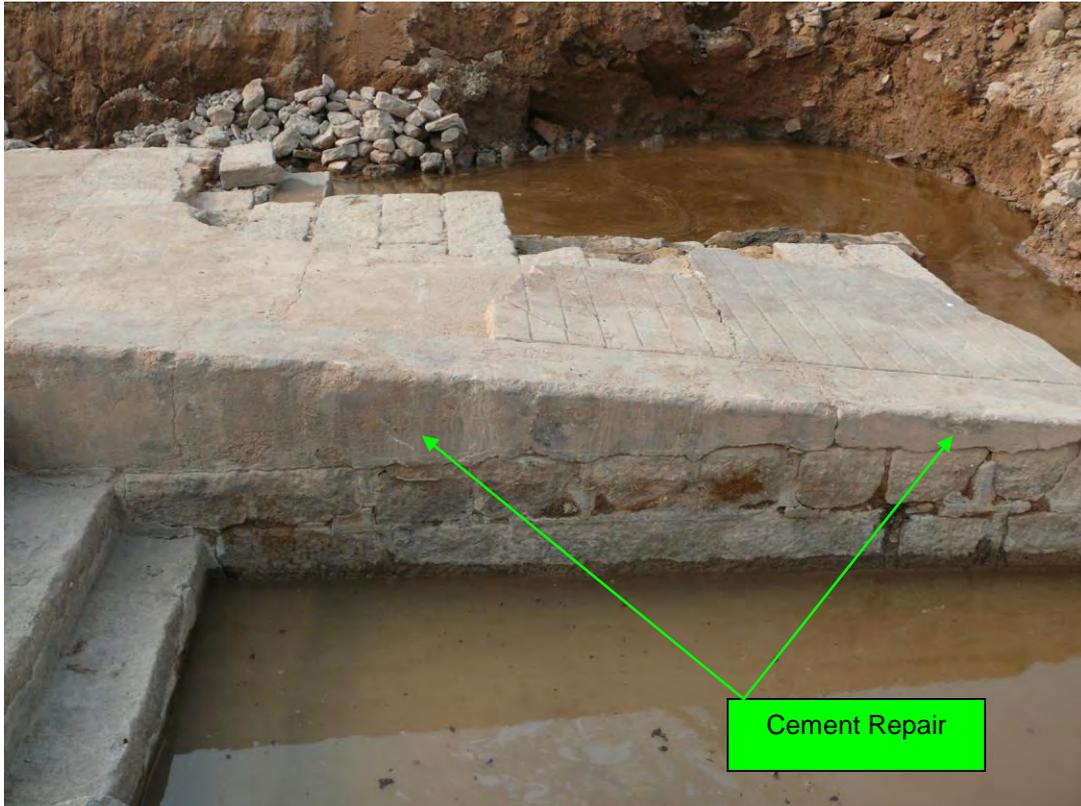


Figure C5 Side View from East of Seaward End of Longjin Bridge



Figure C6 Side View from North of Seaward End of Longjin Bridge



Figure C7 Three Layers of Seaward End of Longjin Bridge



Figure C8 Supporting Pillar SP6 of Longjin Bridge



Figure C9 Internal Structure of SP6 (View From West)



Figure C10 Rocks and Sandy Mortar Infill of SP6 (View From North)



Figure C11 Top View of SP6



Figure C12 Three Layers of Footing Stones of SP6 (View From East)



Figure C13 Close-up of Footing Stones of SP6



Figure C14 Cobber Layer of SP6



Figure C15 Top View of Remains of Longjin Bridge in T3b

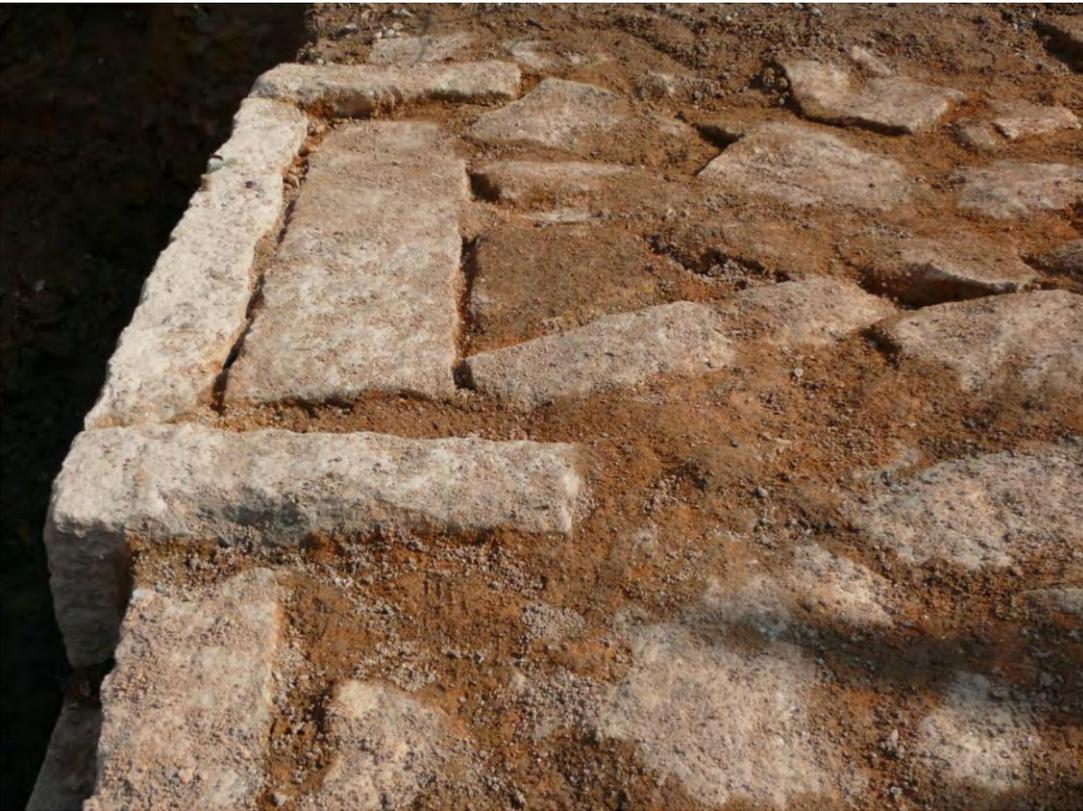


Figure C16 Close-up of Granite Blocks Bonded Together by Sandy Mortar



Figure C17 Eastern Side Wall of Longjin Bridge in T3b



Figure C18 Eastern Side Wall and Footing Stones of Longjin Bridge in T3b



Figure C19 Top View of Remain of Longjin Bridge in T3c



Figure C20 Top View of Remains of Longjin Bridge in T3d



Figure C21 The Western Side Wall of Remain of Longjin Bridge Discovered in T3d



Figure C22 Supporting Pillars of Former Kowloon City Pier (View form south)



Figure C23 Landing Steps and Supporting Pillars



Figure C24 Top View of Landing Steps (wide portion) and Supporting Pillars (narrow portion) of Former Kowloon City Pier



Landing Steps of Wide Portion



Pillar of Wide Portion



Pillar of Narrow Portion



Pillar of Wide Portion



Pillar of Wide Portion



Pillar with Timber Fender of Narrow Portion

Figure C25 Selected Pillars of Former Kowloon City Pier



Figure C26 Three Side Wall Foundation Stones of Pavilion for Greeting Officials (View from North)



Figure C27 Wall Edge Stones of Pavilion of Greeting Officials in T3a

Responses to Comments

**Agreement No. CE 35/2006(CE)
Kai Tak Development Engineering Study
cum Design and Construction of Advance Works
– Investigation, Design and Construction**

Further Archaeological Excavation Report

Responses to Comments

Comments Received

Date Received

- | | | |
|----|--------------------------------|---------------|
| 1. | Antiquities & Monuments Office | 25 March 2009 |
| 2. | CEDD | 23 March 2009 |

**Agreement No. CE 35/2006(CE)
Kai Tak Development Engineering Study
cum Design and Construction of Advance Works
– Investigation, Design and Construction**

Further Archaeological Excavation Report

Responses to Comments

<u>No.</u>	<u>Comments</u>	<u>Responses</u>
1.	<p>Antiquities & Monuments Office, ES, letter ref.: () in LCS AM 64/3/2 dated 25 March 2009</p> <p>I refer to your letter dated 17.3.2009. Comments on the captioned draft report received on 18.3.2009 are as follows:</p> <p><u>General comments</u></p> <p>1. It is noted that some of the objectives and tasks stated in the Proposal of Further Archaeological Excavation cannot be fully complies.</p> <p>According to the Proposal attached to your letter dated 17.10.2008,</p> <ul style="list-style-type: none"> ● The captioned report would present all the findings about the entire Longjin Bridge and other relevant items of historical significance such as Kowloon Fort, Pavilion for Greeting Officials, 1924 seawall, pre-world war II or after World War II disturbance to these items in full details (4.2(5)). ● The Structural Assessment Report which would be separately prepared and certified by registered structural engineer would be appended in the captioned report (5.7) 	<p>The findings of the 1924 seawall were presented in the Final Archaeological Impact Assessment Report of Agreement No. CE 35/2006 (CE) Kai Tai Development Engineering Study cum Design and Construction of Advance Works.</p> <p>"The entire Longjin Bridge and other relevant items of historical significance" should be understood as "<i>all archaeological findings of excavated trenches in this further excavation.</i>"</p> <p>With the understanding mentioned above, all archaeological findings revealed in the excavated trenches were presented in the further excavation report.</p> <p>Thus, the section 4.2(5) of the proposal was completely fulfilled.</p> <p>Section 6 of the report covers the content of the Structural Assessment Report. Section 6 of the report will be included as an appendix to report. Certification by registered structural engineer is not applicable to the current conditions because all the remains found are standalone elements resting on soils individually as explained in Section 6.1.2 of the report.</p>

<u>No.</u>	<u>Comments</u>	<u>Responses</u>
	<ul style="list-style-type: none"> ● The measured plan, side view and section drawings in scale 1:20 would be prepared (5.8). ● The archaeological features, artifacts and field records would be processed and analyzed in accordance with the requirements of the Guidelines for Handling of Archaeological Finds and Archive of the AMO (5.8). ● Representative findings with archaeological or historical significance would be dated, photographed, drawn and assessed,... The special findings would be presented in the captioned report (5.8). <p>However, the captioned report is deficient in fulfilling the above objectives and tasks. You may wish to note that the excavation report is very likely to be viewed by concerned groups and general public upon request. The report will also be presented to AAB for discussion. As such, a long list of comments is prepared as below for amendment.</p> <p>2. The following two plans showing all features discovered in the two investigation conducted in April and October 2008 at appropriate scale and size must be provided:</p> <ul style="list-style-type: none"> ● A plan with clear labels for all features discovered. ● A southwest side view plan with clear labels and reduced level marked on all the features discovered. <p>The terms used for all features discovered should be consistent. For instance, both "granite slabs" and "granite decking (GD)" are found in the report. Besides, both "Old Kowloon City Pier" and "Former Kowloon City Pier" are found in the report. Please use consistent terminology throughout the report.</p>	<p>The measured plans of those features with high significance in scale of 1:20 were prepared. The scale of these plans was modified in order to fit to A4 size report. The measured plans in scale of 1:20 will be submitted in the revised report.</p> <p>The archaeological findings, field records and will be processed and analyzed in accordance with the requirements of the Guidelines for Handling of Archaeological Finds and Archive of the AMO.</p> <p>A new section will be added to the report to present the representative findings.</p> <p>Please refer to our responses above.</p> <p>Two plans of appropriate scale and size showing all features discovered in the two investigations conducted in April and October 2008 will be provided in the revised report.</p> <p>The plan will be included in the revised report.</p> <p>The side view plan will be prepared accordingly and included in the revised report.</p> <p>The terms used in the revised report will be made consistent.</p>

<u>No.</u>	<u>Comments</u>	<u>Responses</u>
	<p>If abbreviations are used, please provide a list of abbreviation and make sure such abbreviations are consistent in the report. An appendix to explain the abbreviation and terminology is required.</p> <p>3. Please mark the exact location of each trench/excavated area on a 1:1000 map. The following should be provided for each trench/excavated area:</p> <ul style="list-style-type: none"> ● Photos showing complete sections of the trench; ● Measured drawings showing sections of the trench (correspond with the photos above); ● A table summarizing stratigraphic information of the trench; ● A table summarizing the information of all features discovered such as the measurements and level readings. <p>4. Presentation problem is noted in the tables showing strata of trenches excavated. The relationship between strata and the features discovered should be clearly shown in the table.</p> <p>5. A new section should be added after Chapter 6. This chapter should summarize the findings of this excavation. Detailed analysis and discussion on the findings (such as the level difference, structural characteristics, later disturbance, any gap of knowledge) of the Longjin Bridge, the Pavillion for Greeting Officials, the Former Kowloon city Pier, the Kowloon Fort, the 1920 and 1930 seawall shall be included in this chapter.</p> <p>6. Please check the typos and grammatical mistakes.</p> <p>7. The report should have a non-technical summary, both in Chinese and English.</p> <p>8. A table of Responses to Comments shall form part of the report.</p>	<p>Abbreviation table will be incorporated in the revised report.</p> <p>The trenches plan will be marked in 1:1:000 plan.</p> <p>The drawings will be incorporated in the revised report.</p> <p>The table will be incorporated in the revised report.</p> <p>The table will be incorporated in the revised report.</p> <p>The presentation will be modified in the revised report.</p> <p>A new section will be set up accordingly in the revised report.</p> <p>The typos will be checked and corrected.</p> <p>The non-technical summary will be prepared for revised report.</p> <p>This table of Responses to Comments will be incorporated into the revised report.</p>

<u>No.</u>	<u>Comments</u>	<u>Responses</u>
<u>Specific comments</u>		
Section Comment		
1.12	Please delete "as an archaeological site for public education and tourism purposes." since such purposes have not yet been confirmed.	"As an archaeological site for public education and tourism purposes." will be deleted.
1.2.4	Please delete "licensed" as no licence has been applied for this excavation.	The "licensed" will be deleted.
2.1.2	Please delete "for display at proposed museum or historic path in future." since such arrangement has not yet been confirmed.	"for display at proposed museum or historic path in future." will be deleted accordingly.
3.2.1	The first sentence should read as "Schematic plans showing the side and top views of the Longjin Bridge and the Former Kowloon City Pier were worked out based on available information in order to provide technical information for engineers to carry out the excavation design." The Former Kowloon City Pier cannot be found in Figures 2 and 3.	Former Kowloon City Pier will be marked in Figures 2 and 3.
3.3.4(1)	Please check the date (1902, 1903 or 1905?) of the map with the Mapping Office of the Lands Department and amend all relevant parts if required.	This map was collected in Public Archives Office and no exact date of the map was recorded in the Office.
3.4.4	Apart from the porcelain plate as shown in Figure 57, are there any other artifacts collected? If yes, a table including details of all the artifacts collected shall be provided.	Some artifacts were discovered in the seabed deposit, but significant artifacts had been collected and they will be presented in the revised report.
4.2	"Quangdong" should read as "Guangdong".	Text will be amended accordingly.
4.2.4	Please provide the source regarding the rebuilt date of the Kowloon Fort.	The source will be provided.
4.2.5	Please check the date of construction of the Kowloon Walled City.	The construction year of Former Walled City will be searched and included in the revised report.

<u>No.</u>	<u>Comments</u>	<u>Responses</u>
4.2.7	The paragraph states that Hong Kong was a centre of opium smuggle after 1858. Please provide any source as evidence.	The source will be provided accordingly. Four Imperial Chinese Customs stations were set up in 1868 in Junk Island, Ma Wan Island, Kwoloon City and Cheung Chau and were surrounding Hong Kong Island. This is an evidence of opium smuggling in the period.
4.2.9	The paragraph states the timber extension was modified to concrete in 1900. Please check the date (1900?) For details of the Former Kowloon City Pier, please refer to Challenges for an evolving city: 160 years of port and land development in Hong Kong, 2004.	The date will be checked.
4.2.14	Please provide evidence to support that Sir Henry Blake was landing at Lonjin Bridge in 1898.	This will be provided accordingly.
4.3.2	What is the meaning of "campaign of fieldwork"?	The words will be amended.
4.3.4	"suspected stone pavement" should read as "stone slab".	The sentence will be rewritten accordingly.
4.3.5	The last sentence should read as "This investigation comprised five trenches (AA1 to AA5) which were designed to test areas not covered by previous archaeological fieldworks due to accessibility problem."	The sentence will be rewritten accordingly.
4.4.5	Please check the date (1900?). Please refer to our comments on 4.2.9.	The dated will be checked.
4.4.8	For details of the Former Kowloon City Pier, please refer to Challenges or an evolving city: 160 years of port and land development in Hong Kong, 2004. Please also refer to our comments on 4.2.9,	The publication will be referred.

<u>No.</u>	<u>Comments</u>	<u>Responses</u>
5.1.1	<p>Please check whether "Figure 7" should be "Figure 5".</p> <p>Please check the date and scale of Kowloon City Survey (Sheet No. 5).</p> <p>Based on Kowloon City Survey (Sheet No. 5) and Figure 14, the Longjin Bridge can be divided into several parts, i.e. the Pavilion for Greeting Officials, bridge without supporting pillar, bridge with supporting pillars, seaward end structure, timber extension section and the Former Kowloon City Pier. Please add labels for the above sections and mark the length and width of each section in relevant plans, drawings and table.</p> <p>Referring to point 3 of the General comments above, the measurements of all features discovered in each trench should be provided.</p> <p>Please compare the above two sets of measurement data.</p>	<p>The figure number will be reviewed.</p> <p>The measurements of all features discovered in each trench will be provided.</p>
5.1.2	<p>" five/nine numbers of longitudinal granite slabs" can read as "five/nine granite slabs/planks/blocks". Please use appropriate terms to describe the findings.</p>	<p>The sentence will be rewritten accordingly.</p>
5.3.1	<p>A plan showing Dock F/Terminal Building and its spatial relationship with the trenches excavated should be provided.</p>	<p>A new plan showing Dock F and its spatial relationship with trenches will be provided.</p>
5.3.2	<p>Please provide a map supporting that the northern part of Ti area was occupied by residential buildings in 1920s to 1942.</p>	<p>The map was already provided in the draft report. Please refer to Figure 10.</p>
5.3.5	<p>The heading before 5.3.5 should be "The 1930s Retaining Seawall".</p> <p>Please provide photos and measured drawings showing the 20m retaining seawall discovered.</p>	<p>The drawing and photos will be provided in the revised report.</p>

<u>No.</u>	<u>Comments</u>	<u>Responses</u>
	<p>5.3.7 Please confirm whether excavation for the "alternative route" has been completed. If yes, please confirm whether the feature discovered looks the same as the image shown in Figure 14.</p> <p>It is stated that the "alternative route" is for "passages or lorry". Please provide any source as evidence.</p>	<p>A feature as evidence of passage route was found in the seawall.</p>
	<p>5.3.8 to 5.3.9 The heading before 5.3.8 should be "The Former Kowloon City Pier".</p> <p>The description in these paragraphs is difficult to understand. Structurally, the Former Kowloon City Pier can be divided into two parts, one is narrow, the other is wide. Description, photos and measured drawings of the remains of these two parts should be provided.</p> <p>Discussion on the Former Kowloon City Pier is oversimplified in these two paragraphs. More discussion and analysis on the types and characteristics of the broken concrete columns and wooden piles should be provided.</p>	<p>The sections 5.38 to 5.39 will be amended.</p> <p>The discussion and analysis on the types and characteristics of Former Kowloon City Pier will be provided.</p>
	<p>5.3.10 The heading before 5.3.10 should be "The Seaward End (Pier-End Structure (PES)) of Longjin Bridge".</p> <p>Structural comparison between the Seaward End of Longjin Bridge and SP6 should be provided.</p>	<p>The heading will be amended accordingly.</p> <p>This will be provided accordingly.</p>
	<p>5.3.12 Please provide photos and drawings showing the exact locations of the scars of two modifications. Details and measurements shall be provided.</p>	<p>The photos and relevant drawings will be provided in the revised report.</p>
	<p>5.3.14 Please provide photos and drawings showing the locations of cement repairing.</p>	<p>The photos and relevant drawings will be provided in the revised report.</p>

<u>No.</u>	<u>Comments</u>	<u>Responses</u>
5.5	Photos and measured drawings of the front, back, left and right views of SP6 should be provided.	The photos and relevant drawings will be provided in the revised report.
5.5.4	Photos and drawings showing the layer of cobbles should be provided.	The photos and relevant drawings will be provided in the revised report.
5.6.2	L3a, b, c as shown in Figure 55 are found missing in Table 5.4.	L3a, b and c will be put into the table 5.4 for consistence.
5.6.3	What is the meaning of "blow basement"? The information of the landing portion is confusing. Please refer to our comment on Figure 49.	The words will be amended. Your comment on the Figure 49 will be referred.
5.6.4	Please check the scale of the old map.	The scale of the old map will be checked.
5.6.5	What is the meaning of "mated to historic map (1:1000) evidence"?	The words will be amended.
5.6.6	The layer of grey marine sand cannot be found in Table 5.4. Photos and drawings showing this layer of grey marine sand should be provided.	Photos and drawing will be provided.
5.6.7	Please check the term "lesser seal writing style".	The "lesser seal" or "minuscule script" in Chinese is 小篆. This writing style is commonly using in official and personal seals.
5.7.1	A plan showing the Terminal Building and its spatial relationship with the trenches excavated should be provided.	The plan will be provided.
5.7.3	What is the meaning of "blow basement"?	The words will be amended.
5.7.5	Discussion on the footing of landward section of Longjin Bridge is not sufficient.	The further discussion of footing will be provided in revised report.

<u>No.</u>	<u>Comments</u>	<u>Responses</u>
	<p>Chapter 6 Please attach the full Structural Assessment Report certified by registered structural engineer as an Appendix.</p> <p>The objectives of the structural assessment shall include, but not limited to the followings, :-</p> <ol style="list-style-type: none"> 1. Overall stability and robustness 2. Integrity, stability and load-capacity of structural components 3. Excessive deflections or vibration, cracking 4. Measurements of defect <p>The Report shall include, but not limited to the followings, :-</p> <ol style="list-style-type: none"> 1. Summary 2. List of content 3. Terms of reference 4. Documents examined 5. Descriptions of structure 6. Inspections: who, how and when 7. Additional information 8. Calculation checks 9. Discussion of evidence 10. Conclusions 11. Recommendation: any preventive measures, testing, and further works, etc. 	<p>Section 6 of the report covers the content of the Structural Assessment Report. Section 6 of the report will be included as an appendix to report. Certification by registered structural engineer is not applicable to the current conditions because all the remains found are standalone elements resting on soils individually as explained in Section 6.1.2 of the report.</p> <p>According to the Proposal submitted to you on 17 October 2009, the objective of the visual structural integrity inspection is to assess whether the remains of Longjin Bridge can remain in its identified positions in a stable manner without any additional supports. The content of the structural assessment will be reviewed according to this objective.</p>
7.1.1	This paragraph is not understandable.	The section will be revised.
7.1.3	<p>Line 4: please check the period "1860s and the 1890s" as the bridge was first built in 1873.</p> <p>"Former Kowloon City" should read as "Former Kowloon City Pier".</p>	<p>The sentence will be amended.</p> <p>The words will be amended.</p>

<u>No.</u>	<u>Comments</u>	<u>Responses</u>
7.2.2	Please rewrite this paragraph with reference to the Structural Assessment Report and our comments on 3.2.1	Section 7.22 will be rewritten making reference to the structural assessment.
7.2.3	Please provide a comparison between the Longjin Bridge and other piers within Victoria Harbour.	The comparison between Longjin Bridge and other piers in Victoria Harbour Hong Kong Island side will be conducted. The comparison result will be incorporated in the revised report.
8.1.1	Please delete "by AMO".	"By AMO" will be deleted.
8.1.2	Please correct typos of the convention.	The typos will be checked and corrected.
8.1.4	Same as our comments on 5.3.7, please provide any source to support that the "alternative landing route" is for "passages and lorry".	The evidences of alternative landing route will be incorporated in the revised report.
8.1.8	Please rewrite this paragraph with reference to the Structural Assessment Report.	Section 8.18 will be amended making reference with structural assessment of Longjin Bridge.
8.1.9	We reserve our comment on this paragraph as photos and drawings showing the layer of marine sand have not been provided.	The photos and drawings showing the layer of marine sand will be provided for your further comment.
8.1.11 8.1.13	We reserve our comment on this paragraph as the Structural Assessment Report has not been provided.	Sections 8.11 to 8.13 will be revised making reference with structural assessment of Longjin Bridge for your further comment.
8.2.1	Please amend this paragraph as ".... The Guidelines for Cultural Heritage Impact Assessment of the AMO, ...".	The sentence will be revised.
8.2.3	Please provide photos and drawings showing the "typical parts" and full justifications.	The relevant photos and drawing will be provided if necessary.
8.2.4	Full justifications shall be provided for further archaeological excavation.	The justification for further excavation will be stated in the revised report. (refer to the response to comment of figure 49)
Bibliography	Sources of all maps and photos should be included.	The source of all maps and photos will be included in the revised report.

<u>No.</u>	<u>Comments</u>	<u>Responses</u>
	<p>Figure No.</p> <p>Comments</p>	
1	<p>The location of each trench is not clear. T1 and T2 are merged together. The arrows pointing to the trenches are placed wrongly on the plan. Please mark the exact location of all trenches/excavated areas on a 1:1000 map.</p>	<p>The figure will be amended. The arrow point direction will be revised accordingly.</p>
2	<p>Please check the scale and enlarge the figure. Appropriate scale and size are required.</p> <p>For the image of the Longjin Bridge, please refer to Photos C and G of Chapter 12 of the EIA report for Comprehensive Feasibility Study for the Revised Scheme of South East Kowloon Development (by Dr. Hase).</p> <p>Please rewrite the caption. It should be a schematic plan showing the side and top views of the landing portion of the Longjin Bridge and Pavilion for Greeting Officials.</p>	<p>The scale will be enlarged.</p> <p>Chapter 12 of the EIA report for Comprehensive Feasibility Study for the Revised Scheme of South East Kowloon Development will be reviewed, where any image(s) of the Llongjin Bridge is appropriate that the image(s) will incorporate the image(s) into revised report.</p>
3	<p>Please enlarge the figure.</p> <p>Please rewrite the caption. It should be a schematic plan showing the side view of SP6 of the Longjin Bridge.</p>	<p>The figure will be enlarged accordingly.</p>
4	<p>It seems that the figure is not significant. Please consider deleting it.</p>	<p>The figure will be deleted.</p>
5	<p>Please provide the scale and check the date (1902, 1903 or 1905?) with the Mapping Office of the Lands Department. Please also add measurements (length and wide) for each parts of the Bridge on the map.</p>	<p>The scale will be provided.</p> <p>The map is collected in Public Archives Office and no exact date of this map is provided by the Office.</p>
6	<p>Please add legend, scale and provide the source of the map.</p>	<p>Legend, scale and the source of the map will be provided accordingly.</p>
7	<p>Please specify the date of the map and provide the source.</p>	<p>The source and the date of the map will be provided in the revised report.</p>

<u>No.</u>	<u>Comments</u>	<u>Responses</u>
8 to 11	Please provide the sources and rewrite the captions.	The source of Figures 8 to 11 will be provided in the revised report and their caption will be rewritten accordingly.
12	Please provide the source. Please rewrite the caption. The runways cannot be regarded as "new".	The source of Figure 12 will be provided in the revised report and its caption will be rewritten accordingly.
13	What is the purpose of showing the nullah?	South to nullah is an original location of Kai Tak Bund where is the original location of Former Kowloon City Pier.
14	Please provide the source and scale.	The source and the scale of Figure 14 will be provided in the revised report.
15	Please provide the source and improve the quality.	The source of Figure 15 will be provided in the revised report. However, the quality of this figure was limited by the original source.
16 & 17	Which parts of T1 do these sections refer to? Please indicate the locations of these sections on a map showing the entire layout of T1. Measured drawings of these sections should also be provided.	The parts of T1 will be mentioned in the revised report. The relevant drawings will also be provided in the revised report.
19	This figure is incomplete. Most of the retaining seawall is not shown.	The land survey of Former Kowloon City Pier and retaining seawall was conducted by survey team of CEDD. Figure 19 was provided by the team and we will contact the team to collect detail survey map(s) of the retaining seawall.
22	Structurally, the Former Kowloon City Pier can be divided into two parts, one is narrow, and the other is wide. Please provide photos of these two parts. The orientation of these photos should be the same.	Photography of two sections of Former Kowloon City Pier will be provided in the revised report.
24	Please indicate the locations of these columns.	The locations will be provided.
26	Please provide photos showing the front view and side view (from East/North East) of the Seaward End of the Longjin Bridge.	The relevant photography will be provided.

<u>No.</u>	<u>Comments</u>	<u>Responses</u>
28	The plan showing the Seaward End of Longjin Bridge is not complete. To facilitate understanding the details of the plan, please add appropriate legends and four side views drawings.	The detail plan of Seaward end of Longjin Bridge will be prepared for revised report. Side view plan of retaining seawall should be provided by survey team of CEDD and we will contact the team.
29	Which part of the Seaward End of Longjin Bridge are you referring to? Please indicate the location of cement repairing clearly on a plan.	It is northern end of seaward end. The repairing part is very clearly shown in this figure.
30	Which part of T2 does this section refer to? Please indicate the location of this section on a map showing the entire layout of T2. Measured drawing of this section should also be provided.	It is a part of eastern section wall of T2 near to seaward end. This photography is showing a complete stratification of T2.
32 to 35	In Figure 32, four views, i.e. front, back, left and right, are noted. Photos of these four views should be provided instead of views from east and south. Measured drawings of the four views should also be provided.	Four views of SP6 will be provided in the revised report.
43	The feature drawings are incomplete. Full details of feature in plan should be provided with legends. Referring to para. 5.5.4 of the text, there is a layer of cobbles. But it cannot be found in the drawings.	The reason of a layer of cobble not shown in this figure is that this further excavation was limited by site safety. The depth of excavation was not allowed to exceed the depth of sheet piles, and therefore the bottom of cobble layer is unknown. Taking account of this reason, the layer was not indicated in Figure 43.
46 & 47	Which parts of TP3a do these sections refer to? Please indicate the locations of these sections on a map showing the entire layout of TP3a. Measured drawings of these sections should also be provided.	Figure 46 is western wall section and Figure 47 is eastern wall section of T3a. They will be indicated in a map and relevant drawings will also be provided accordingly.

<u>No.</u>	<u>Comments</u>	<u>Responses</u>
49	<p>Please indicate which part is the Pavilion for Greeting Officials and which part is the Longjin Bridge. Is the excavation on the Pavilion and the Bridge of this part completed? It seems that there are gaps in the northwest part of the Pavilion and the southwest of the Bridge.</p> <p>Please advise whether the original features in this area have been disturbed by construction foundations. If yes, the areas of disturbance should be clearly shown on the drawing.</p>	<p>The parts of the Pavilion for Greeting Officials and the Longjin Bridge will be indicated in the revised report.</p> <p>The excavation of those parts of Longjin Bridge and the Pavilion for Greeting Officials were limited by the trench T3a.</p> <p>Based upon that, the further excavation for the remains of landing part of Longjin Bridge and the other parts of Pavilion for Greeting Official should be considered by relevant government departments.</p>
51 & 53	Please indicate the location of the two granite slabs clearly on the feature plan for T3a.	The slabs are located at northwest portion of the Pavilion and they will be shown in plan of T3a.
52	Please explain in relevant part of the text why there are only three sides of wall foundation stones of the Pavilion for Greeting Officials discovered. Was the northern side of wall foundation stones disturbed?	The northern side wall foundation stones had been destroyed by construction of Terminal Building and all of them are missing in T3a.
54 & 55	<p>Details of the photo and the drawing are not matched.</p> <p>The label "Wall Foundation Stones" covers the features showing in the photo.</p>	The figure 54 will be improved.
56	Please provide a photo showing the eastern section of wall foundation stones of the Pavilion for Greeting Officials.	The photography of eastern section of the Pavilion foundation stones will be provided.
57	<p>The seal of "Made in the Regime of Tongzhi" is not clear.</p> <p>Photos showing the front view of the porcelain plate should be provided.</p>	A new photo in good solution will be provided. The front view of the plate will be provided.
58	<p>Layers 6 and 7 are not clearly divided.</p> <p>Measured drawing of this section should be provided.</p>	The figure will be improved.

<u>No.</u>	<u>Comments</u>	<u>Responses</u>
	<p>59 & 60 The orientation of the photo and plan should be the same.</p> <p>Footing stones cannot be found in Figure 60.</p>	<p>The orientations photo and drawing will be revised.</p> <p>The footing stones are showing in Figures 63 and 64.</p>
	<p>65 & 66 What features do you want to show in these photos?</p> <p>Clear plan, side view drawings and photos of T3c should be provided.</p>	<p>Figure 63 was shown stratification of T3c, Figure 66 was shown a top view of remain of Longjin Bridge of T3c.</p>
	<p>70 Eastern side view plan should be provided.</p>	<p>Eastern side view plan will be provided.</p>
	<p>73-75 These figures are not understandable and too small. Please revise.</p>	<p>The figures 73 to 75 will be enlarged and presented in the revised report.</p>
	<p>76 Please provide the source.</p>	<p>The source will be provided.</p>
	<p>App A We reserve our comment on the figure as it is not clear. Please enlarge this figure to show the coordinates.</p>	<p>The figure will be enlarged in the revised report.</p>
	<p>App B What is the meaning of the yellow circle? Appropriate plans with legends shall be provided.</p>	<p>It will be improved.</p>
	<p>Please submit the revised report to this Office for further comments as soon as possible. Thank you for your kind attention.</p>	<p>The revised report will be submitted after the meeting with AMO regarding the draft report on 3 April.</p>
<p>2. CEDD, letter ref.: ,dated 23 March 2009</p> <p>I refer to the draft Further Archaeological Excavation Report submitted to LCSD by your letter of 17 March 2009 and have the following comments.</p> <p>In accordance para. 2.1.2, the objective is to ascertain the extent of the possible remains of the Longjin Bridge in order to facilitate formulation of Conservation Management Plan (CMP). The report should highlight the key issues that need to be considered and possible options to facilitate the formulation of the CMP.</p>		<p>The revised report will address the key issues that need to be considered and possible options to facilitate the formulation of the CMP.</p>

<u>No.</u>	<u>Comments</u>	<u>Responses</u>
	<p>It seems not desirable to continue further archaeological excavation as recommended in para. 8.2. You should ascertain the likelihood of the extent of the possible remains based on your findings and suggest measures to deal with possible scenarios to facilitate the formulation of CMP.</p>	<p>Refer to the AMO comment on Figure 49, this further excavation was limited by trenches, it is possible some missing parts are existing at unexcavated areas, it is believed the areas between T1 and T3a, and areas between T3a, T3b, T3c and T3d would have high archaeological potential.</p> <p>The CMP will also be reviewed or revised accordingly.</p>

**Agreement No. CE 35/2006(CE)
Kai Tak Development Engineering Study
cum Design and Construction of Advance Works
– Investigation, Design and Construction**

Further Archaeological Excavation Report

Responses to Comments

Comments Received

Date Received

1. Leisure and Cultural Services Department, AMO

30 April 2009

Agreement No. CE 35/2006(CE)
Kai Tak Development Engineering Study
cum Design and Construction of Advance Works
– Investigation, Design and Construction

Further Archaeological Excavation Report

Responses to Comments

<u>No.</u>	<u>Comments</u>	<u>Responses</u>
1.	<p>Leisure and Cultural Services Department, AMO letter ref. () in LCS AM 64/3/2 dated 30 April 2009</p> <p>I refer to your letter dated 20.4.2009. Our comments on the captioned report are as follows:</p>	
	<i>Main Text:</i>	
	<p>Abstract</p> <ul style="list-style-type: none"> • Data recording should be regarded as part of the excavation works. So the whole period of excavation should be from 30 Oct 2008 to Feb 2009. • “supporting pier” instead of “supporting pillar” should be used throughout the report. Please amend relevant parts of the report accordingly. • The fourth paragraph states “Longjin Bridge was one of the major diplomacy issues between Britain and China in the late 1890s”. This description may not be precise. In fact, the Bridge is associated with the issue of the Kowloon Walled City and after 1899 no argument on the Bridge was recorded. • Please delete the last two sentences in the fourth paragraph. • Please highlight the significance of the site after burial of the Bridge in respect of the development of Kai Tak Airport. 	<p>The date has been amended and is now consistent throughout the Final Report.</p> <p>It is confirmed that “pillar” is a corrected term. Relevant text has been amended.</p> <p>The description of this historical event has been reviewed. Text has been revised accordingly.</p> <p>The last two sentences have been deleted.</p> <p>Text has been added accordingly.</p>
	<p>1.1.2</p> <ul style="list-style-type: none"> • The description of Longjin Bridge (historical resource?) in this paragraph is not precise. Please amend. 	<p>“Historical resource” has been revised as “historic remains”.</p>
	<p>1.2.4</p> <ul style="list-style-type: none"> • Data recording should be regarded as part of the excavation works. So the whole period of excavation works should be from 30 Oct 2008 to Feb 2009. 	<p>The dates have been reviewed and revised.</p>

<u>No.</u>	<u>Comments</u>	<u>Responses</u>
Section 2	<ul style="list-style-type: none"> The objectives and scope stated in this section should be same to those listed in the Proposal of Further Archaeological Excavation. 	<p>The objectives and scope stated in Section 2 has been reviewed and made consistent with those in the Proposal.</p>
4.2.13	<ul style="list-style-type: none"> The paragraph states “Longjin Bridge is a key issue of Sino-British diplomacy relationship ...”. This description may not be precise. In fact, the Bridge is associated with the issue of the Kowloon Walled City and after 1899 no argument on the Bridge was recorded. 	<p>The paragraph has been revised.</p>
4.4	<ul style="list-style-type: none"> The description for Phases 2 to 4 modification should be substantiated by direct evidence from archive research. Burial period (after construction and modification) should be added in this section. The relationship between the site burial and the development of Kai Tak Airport should be highlighted. 	<p>Direct evidence has been quoted in the footnote of the report.</p> <p>The relationship between the site burial and the development of Kai Tak Airport has been highlighted.</p>
Section 5	<ul style="list-style-type: none"> A table summarizing the information of all features discovered such as the measurements and level readings should be provided. 	<p>The Table 5.1 has been revised. Dimension and height levels of all features discovered were provided. The levels can also be found in Table 7.1.</p>
Table 5.1	<ul style="list-style-type: none"> The following three sets of measurements of the Bridge should be provided: <ul style="list-style-type: none"> 1. measurements mentioned in the tablet inscriptions 2. measurements from the map of 1903 3. measurements from excavation result Please correct the year of timber extension of the Bridge. Please provide evidence to support the construction year of: <ul style="list-style-type: none"> 1. Pavilion for Greeting Officials 	<p>Refers to above response for Section 5.</p> <p>Refers to above response for Section 5. With reference to the discussion in meeting among LCSD/AMO, CEDD/KDevO and MCAL on 30 April 2009, “measurement” has been revised as “approximate dimension” accordingly.</p> <p>Same as above.</p> <p>Same as above.</p> <p>The construction year has been checked.</p> <p>Same as above.</p> <p>Same as above.</p>

<u>No.</u>	<u>Comments</u>	<u>Responses</u>
	<p>2. Replacement of Timber Extension</p> <p>3. Concrete Extension of the Bridge</p> <p>4. Retaining Seawall of Kowloon City Pier</p> <p>5. Reconstruction of Kowloon City Pier</p>	<p>Same as above.</p> <p>Same as above.</p> <p>Same as above.</p> <p>Same as above.</p>
5.1.2	<ul style="list-style-type: none"> “decking” instead of “walkway” is used in other parts of the report. Please check. 	<p>“Decking” has been used instead of “walkway” throughout the Final Report.</p>
5.3.7	<ul style="list-style-type: none"> Please state clearly that the granite decking composed of 5 and 9 nos. of granite slabs are found in the seaward side and landward side of the Bridge respectively. Relevant old photos should be provided as illustration. 	<p>It is confirmed that five granite blocks are used as decking at seaward portion and nine blocks are used as decking in landward portion of the Longjin Bridge. The relevant sections have been amended accordingly. Relevant old photos have been provided.</p>
5.3.7	<ul style="list-style-type: none"> Please provide evidence to support the interpretation regarding the function of retaining seawall. 	<p>The evidence has been described in the Final Report.</p>
5.3.9	<ul style="list-style-type: none"> For each type of the pillars, please provide the number discovered and describe its distribution. 	<p>The grid numbering for these supporting pillars of Former Kowloon City Pier has been provided in the Final Report.</p>
5.3.9	<ul style="list-style-type: none"> “columns” instead of “pillars” is found in other part of the report. Please be consistent. 	<p>“Pillars” has been used instead of “columns” throughout the final Report.</p>
5.3.12	<ul style="list-style-type: none"> The last few sentences are not relevant to the discussion of the Seaward End. Please delete them. 	<p>They have been deleted.</p>
5.3.14	<ul style="list-style-type: none"> The interpretation regarding the Seaward End should be substantiated by direct evidence from archive research. 	<p>The relevant information has been reviewed and the construction year has been deleted.</p>
5.4	<ul style="list-style-type: none"> Observation on the presence of timber extension and interpretation of the trench findings are missing. Reasons for not excavating the remaining area of T2 shall be stated clearly. 	<p>A new sub-section 5.54 has been added to Final report for description of the finding of timber extension.</p>
5.5.3	<ul style="list-style-type: none"> Please provide illustrations to demonstrate the faxed angles for construction of a hexagonal pillar. 	<p>The “faxed angles” has been revised to “fixed angles”.</p>
5.5.4	<ul style="list-style-type: none"> Please state whether the granite blocks are dressed or not for footing stones. 	<p>All the footing stones of SP6 are dressed granite slabs.</p>

<u>No.</u>	<u>Comments</u>	<u>Responses</u>
	<ul style="list-style-type: none"> • The dimensions, thickness and extent of the layer of cobbles should be provided. 	<p>The dimensions, thickness and extent have been provided. Details refer to Figures 49 to 52.</p>
5.5.5	<ul style="list-style-type: none"> • Please check the figure numbers. 	<p>Figure numbers have been rectified.</p>
5.5.7	<ul style="list-style-type: none"> • Findings of the re-excavation and measurements of the features discovered are missing. 	<p>Sub-section 5.57 has been moved to Section 5.3.16.</p>
5.6.3 5.6.5	<ul style="list-style-type: none"> • Please prove explicitly that the three sides of wall foundation stones discovered belong to the Pavilion. Side view drawings of the walls should be provided to show the relevant details. • Please advise whether the fourth side wall has been disturbed or is still buried underground. • Please elaborate the relationship between the Pavilion and the Longjin Bridge in terms of the construction time and method based on field findings. • Please state the relationship between the Pavilion and the two granite slabs. How to prove these slabs were part of the Pavilion. • Regarding the triangular structures, please state whether excavation for the structure has been completed, how the excavation findings match with the setting shown in historical photos and the measurements from the map of 1903. • Referring to the R to C table, further excavation for the remains of landing part of Longjin Bridge and the other parts of Pavilion for Greeting Official are recommended. Please explain why no complete excavation for these parts was conducted. Please seek advice from CEDD on whether the further excavation is justified and can be arranged shortly. 	<p>The remains discovered in the original location of the Pavilion which are consistent with this historic map (Figures 61 and 63). It is therefore presumed those findings are remains of landing portion of the Bridge and the edge structure of the pavilion.</p> <p>Since excavation was limited by the existing ex-Terminal Building basement structures, the existing of fourth (northern) side wall is uncertain.</p> <p>The granite blocks of southern edge are directly interfacing with the landing portion of the Bridge. It is believed that the restoration works of the Pavilion and construction works of the Bridge were carried out in same year of 1873.</p> <p>The original pavilion floor was demolished. Two granite blocks were dug out within the original location of Pavilion is presumed as component of the Pavilion. The excavation was limited by basement structure. Hence, the functions of these two granite blocks are uncertain.</p> <p>The excavation was limited by basement structure. The entire structures are likely unknown yet.</p> <p>The excavation was limited by basement structure and further excavation was not proceeded for safety reason.</p> <p>With reference to the discussion in the meeting among AMO, CEDD and MCAL on 30 April 2008, this further excavation fulfilled search of the Pavilion remains. Therefore, it is considered not necessary to carry out a supplementary excavation of any suspected existing remains of the Pavilion in this stage.</p>

<u>No.</u>	<u>Comments</u>	<u>Responses</u>
5.6.6	<ul style="list-style-type: none"> Please provide evidence to substantiate the interpretation that the marine sand was used as foundation filled material to support the pavilion floor. Can the marine sand be regarded as subsequent disturbance? 	The description of this sub-section has been revised accordingly.
Table 5.6	<ul style="list-style-type: none"> Please check the mPD of the lowermost of L7. 	The level has been checked and revised.
5.7.3	<ul style="list-style-type: none"> Please elaborate how the finding is consistent with the map evidence. 	By the dimension, direction and the location, the findings (granite blocks) are consistent with the historic map of 1903 (scale; 1:1,000).
5.7.3, 5.8.3, 5.9.3	<ul style="list-style-type: none"> The length and width of the northern portion discovered in T3b, T3c and T3d are the same. Please clarify. 	Those sections have been revised.
	<ul style="list-style-type: none"> Please provide a plan to clearly show the alignment of the Longjin Bridge discovered in T3a to d. 	The plan has been provided in the Final Report.
5.7.5	<ul style="list-style-type: none"> Please advise whether footing stones were found in the western side wall of the Bridge in T3b. If yes, please provide relevant photo, plan and side view drawing. 	Since the excavation was limited by basement concrete, the western side wall was not identified.
5.8	<ul style="list-style-type: none"> Please illustrate more on the findings of T3c. 	More descriptions have been added.
5.8.4	<ul style="list-style-type: none"> Please provide photo, plan and side view drawings as illustration. 	They have been added in the Final Report.
5.9	<ul style="list-style-type: none"> Please advise whether footing stones were discovered in T3a, T3c and T3d. 	Footing stones were identified in T3b and t3d.
Figure 81 and 83	<ul style="list-style-type: none"> Information on the southeast corner of the plans is not clear. 	The figures have been revised.
Section 6	<ul style="list-style-type: none"> A table summarizing the quantity, the layer and location of finds unearthed should be provided. 	The Table 6.1 has been revised accordingly.
	<ul style="list-style-type: none"> Characteristics of Bridge and Pier should be addressed in a separate chapter. 	It has been moved to the Chapter 7.
Section 7	<ul style="list-style-type: none"> Please provide a conclusive remark on the completeness and preservation condition of the entire Bridge. 	The conclusive remark has been provided in 7.2.4 of the revised report.
	<ul style="list-style-type: none"> What are CS1 and CS2? 	CS1 and CS2 have been deleted.

<u>No.</u>	<u>Comments</u>	<u>Responses</u>
	<ul style="list-style-type: none"> • Workmanship, shape and strength of stone material, composition/strength of mortars, cracks/damage/deformation of all structures, buried environment and soils below the foundation of Bridge (any soil settlement) should be analyzed. 	<p>The objective of the structural assessment is to assess the stability of the remains by visual inspection. Appropriate content has been included in the report to meet this objective.</p>
6.4 to Section 8	<ul style="list-style-type: none"> • Please reorganize the content of section 6.4, sections 7 and 8. • A table to summarize the stone material, dressed or not, size, methods, layers, etc for the pavilion, northern section, decking, supporting pier footing stones, cobble layer and PES shall be provided after discussion on the Bridge characteristics. 	<p>Section 6.4 has been moved to Section 7.</p> <p>A new Table 7.1 has been added accordingly.</p>
Section 9	<ul style="list-style-type: none"> • Please provide a conclusive remark on the completeness and preservation condition of the entire Bridge. • Please also discuss whether the timber extension is present or not. 	<p>The conclusive remark has been provided in para. 9.1.9 of the report.</p> <p>The timber extension of the Bridge is confirmed to have been demolished.</p>
9.1.1	<ul style="list-style-type: none"> • Data recording should be regarded as part of the excavation works. So the whole period of excavation should be from 30 Oct 2008 to Feb 2009. 	<p>The text has been revised accordingly.</p>
9.1.2	<ul style="list-style-type: none"> • The paragraph states "Longjin Bridge was one of the major diplomacy issues between Britain and China in the late 1890s". This description may not be precise. In fact, the Bridge is associated with the issue of the Kowloon Walled City and after 1899 no argument on the Bridge was recorded. 	<p>The sentence has been deleted.</p>
9.1.3	<ul style="list-style-type: none"> • Please delete the first sentence. 	<p>It has been deleted.</p>
9.1.4	<ul style="list-style-type: none"> • Please provide evidence to support the interpretation regarding the function of the retaining seawall. 	<p>The evidence has been provided.</p>
9.1.5	<ul style="list-style-type: none"> • Observation on the preservation condition of other supporting piers should be provided. 	<p>Text on the preservation condition of other supporting piers has been provided</p>
9.1.6	<ul style="list-style-type: none"> • Please prove explicitly that the three sides of wall foundation stones discovered belong to the Pavilion. 	<p>Please refer to sub-sections 5.63 to 5.65.</p>

<u>No.</u>	<u>Comments</u>	<u>Responses</u>
9.2	<ul style="list-style-type: none"> • Paragraphs regarding other condition survey and the zoning issue should be deleted. <p><u>Appendix A:</u></p> <p><u>General Comments</u></p> <ul style="list-style-type: none"> • Please advise the meaning of “r” found in most of the figures. • Labels for significant features discovered should be added. • Scales should be provided for all drawings. N.T.S. drawings in this appendix are not acceptable. • Please overlay all the features discovered on 1:1000 topographic maps of Kai Tak area. <p><u>Specific Comments</u></p>	<p>Section 9.2 has been deleted.</p> <p>The “r” has been deleted.</p> <p>They have been added accordingly.</p> <p>The scale has been added.</p> <p>The features have been marked on 1:1000 map.</p>
1.1	<ul style="list-style-type: none"> • Features discovered cannot be clearly shown. • Some of them are highlighted in red, some are not. Please clarify • Labels for trench no. and different sections of the Longjin Bridge should be added. • As a general overview plan, please consider deleting unnecessary information, such as the sloping sign, the cross in the middle of the supporting columns of Former Kowloon City Pier, cut line x-x, y-y, view A and B. • Please use colour grids to indicate the frame of figures and highlight the figure nos. 	<p>The features have been shown clearly.</p> <p>Red lines are indicating outline of features measured by photography survey images.</p> <p>These have been added accordingly.</p> <p>Unnecessary information has been deleted, except sloping sign.</p> <p>These have been used when appropriate.</p>
1.2	<ul style="list-style-type: none"> • Please delete unnecessary information, such as the two crosses (one in the middle of the supporting columns of Former Kowloon City Pier), cut line x-x, y-y, view A and B. • The drawings of some columns/pillars are found incomplete. 	<p>Unnecessary information has been deleted.</p> <p>This has been rectified.</p>
1.3	<ul style="list-style-type: none"> • A group of dotted lines is found in the centre of T1. Please explain what it is. 	<p>The dotted lines indicate the trench bottom as shown in the legend.</p>

<u>No.</u>	<u>Comments</u>	<u>Responses</u>
	<ul style="list-style-type: none"> Columns as indicated in Figure 1.1 are found missing in Figure 1.3. 	<p>Figure 1.3 only indicates the seaward end and the 1930's seawall. Supporting pillars of Former Kowloon City Pier are therefore not shown in Figure 1.3.</p>
1.5	<ul style="list-style-type: none"> Please add labels for the SPs, GDs and 1924 seawall or any later disturbance. 	<p>Labels have been added accordingly.</p>
1.6	<ul style="list-style-type: none"> Apart from the features shown in the centre of the trench bottom, information for the remaining part of the trench bottom is found missing. Or just simply misplace the field drawing. 	<p>Please note that the dotted lines indicate the trench bottom.</p>
1.7	<ul style="list-style-type: none"> Apart from the features shown in the east corner of the trench bottom, information for the remaining part of the trench bottom is found missing. 	<p>Please note that the dotted lines indicate the trench bottom.</p>
1.8	<ul style="list-style-type: none"> Apart from the features shown in the centre of the trench bottom and the terminal building basement, information for the remaining part of the trench bottom is found missing. 	<p>Please note that the dotted lines indicate the trench bottom. The terminal building basement has been added.</p>
1.9	<ul style="list-style-type: none"> Please add a label for the two granite slabs. 	<p>The label has been added.</p>
	<ul style="list-style-type: none"> Please mark the part of Longjin Bridge and the part of Pavilion for Greeting Officials on the plan. 	<p>Longjin Bridge and the part of Pavilion for Greeting Officials has been marked accordingly.</p>
2.1	<ul style="list-style-type: none"> The side view drawings are not clear. 	<p>The side view has been made clear.</p>
	<ul style="list-style-type: none"> Please delete unnecessary information, such as the sloping sign, the cross in the middle of the supporting columns of Former Kowloon City Pier, cut line x-x, y-y, view A and B. 	<p>Unnecessary information was deleted, except sloping sign.</p>
2.2	<ul style="list-style-type: none"> The side view drawing is not clear. Please delete unnecessary information, such as the cross in the middle of the supporting columns of Former Kowloon City Pier, cut line x-x, y-y, view A and B. 	<p>High solution of side view has been added.</p> <p>Unnecessary information was deleted, except sloping sign.</p>
	<ul style="list-style-type: none"> The drawings of some columns are found incomplete. 	<p>This has been rectified.</p>
2.3	<ul style="list-style-type: none"> The side view drawing does not match with the corresponding side of the Seaward End. 	<p>It has been made to match with each other.</p>

<u>No.</u>	<u>Comments</u>	<u>Responses</u>
2.4	<ul style="list-style-type: none"> The side view drawings are not clear. 	High solution of side view has been added.
2.5	<ul style="list-style-type: none"> Please provide the northeast side view drawing. 	The northeast side view drawing has been added.
2.6	<ul style="list-style-type: none"> Apart from the features shown in the east corner of the trench bottom, information for the remaining part of the trench bottom is found missing. 	The remaining parts are existing basement structures which have been added to the drawing.
2.7	<ul style="list-style-type: none"> Please provide the southwest side view drawing. 	This has been provided in the Final report.
	<ul style="list-style-type: none"> Footing stones on the plan are found missing. 	It has been provided in the Final Report.
2.8	<ul style="list-style-type: none"> The two granite slabs are missing. Please mark the part of Longjin Bridge and the part of Pavilion for Greeting Officials on the plan. Area with foundation of terminal building is not shown. Side view drawings for the three walls of the Pavilion should be provided. 	<p>It has been shown in Figure 1.9.</p> <p>They have been marked on the plan.</p> <p>It has been shown in Figure 1.9.</p> <p>It has been added in Final Report.</p>
3.1	<ul style="list-style-type: none"> The side view drawing is not clear. mPD data of all the features should be shown in a table. Each important feature shall mark with level readings which are consistent with relevant tables and text should be marked. 	<p>High solution of side view has been provided in Final Report.</p> <p>The mPD data of the feature has been provided in Final Report.</p> <p>Each important feature has been marked with level readings.</p>
4.1	<ul style="list-style-type: none"> Please show the existing box culvert, AA2, foundation columns of terminal building. Please add labels for significant features discovered. 	<p>Box culvert and location of AA2 have been provided.</p> <p>The labels have been added in Final Report.</p>
AppB-1	<p><u>Appendix B</u></p> <ul style="list-style-type: none"> Please clearly overlay all features discovered on the OZP at an appropriate scale. 	This has been prepared accordingly.

<u>No.</u>	<u>Comments</u>	<u>Responses</u>
	<p><u>Appendix C</u></p> <ul style="list-style-type: none"> • Please advise whether the report is prepared and certified by a registered structural engineer. Please refer to comments on section 7. <p>Abstract</p> <ul style="list-style-type: none"> • Please state clearly that the granite decking composed of 5 and 9 nos. of granite slabs are found in the seaward side and landward side of the Bridge respectively. Relevant old photos should be provided as illustration. <p>3.1.2</p> <ul style="list-style-type: none"> • Please indicate the locations of CS1 and CS2. <p>3.2.6 and C7</p> <ul style="list-style-type: none"> • Please check whether the Seaward End has two or three layers. <p>3.4.3</p> <ul style="list-style-type: none"> • Please provide the size and describe the present condition of the two granite slabs. <p>4.2.1</p> <ul style="list-style-type: none"> • Please provide more details on the Detailed Condition Survey, such as the objectives, scope of work, any guidelines, party responsible for conducting the survey, etc. • Please elaborate more on the strict conditions recommended in the third point. <p>Figure C25</p> <ul style="list-style-type: none"> • Both "pillar" and "column" are found. Please be consistent. 	<p>The report has been prepared and certified by the Consultants.</p> <p>The text has been revised accordingly.</p> <p>The CS1 and CS2 have been deleted.</p> <p>Three layers. Text has been amended.</p> <p>The present condition is good. The granite slabs each measured 135cm long, 40cm wide and 18 cm thick.</p> <p>The recommendation for the Detailed Condition Survey has been deleted and will be addressed in the CMP.</p> <p>The recommendation for the strict conditions has been deleted and will be addressed in the CMP.</p> <p>"Pillar" was used instead of "column" throughout the Final Report.</p>
	<p>All R to C tables should be attached to the report.</p> <p>Further comments on the report will be discussed in our meeting in this afternoon.</p>	<p>This and all previous R to C tables have been included the report.</p>

**Agreement No. CE 35/2006(CE)
Kai Tak Development Engineering Study
cum Design and Construction of Advance Works
– Investigation, Design and Construction**

Further Archaeological Excavation Report

Responses to Comments

<u>Comments Received</u>	<u>Date Received</u>
1. Leisure and Cultural Services Department, AMO (email)	5 June 2009
2. Leisure and Cultural Services Department, AMO (email)	23 June 2009
3. Leisure and Cultural Services Department, AMO (email)	14 July 2009
4. Leisure and Cultural Services Department, AMO (email)	29 July 2009

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Further Archaeological Excavation Report

Responses to Comments

<u>No.</u>	<u>Comments</u>	<u>Responses</u>
1.	Leisure and Cultural Services Department, AMO email dated 5 June 2009	
	<p>Abstract</p> <ul style="list-style-type: none"> • Please mention the name “Lung Tsun Stone Bridge”. <p>Chapter 1</p> <p>1.1.2</p> <ul style="list-style-type: none"> • The description of the remains of Longjin Bridge (historical resource?) in this paragraph is not precise. Please amend. • Please delete “as an historical site” in the last sentence. <p>Chapter 2</p> <p>2.2.1</p> <ul style="list-style-type: none"> • Please check: “1898 pillars of the concrete extension” <p>Chapter 3</p> <p>3.1.1</p> <ul style="list-style-type: none"> • Please delete “such as historic map no. CXXXVII-NE8”. <p>3.3.5</p> <ul style="list-style-type: none"> • “Trench AA5” is not understandable here as the details of the investigation from March to May 08 have not been introduced in previous chapters. <p>Chapter 4</p> <ul style="list-style-type: none"> • <p>Chapter 5</p> <p>Table 5.1</p> <ul style="list-style-type: none"> • Please check the source numbers in the last two columns of the table. 	<p>The text has been revised accordingly.</p> <p>The “historical resource “has been revised as “historical structure”.</p> <p>“As an historical site” in the last sentence has been deleted.</p> <p>After counter checking, the “1898 pillars of the concrete extension” amended as “1910 pillars of the concrete extension”.</p> <p>Map no. CXXXVII-NE8 has been deleted.</p> <p>Trench AA5 has been deleted.</p> <p>The source numbers in the last two columns of the table have been checked and amended.</p>

<u>No.</u>	<u>Comments</u>	<u>Responses</u>
	<ul style="list-style-type: none"> Please check the measurements and level readings of all features discovered throughout the report. A table summarizing the information of all features discovered including the measurements and level readings should be provided. 	<p>The measurements and level readings of all features discovered throughout the report have been cross-checked.</p>
5.1.2	<ul style="list-style-type: none"> Please amend the fourth line as "...nine longitudinal granite slabs placed in parallel ...". 	<p>The fourth line has been amended accordingly.</p>
5.3.6	<ul style="list-style-type: none"> Lines 3 to 4: please check the measurements. Last line: please check the figure numbers. 	<p>The measurements and figure numbers described in section 5.36 have been amended.</p>
5.3.10	<ul style="list-style-type: none"> Line 3: please check the measurements. 	<p>The measurements described in section 5.3.10 have been amended.</p>
5.3.14	<ul style="list-style-type: none"> Please state the result of re-excavation. 	<p>The result of re-excavation has been added.</p>
5.4.3	<ul style="list-style-type: none"> Please check the description of the last line. 	<p>The description of the last line has been checked and revised.</p>
5.5.2	<ul style="list-style-type: none"> Please advise whether both the width and depth of cobbles are 1m. 	<p>The width and depth of cobbles of all about 1 m.</p>
5.6.6	<ul style="list-style-type: none"> Please review the description in this paragraph. 	<p>The description in this paragraph has been reviewed and amended.</p>
5.6.7	<ul style="list-style-type: none"> Please provide illustrations to substantiate the description in this paragraph. 	<p>Please refers to drawing AF4.1.</p>
5.6.9	<ul style="list-style-type: none"> Please replace "regime" by "reign". 	<p>"Regime" has been amended as reign.</p>
	<p>Chapter 6</p>	
6.1.1	<ul style="list-style-type: none"> Please delete "According to the raw material". 	<p>"According to the raw material" has been deleted.</p>
6.1.4	<ul style="list-style-type: none"> Please check the figure number. 	<p>The figure number has been checked.</p>
6.3.2	<ul style="list-style-type: none"> Please combine 6.3.2 and 6.3.3. Please replace "regime" by "reign". 	<p>The sections 6.3.2 and 6.3.3 has been combined.</p> <p>"Regime" has been amended as reign.</p>

<u>No.</u>	<u>Comments</u>	<u>Responses</u>
	<p>Chapter 7</p>	
7.2.3	<ul style="list-style-type: none"> Both “supporting pillars” and “supporting columns” are found in the report. Please be consistent. 	<p>All “supporting columns” were amended as “supporting pillars” throughout the report.</p>
7.2.4	<ul style="list-style-type: none"> Please elaborate more on the “proper means”. 	<p>The “proper means” has been fully interpreted in the Section 7.24.</p>
	<p>Chapter 8</p>	
8.2.4	<ul style="list-style-type: none"> “dress” should read as “dressed” in the first line and Table 8.1. 	<p>“Dress” has been amended as “dressed”.</p>
Table 8.1	<ul style="list-style-type: none"> The information provided in the column of Dimensions of Excavated Remains should be corresponded with those in the other chapters. 	<p>Dimensions of Excavated Remains described in Table 8.1 have been cross-checked with main text.</p>
	<p>Chapter 9</p>	
9.1.5	<ul style="list-style-type: none"> Please consider using “possible” instead of “believe” in the last sentence. 	<p>“Possible” has been amended accordingly.</p>
	<ul style="list-style-type: none"> Section 9 should include the recommendations. Please supplement accordingly. 	<p>The recommendations have been supplement.</p>
	<p>Figures</p>	
15	<ul style="list-style-type: none"> Please check the figure numbers. 	<p>Figure numbers have been cross checked.</p>
18	<ul style="list-style-type: none"> “Retaining seawall” should be replaced by “1930s’ seawall”. 	<p>“Retaining seawall” has been amended.</p>
19	<ul style="list-style-type: none"> “Retaining seawall” should be replaced by “1930s’ seawall”. 	<p>“Retaining seawall” has been replaced.</p>
	<ul style="list-style-type: none"> The drawings of some pillars of Former Kowloon City Pier are found incomplete. 	<p>The drawings have been revised.</p>
	<ul style="list-style-type: none"> Please delete “View A, View B, Cut Line x-x, Cut Line Y-Y”. 	<p>“View A, View B, Cut Line x-x, Cut Line Y-Y” have been deleted.</p>
19-24	<ul style="list-style-type: none"> Both “supporting pillars” and “supporting columns” are found in the report. Please be consistent. 	<p>All “supporting columns” were amended as “supporting pillars” throughout the report.</p>
57	<ul style="list-style-type: none"> Please check figure numbers. 	<p>Figure numbers have been cross checked.</p>

<u>No.</u>	<u>Comments</u>	<u>Responses</u>
65	<ul style="list-style-type: none"> Please add pointer to show the two granite slabs. 	Pointers have been added for tow granite slabs.
77-78	<ul style="list-style-type: none"> The remains of the Bridge cannot be clearly shown. 	This figure has been revised.
	Appendix A	
1.1A	<ul style="list-style-type: none"> The drawings of some pillars of Former Kowloon City Pier are found incomplete. Please add labels of all SPs, GD1 and GD2. These features should be clearly shown on the plan. Please use different pointers to mark the Pavilion for Greeting Officials and landing portion of Longjin Bridge. The two granite blocks in relation to the Pavilion for Greeting Officials are missing. For the side view, please check the pointer locations of SP1, SP2 and 1924 seawall. Please check the location of T3c. 	<p>The drawings have been revised.</p>
1.1B	<ul style="list-style-type: none"> Please check the year of timber extension. Please add labels of all SPs, GD1, GD2, CS1 and CS2. The two granite blocks in relation to the Pavilion for Greeting Officials are missing. The drawings of some pillars of Former Kowloon City Pier are found incomplete. 	<p>The year of timber extension has been checked.</p> <p>The drawings have been revised.</p> <p>The drawings have been revised.</p> <p>The drawings have been revised.</p>
1.2	<ul style="list-style-type: none"> The drawings of some pillars of Former Kowloon City Pier are found incomplete. 	The drawings have been revised.
1.7	<ul style="list-style-type: none"> Please add label to show the part of Longjin Bridge. Please add arrow to link the Enlarged View A with the plan. 	The drawings have been revised.

<u>No.</u>	<u>Comments</u>	<u>Responses</u>
	<p>4.1</p> <ul style="list-style-type: none"> • Please add labels of all SPs, GD1, GD2, CS1 and CS2. • The drawings of some pillars of Former Kowloon City Pier are found incomplete. • The two granite blocks in relation to the Pavilion for Greeting Officials are missing. • AA2A is not clear. • Is it possible to show the foundation of the terminal building? <p>Appendix B</p> <ul style="list-style-type: none"> • Please amend the figure according to the above comments on figures. <p>Appendix C</p> <ul style="list-style-type: none"> • Please refer to the above comments and amend relevant parts accordingly. <p>3.4.1</p> <ul style="list-style-type: none"> • Both “2 granite slabs” and “2 granite blocks” are found in the report. Please be consistent. <p>3.4.2</p> <ul style="list-style-type: none"> • Please elaborate more on the protection measures. <p>Fig. C1</p> <ul style="list-style-type: none"> • Please add label of SP1. 	<p>The drawings have been revised.</p>
2.	<p>Leisure and Cultural Services Department, AMO email dated 23 June 2009</p> <p>General comments:</p> <ul style="list-style-type: none"> • It is noted that the report has not been fully amended according to our discussion in the meeting on 4.6.2009. • Please check the measurements and level readings again and make sure that they are consistent throughout the report. 	<p>Noted.</p> <p>The measurements and level readings of all features discovered throughout the report have been cross-checked.</p>

<u>No.</u>	<u>Comments</u>		<u>Responses</u>
	Abstract	<p>Specific comments:</p> <ul style="list-style-type: none"> • 3rd para.: “development control zone” should read as “buffer zone”. Please use “監控區” in the Chinese abstract and amend other relevant parts accordingly. • Please delete “(which shall include the space vertically above and the ground below the plan area of the control zone)”. Please amend the Chinese abstract and other relevant parts accordingly. • 提要第一段: “畫”應改為“劃” 	<p>The Chinese and English words have been amended accordingly.</p> <p>“(which shall include the space vertically above and the ground below the plan area of the control zone)” has been deleted, the Chinese abstract and other relevant parts accordingly have been amended accordingly.</p> <p>“畫” has been amended.</p>
	Chapter 4		
	4.1.3	<ul style="list-style-type: none"> • Figures 7a and 7b cannot be found. 	Figures 7a and 7b have been added.
	4.2.8	<ul style="list-style-type: none"> • Figure 7a cannot be found. 	Figures 7a has been added.
	4.3.5	<ul style="list-style-type: none"> • “pliers” should read as “pillars”. 	Pliers have been revised as “pillars”.
	Chapter 5		
	Table 5.1	<ul style="list-style-type: none"> • Source (6) cannot be found. • Source (7) is not used. 	<p>Table 5.1 has been revised accordingly.</p> <p>Table 5.1 has been revised accordingly.</p>
	5.1.2	<ul style="list-style-type: none"> • Please check the figure numbers. 	Figure numbers have been cross checked.
	5.6.8	<ul style="list-style-type: none"> • “granite blocks” should read as “granite slabs”. 	“granite blocks” has been ammended as “granite slabs”.
	5.8.3	<ul style="list-style-type: none"> • Please check figure no. 79. 	Figure numbers have been cross checked.
	5.10.1	<ul style="list-style-type: none"> • Some of the level readings are missing, such as top elevation of remains of Longjin Bridge in T3c, remains of Pavilion and landing portion, remains of Former Kowloon City Pier. Please check 	This section has been revised accordingly.

<u>No.</u>	<u>Comments</u>	<u>Responses</u>
	<p>Chapter 7</p> <p>7.2.3</p> <ul style="list-style-type: none"> • Top elevation of Bridge remains in T3b is different from the reading in Figure 1.1A. 	<p>The elevation has been cross-checked and amended.</p>
	<ul style="list-style-type: none"> • Please check figure nos. 7a and 7b. 	<p>Figure numbers have been cross checked.</p>
	<p>Chapter 9</p> <p>9.1.8</p> <ul style="list-style-type: none"> • “granite slabs” should be used instead of “granite blocks”. 	<p>granite blocks” has been ammended as “granite slabs”.</p>
	<p>Figures</p>	
1	<ul style="list-style-type: none"> • “1930s’ seawall” should read as “1930’s causeway”. 	<p>“1930s’ seawall” has been amended as “1930’s causeway”.</p>
13	<ul style="list-style-type: none"> • “Retaining seawall” should be replaced by “1930s’ causeway”. 	<p>“1930s’ seawall” has been amended as “1930’s causeway”.</p>
15	<ul style="list-style-type: none"> • Please check the information in the blue boxes. 	<p>Information have been cross checked.</p>
18	<ul style="list-style-type: none"> • “Retaining seawall” should be replaced by “1930s’ causeway”. 	<p>“1930s’ seawall” has been amended as “1930’s causeway”.</p>
19	<ul style="list-style-type: none"> • “Retaining seawall” should be replaced by “1930s’ causeway”. 	<p>“1930s’ seawall” has been amended as “1930’s causeway”.</p>
	<ul style="list-style-type: none"> • “supporting columns” should read as “supporting pillars” • The drawings of some pillars of Former Kowloon City Pier are found incomplete. 	<p>“supporting columns” has been revised as “supporting pillars”</p> <p>Figures have been revised.</p>
	<ul style="list-style-type: none"> • Please delete “View A, View B, Cut Line x-x, Cut Line Y-Y”. 	<p>“View A, View B, Cut Line x-x, Cut Line Y-Y” have been deleted.</p>
20-24	<ul style="list-style-type: none"> • “supporting columns” should read as “supporting pillars”. 	<p>“supporting columns” has been revised as “supporting pillars”</p>
55	<ul style="list-style-type: none"> • Please add the label of “SP1” on the photo. Please check the locations of “GD1” and GD2”. 	<p>Figures have been revised.</p>

<u>No.</u>	<u>Comments</u>	<u>Responses</u>
56	<ul style="list-style-type: none"> • Please check the caption. "SP1" or "SP2"? 	Captions of SPs1 and 2 have been revised.
57	<ul style="list-style-type: none"> • Please check the information in the green boxes. 	Information have been cross checked.
65	<ul style="list-style-type: none"> • Please add pointer to show the two granite slabs. 	Figures have been revised.
69	<ul style="list-style-type: none"> • "Regime" should read as "reign". 	"Regime" has been amended as reign.
88	<ul style="list-style-type: none"> • Wrong figure number. 	Figure numbers have been revised.
90	<ul style="list-style-type: none"> • "Regime" should read as "reign". 	"Regime" has been amended as reign.
Appendix A		
1.1A	<ul style="list-style-type: none"> • "1924 causeway" should read as "1924 seawall". 	"1924 causeway" has been revised as "1924 seawall".
	<ul style="list-style-type: none"> • Please check the locations of labels "GD1" and "GD2". 	Figures have been revised.
1.1B	<ul style="list-style-type: none"> • Please check the locations of labels "GD1" and "GD2". 	Figures have been revised.
1.5	<ul style="list-style-type: none"> • Please check the locations of labels "SP1", "SP2", "GD1" and "GD2". 	Figures have been revised.
4.1	<ul style="list-style-type: none"> • "1924 causeway" should read as "1924 seawall". 	Figures have been revised.
	<ul style="list-style-type: none"> • Please check the locations of labels "GD1" and "GD2". 	Figures have been revised.
	<ul style="list-style-type: none"> • "1924 causeway" should read as "1924 seawall". 	Figures have been revised.
	<ul style="list-style-type: none"> • Existing box culvert is not clear. 	Figures have been revised.
Appendix C		
1.1.2	<ul style="list-style-type: none"> • "resource" should read as "structure". 	The "historical resource" has been revised as "historical structure".
1.1.5	<ul style="list-style-type: none"> • "31 December 2008" should read as "20 February 2009". 	"31 December 2008" has been revised as "20 February 2009".
2.2.8	<ul style="list-style-type: none"> • "seawall" should read as "causeway". 	The "seawall" has been revised as "causeway".

No.	Comments	Responses
3.1.1	<ul style="list-style-type: none"> • "31 December 2008" should read as "20 February 2009". 	"31 December 2008" has been revised as "20 February 2009".
3.2.7	<ul style="list-style-type: none"> • The dimensions and level do not match with those in Table 8.1. 	The section 3.27 has been cross check with Table 8.1 and amended according to the checking result.
3.2.14-15	<ul style="list-style-type: none"> • "supporting pier" should read as "supporting pillar". 	"supporting pier" has been revised as "supporting pillar".
3.4.3	<ul style="list-style-type: none"> • The dimensions do not match with those in Table 8.1. 	The dimensions has been cross check with Table 8.1 and amended according to the checking result.
4.2.2	<ul style="list-style-type: none"> • Please delete "For general civil engineering works outside the development control zone ...can be exempted." 	"For general civil engineering works outside the development control zone ...can be exempted." Has been deleted accordingly.
4.2.3	<ul style="list-style-type: none"> • Please delete this paragraph. 	This paragraph has been deleted.
5.1.2	<ul style="list-style-type: none"> • Please delete "CS1 and CS2". "(next to the 1924 seawall, SP1 to SP9)" should read as "SP1, SP2 and SP6". 	The information has been deleted.
5.1.5	<ul style="list-style-type: none"> • The measures mentioned in 7.2.4 of the main text cannot be found in Appendix C. 	The measures mentioned in 7.2.4 of the main text have been cross checked with in Appendix C.
Fig. C1	<ul style="list-style-type: none"> • Please add label of SP1. Please check the locations of labels "GD1" and GD2". 	Figures have been revised.
Fig. C22-25	<ul style="list-style-type: none"> • "supporting columns" should read as "supporting pillars". 	"supporting pier" has been revised as "supporting pillar".
3.	<p>Leisure and Cultural Services Department, AMO email dated 14 July 2009</p> <p>1. The elevation and dimension figures should be consistent throughout the report. It is found that some figures do not correspond with paragraph 5.10.1, Table 8.1 and Figure 1.1A. Please check the elevation/dimension figures again, especially those in the following paragraphs:</p>	Paragraph 5.10.1, Table 8.1 and Figure 1.1A have been checked and updated accordingly.

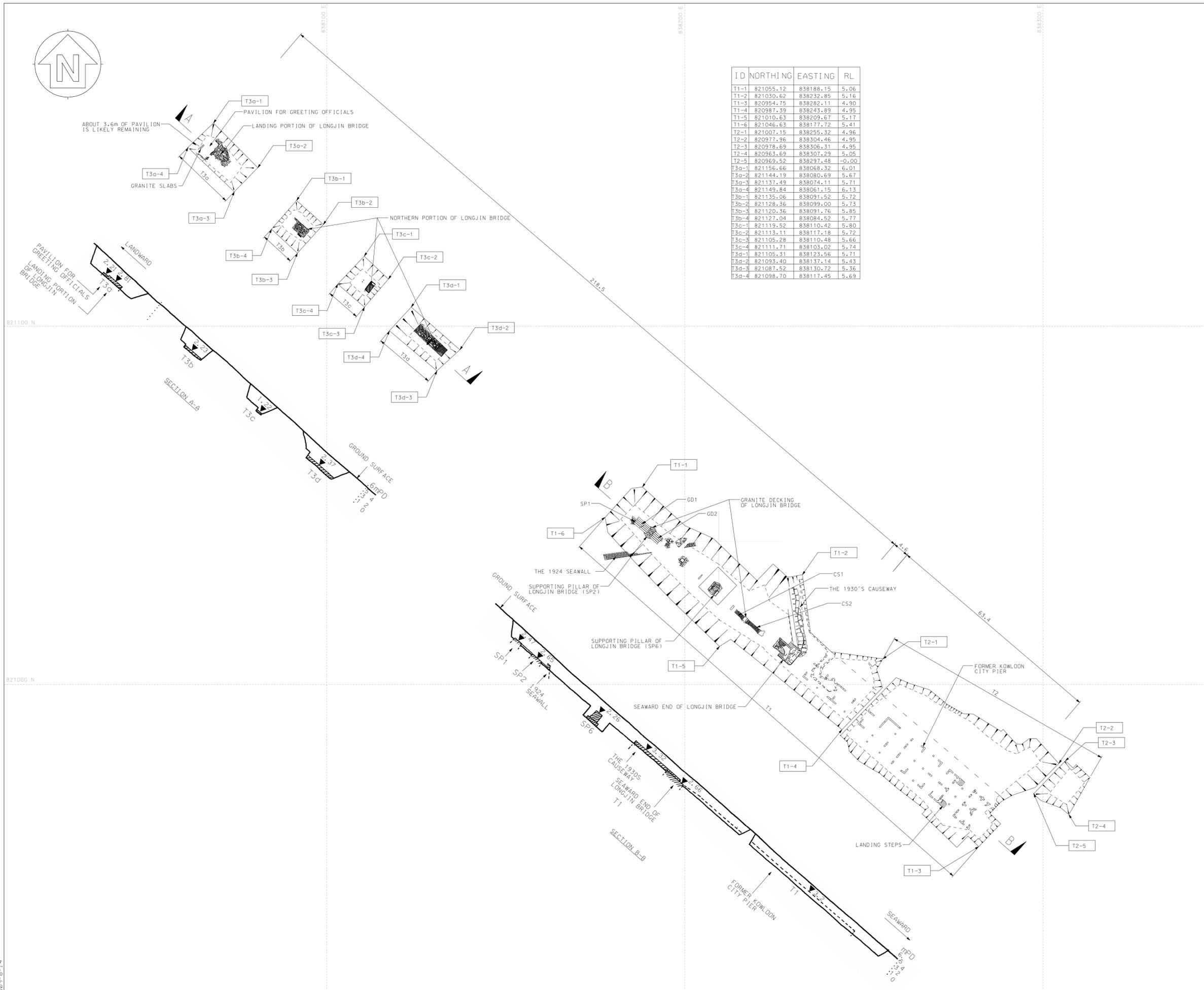
<u>No.</u>	<u>Comments</u>		<u>Responses</u>
	Main text		
5.3.3		Line 3	Text has been revised as "The top elevation of this causeway was at 3.32 mPD."
5.3.12		Line 4	Text has been revised as "The top of the decking is about +2.66 mPD."
5.5.2		Line 2	Text has been revised as "...at supporting pillar SP6 down to its uppermost of first layer of footing stone at -0.80mPD."
5.6.4		Line 2	Text has been revised as "The length of the landing portion remains is 5.25m and the width is 4.8m (Figures 61 to 68, AF1.9)."
5.7.4		Line 4	Text has been revised as "The side walls were constructed of five layers of granite blocks with the top elevation of the first layer at 2.23 mPD and the bottom elevation of the footing stones at +0.60mPD. The range of side wall granite blocks measured between 1000mm (L) x 300mm (W) x 200mm (H) and 2200mm (L) x 300mm (W) x 150mm/220mm (H) (Figures 74 to 76)."
5.8.3		Line 3	Text has been updated as "The top elevation of the remains is at 1.22mPD and the length of the excavated remains is about 3m (Figure 78)."
5.8.4		Line 6	Text has been revised as "The longitudinal blocks each measure 1200mm (L) x 300mm (W) x 200mm (H)."
5.9.4		Line 5	Text has been updated as "The top elevation of the first layer of blocks is at 2.37mPD...".
9.1.7		Line 2	Text has been revised as "An additional grid was excavated at the granite supporting pillar SP6 down to near the bottom of the pillar's footing stones at -2.0mPD."
9.1.10		Line 2	Text has been revised as "... the basement floor of the Former Terminal Building between +0.60mPD to+2.81mPD at Trenches T3a, T3b, T3c and T3d."
	Appendix C		
3.2.7		Line 3	Text has been revised as "The top of the seaward end is at about 2.66mPD. The structure of the seaward end is believed to be found on coarse marine sand at about elevation of -0.8mPD."

<u>No.</u>	<u>Comments</u>		<u>Responses</u>
	3.2.11	Line 1	Text has been revised as "Deep excavation was carried out down to sea deposit layer (-2.0mPD)..."
	3.2.13	Line 3	Text has been revised as "The lowermost of the third layer of footing stone are at elevation of -2.0mPD."
	4.1.4	Lines 2 and 3	Text has been revised as "...areas (the uppermost of SP6 is at 2.26mPD and the highest point of northern portion of Longjin Bridge is at 2.81mPD),...".
	2.	Line 4 of para. 5.8.3, Figure 79 should be 78.	Figure no has been revised accordingly.
	3.	Line 3 of para. 9.1.15, "buff" should be "buffer".	Text has been revised accordingly.
	4.	Figure 1, the word "causeway" is missing in the box for T1.	"Causeway" has been added to Figure 1.
	5.	Figure 18, "retaining seawall" should read as "1930's causeway.	Figure name has been revised accordingly.
	6.	Figure 20, "columns" should read as "pillars".	Figure name has been revised accordingly.
	7.	Please delete para. 4.2.2 in Appendix C.	Para. 4.2.2 has been deleted.
	8.	Please attach all the R to C tables to the report.	The R to C tables have been attached to this submission.
4.	Leisure and Cultural Services Department, AMO email dated 29 July 2009		
	I refer to your letter dated 20.7.2009 attaching the captioned report. Our comments on the report are as follows:		
	1.	5.7.4: Please check the size of wall granite blocks.	The size has been checked and revised.
	2.	5.8.3: Line 4, please check the length of the excavated remains.	The length has been checked and revised.
	3.	Table 8.1: Second row on page 32, "Bottom elevation of SP6 footing stone; -0.8;" should read as "Uppermost of first layer of footing stone; -0.8;".	"Bottom elevation of SP6 footing stone; -0.8;" has been revised as "Uppermost of first layer of footing stone; -0.8;".

<u>No.</u>	<u>Comments</u>	<u>Responses</u>
	<p>4. 9.1.15: With reference to 4.2.1 of the Structural Assessment Report, the sentence about vertical spacing is noted. For consistency, please add this sentence in 9.1.15.</p> <p>5. Figure 1: The word "causeway" is missing in the box for T1.</p> <p>6. Figure 18: "Retaining Seawall" in the second line of the caption should read as "1930's causeway".</p> <p>7. Figure 1.1A: Please add a table on the figure to present the following data for easy reference:</p> <p>a) original width and length of the Pavilion</p> <p>b) the maximum width of remains of Pavilion, Longjin Bridge and Kowloon City Pier from this excavation</p> <p>c) the length of remains of Pavilion, Longjin Bridge and Kowloon City Pier from this excavation</p> <p>d) the total extent in length of all remains discovered from this excavation</p> <p>8. Please provide a front page for the R to C table which should show all the comments received with date.</p> <p>9. Responses to our comments dated 5.6.2009 and 23.6.2009 are missing in the R to C table.</p> <p>10. Please provide response to our request for a foundation plan of the terminal building.</p>	<p>The vertical spacing has been added accordingly.</p> <p>"Causeway" has been added.</p> <p>"Retaining Seawall" has been revised accordingly.</p> <p>The relevant information has been added to the AF1.1A according.</p> <p>See above</p> <p>See above</p> <p>See above</p> <p>See above</p> <p>This has been provided in this submission.</p> <p>This has been provided in this submission.</p> <p>We have visited ArchSD for 3 times already and had a discussion with their concerned colleagues in which we had re-indicated the location and the extent of the structure, of which we need the as-built drawings. Nevertheless, based on the available information provided by ArchSD after detailed search of their records, no foundation plans of the terminal building structure at the location of Longjin Bridge can be found in their office.</p>

Appendix A

General Layout Plan of Trench Location



ID	NORTHING	EASTING	RL
T1-1	821055.12	838188.15	5.06
T1-2	821030.62	838232.85	5.16
T1-3	820954.75	838282.11	4.90
T1-4	820987.39	838243.89	4.95
T1-5	821010.63	838209.67	5.17
T1-6	821046.63	838177.72	5.41
T2-1	821007.15	838255.32	4.96
T2-2	820977.96	838304.46	4.95
T2-3	820978.69	838306.31	4.95
T2-4	820963.69	838307.29	5.05
T2-5	820969.52	838297.48	-0.00
T3a-1	821156.66	838068.32	6.01
T3a-2	821144.19	838080.69	5.67
T3a-3	821137.49	838074.11	5.71
T3a-4	821149.84	838061.15	6.13
T3b-1	821135.06	838091.52	5.72
T3b-2	821128.36	838099.00	5.73
T3b-3	821120.36	838091.76	5.85
T3b-4	821127.04	838084.52	5.77
T3c-1	821119.52	838110.42	5.80
T3c-2	821113.11	838117.18	5.72
T3c-3	821105.28	838110.48	5.66
T3c-4	821111.71	838103.02	5.74
T3d-1	821105.31	838123.56	5.71
T3d-2	821093.40	838137.14	5.43
T3d-3	821087.52	838130.72	5.36
T3d-4	821098.70	838117.45	5.69

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- LEGEND:
- TRENCH TOP LINE
 - TRENCH BOTTOM LINE
 - EXCAVATION SLOPE

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 九龍新發展處



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CONTRACT NO. KL/2008/05 KAI TAK
 DEVELOPMENT - FURTHER ARCHAEOLOGICAL
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 OF FORMER KAI TAK AIRPORT

Drawing title
**GENERAL LAYOUT PLAN OF
 FURTHER ARCHAEOLOGICAL EXCAVATION**

Checked	-	Drawn	TWH
Approved	-	Scale	A1 1:500 A3 1:1000
Sketch no	FIGURE 1.1A	Date	08-04-2009

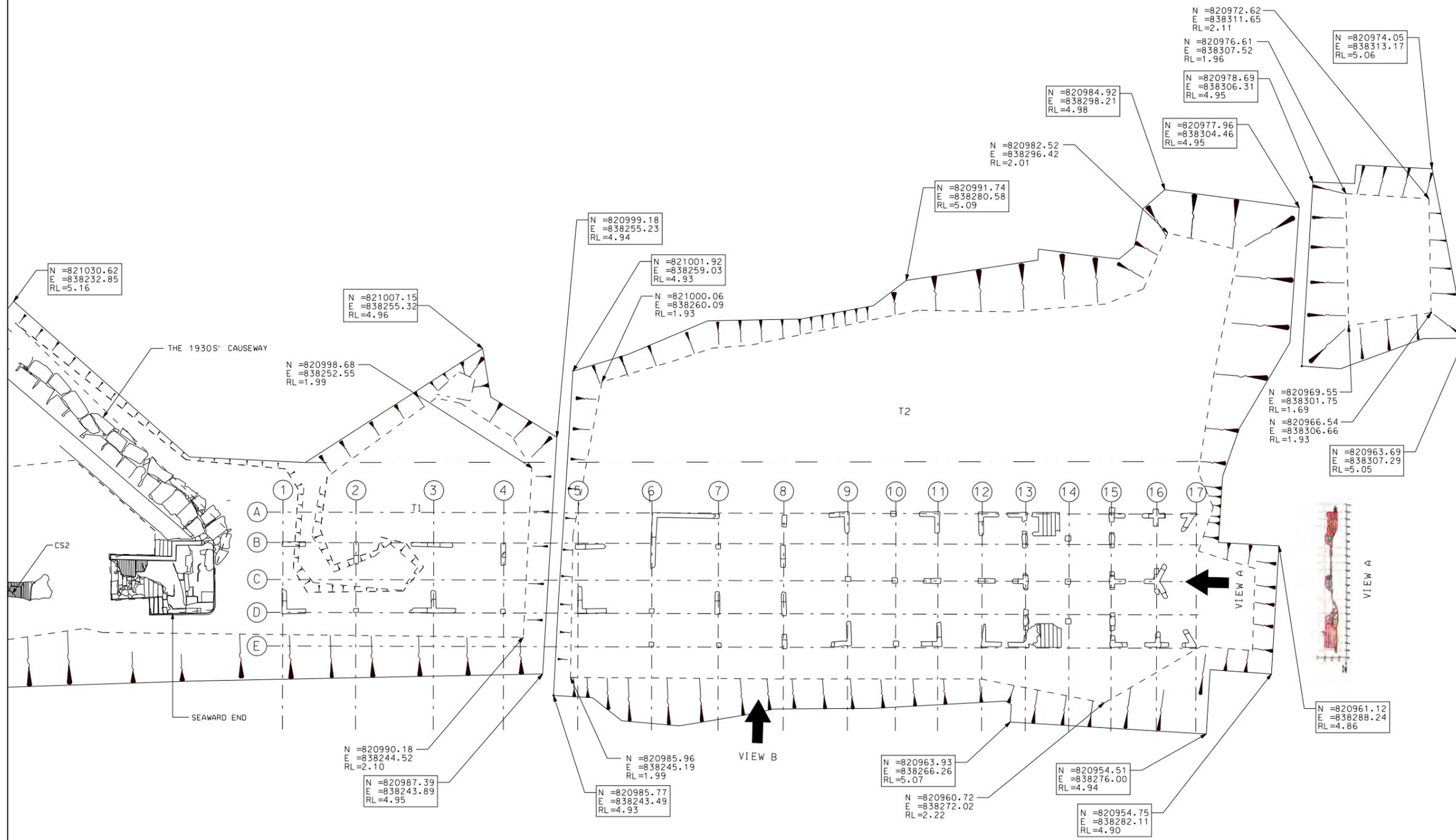
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 - FOR ENLARGED SIDE VIEWS, PLEASE REFER TO FIGURE 1.2A.

- LEGEND:
- TRENCH TOP LINE
 - TRENCH BOTTOM LINE
 - EXCAVATION SLOPE



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Drawing Title

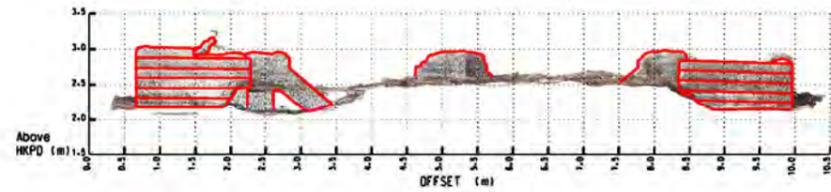
OVERVIEW OF TRENCH LOCATION
 OF LONGJIN BRIDGE AND
 FORMER KOWLOON CITY PIER- T1

Checked	-	Drawn	XCF
Approved	-	Scale	A3 1:300
Sketch no.	FIGURE 1-2	Date	08-04-2009

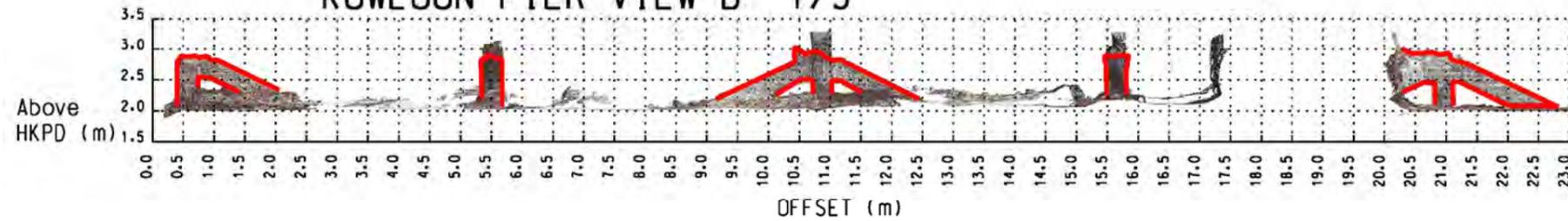
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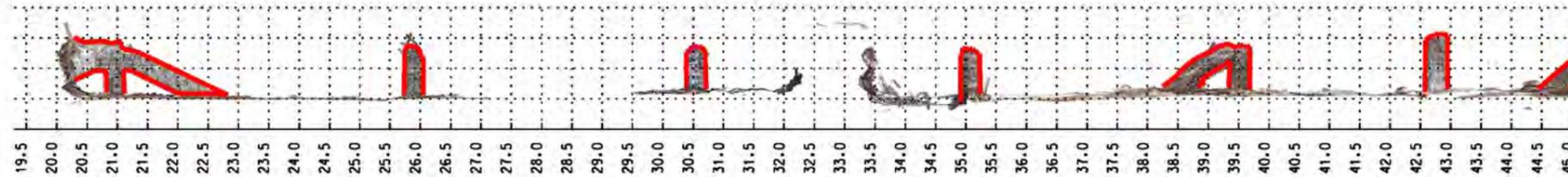
KOWLOON PIER VIEW A



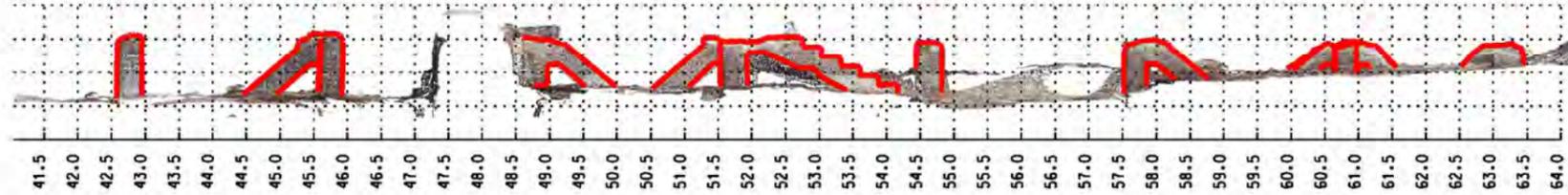
KOWLOON PIER VIEW B 1/3



KOWLOON PIER VIEW B 2/3



KOWLOON PIER VIEW B 3/3



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 - 4 ALL COORDINATES REFER TO HONG KONG (1980) METRIC GRID SYSTEM.
 - 5 FOR PLAN VIEW, PLEASE REFER TO FIGURE 1.2.

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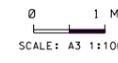
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OVERVIEW OF TRENCH LOCATION
 OF FORMER KOWLOON CITY PIER - T1

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Sketch no.	FIGURE 1.2A	Date	08-04-2009

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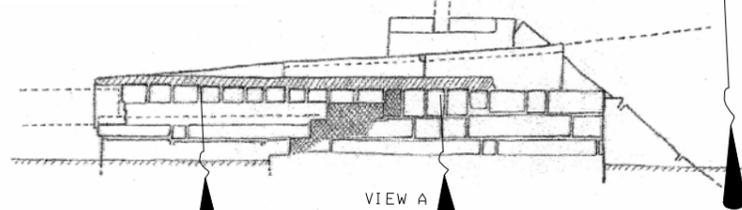
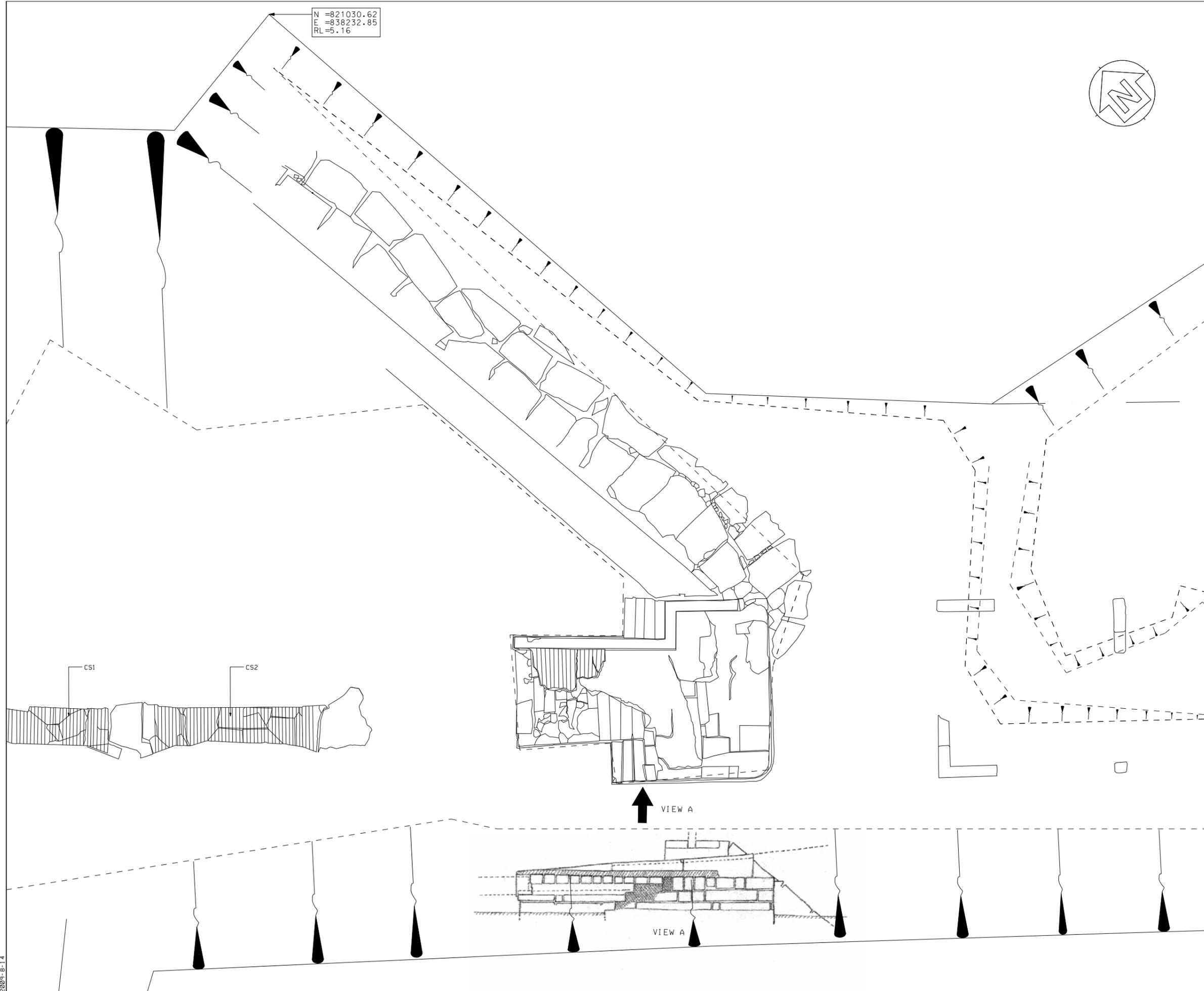
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N = 821030.62
 E = 838232.85
 RL = 5.16



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 - 4 ALL COORDINATES REFER TO HONG KONG (1980) METRIC GRID SYSTEM.
 - 5 FOR ENLARGED VIEW, PLEASE REFER FIGURE 1.3A.

- LEGEND:
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 - - - - TRENCH BOTTOM LINE
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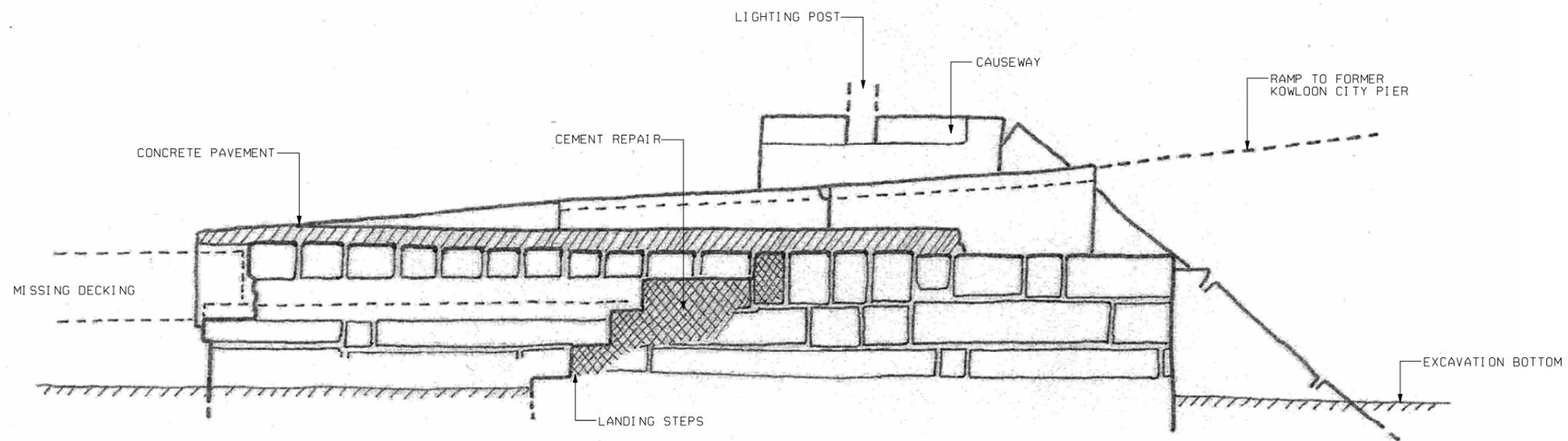
OVERVIEW OF TRENCH LOCATION
 OF LONGJIN BRIDGE - T1

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Sketch no.	FIGURE 1.3	Date	08-04-2009

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VIEW A

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LEGEND:

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 OF LONGJIN BRIDGE - T1

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Sketch no.	FIGURE 1.3 A	Date	08-04-2009

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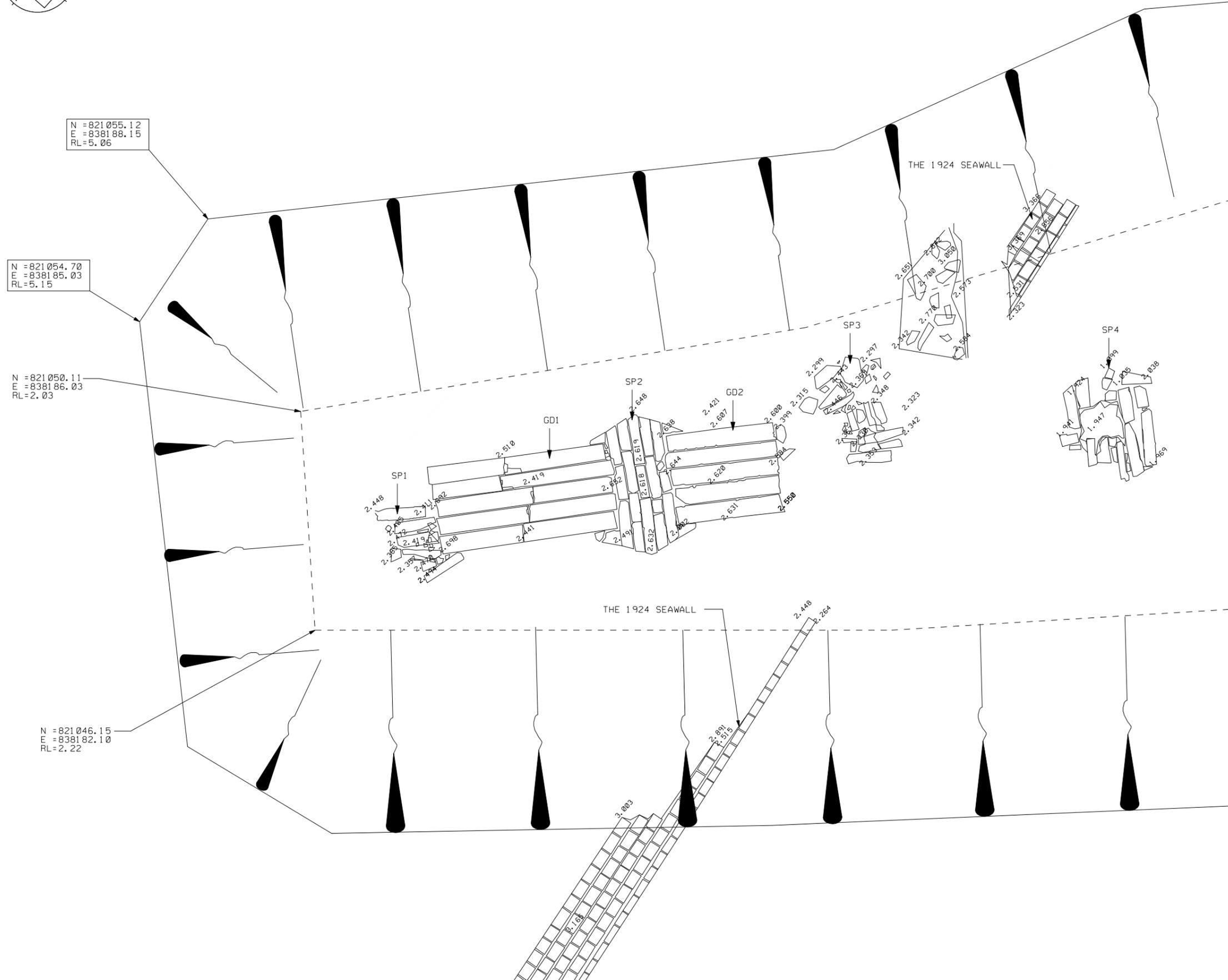
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 - 3 ALL LEVELS REFER TO HONG KONG PRINCIPAL DATUM (P.D.).
 - 4 ALL COORDINATES REFER TO HONG KONG (1980) METRIC GRID SYSTEM.
 - 5 THE REMAINS OF SP4 AND 1924 SEAWALL WERE UNEARTHED IN MAY 2008, BUT NOT EXCAVATED IN THE FURTHER EXCAVATION.

- LEGEND:
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 - - - TRENCH BOTTOM LINE
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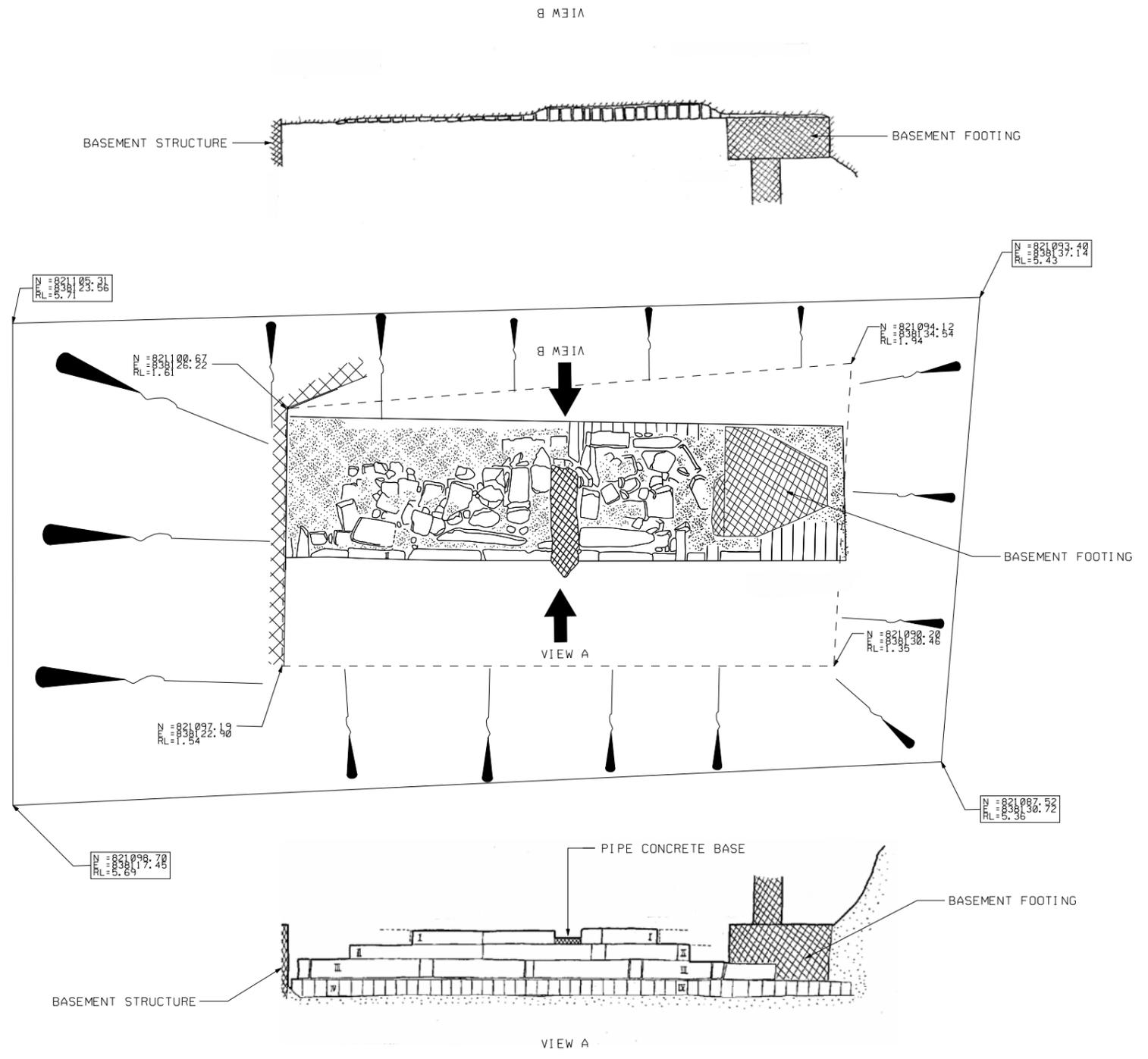
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OVERVIEW OF TRENCH LOCATION
OF LONGJIN BRIDGE & 1924 SEAWALL

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Sketch no.	FIGURE 1.5	Date	08-04-2009

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- LEGEND:
- TRENCH TOP LINE
 - - - - TRENCH BOTTOM LINE
 - ▣ BASEMENT STRUCTURES OF FORMER TERMINAL BUILDING

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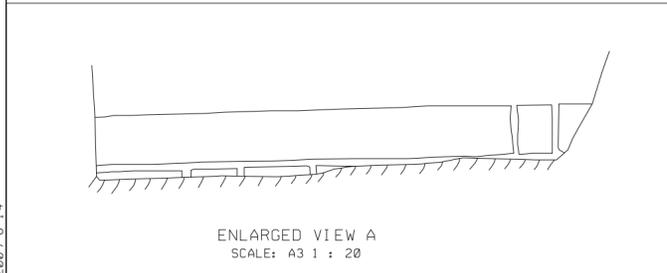
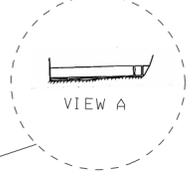
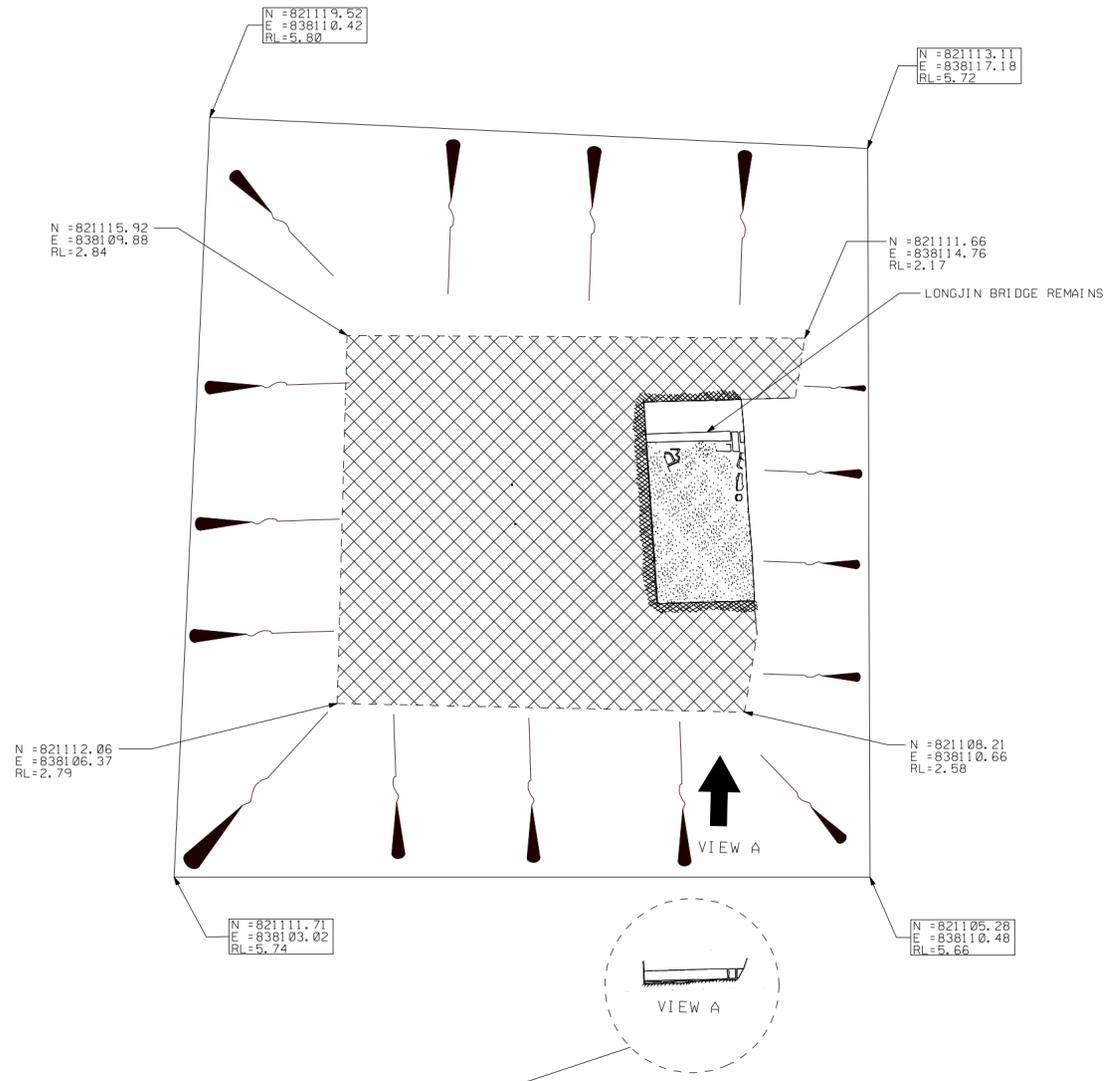
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Drawing title
 OVERVIEW OF TRENCH LOCATION
 OF LONGJIN BRIDGE - T3D

Checked	-	Drawn	XCF
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Sketch no.	FIGURE 1.6	Date	08-04-2009

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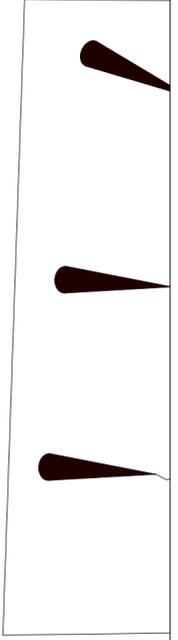




ENLARGED VIEW A
SCALE: A3 1 : 20

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- LEGEND:
- TRENCH TOP LINE
 - - - - TRENCH BOTTOM LINE
 - ▨ BASEMENT STRUCTURES OF FORMER TERMINAL BUILDING
 - ▲ EXCAVATION SLOPE



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OVERVIEW OF TRENCH LOCATION
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Approved	—	Scale	A3 1:100
Sketch no	FIGURE 1.7	Date	08-04-2009

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RL = 5.73

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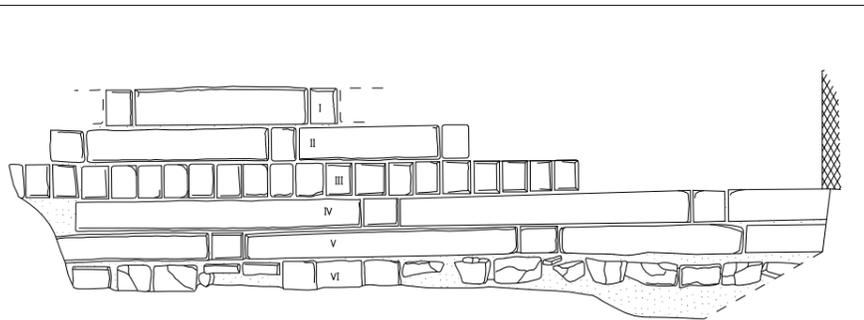
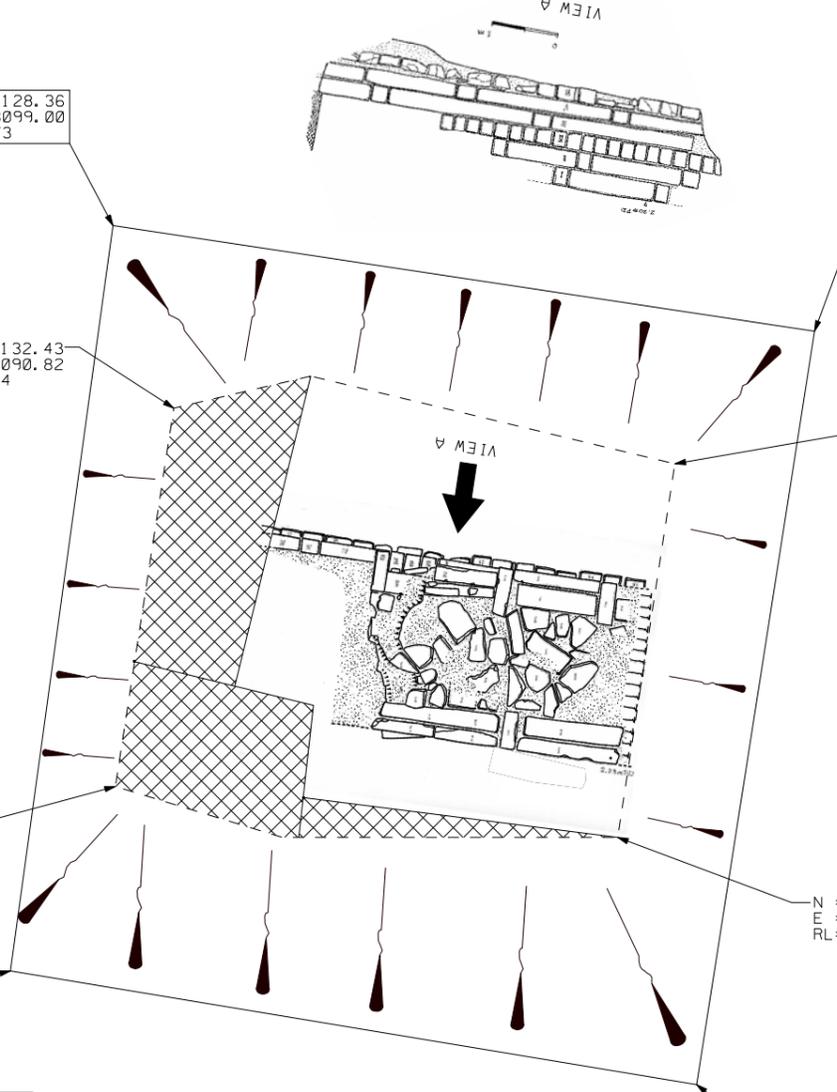
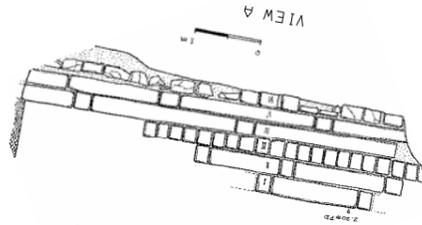
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0 1 M
ENLARGED VIEW A
SCALE: A3 1:50

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 - 4 ALL COORDINATES REFER TO HONG KONG (1980) METRIC GRID SYSTEM.

- LEGEND:
- TRENCH TOP LINE
 - - - TRENCH BOTTOM LINE
 - ▣ BASEMENT STRUCTURES OF FORMER TERMINAL BUILDING

Rev	Description	By	Date

Civil Engineering and Development Department
土木工程發展署
KOWLOON DEVELOPMENT OFFICE
九龍發展處



KAI TAK DEVELOPMENT
ENGINEERING STUDY CUM DESIGN AND
CONSTRUCTION OF ADVANCE WORKS-INVESTIGATION,
DESIGN AND CONSTRUCTION

CONTRACT NO. KL/2008/05 KAI TAK
DEVELOPMENT - FURTHER ARCHAEOLOGICAL
EXCAVATION AT NORTH APRON
OF FORMER KAI TAK AIRPORT

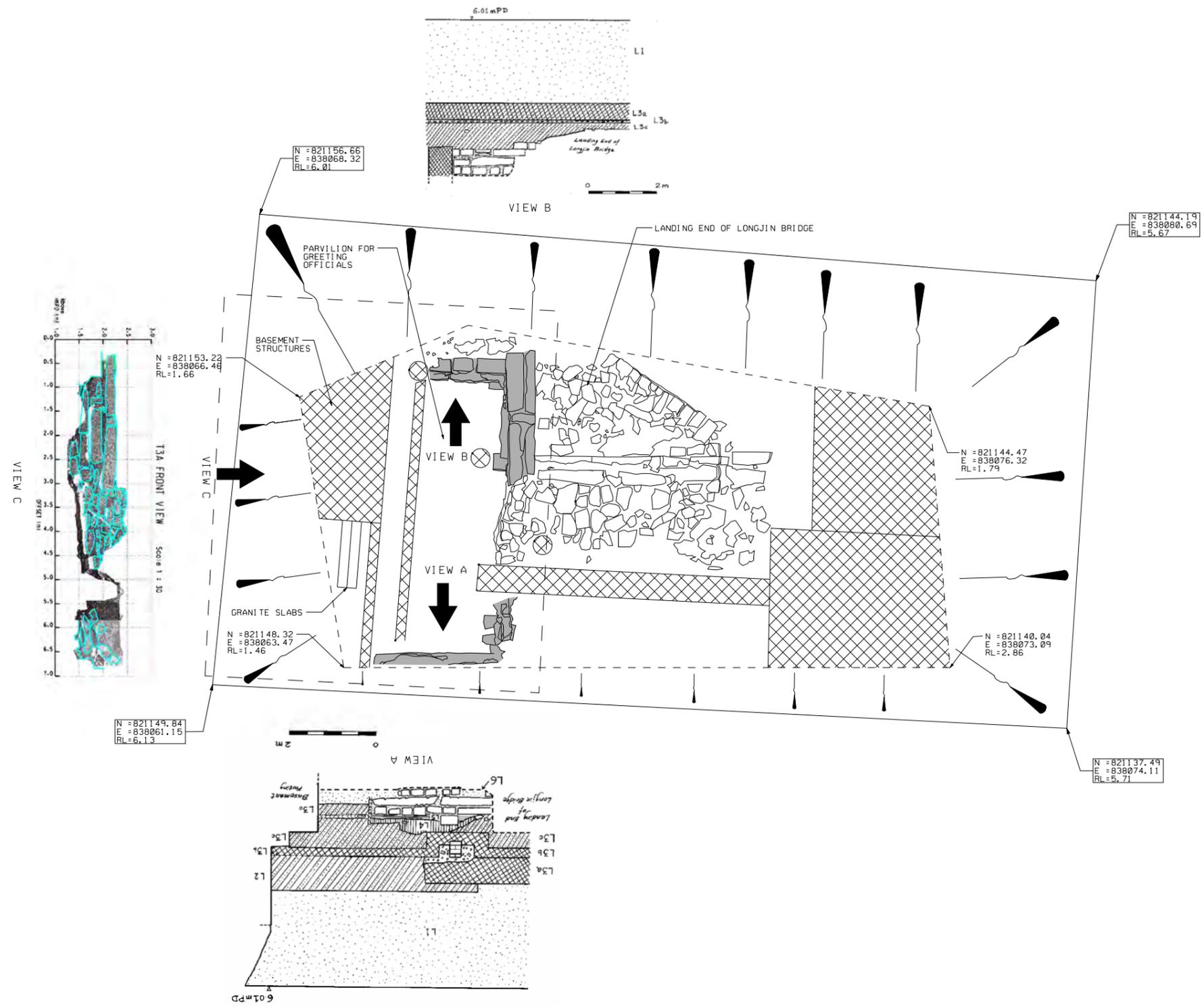
Drawing title

OVERVIEW OF TRENCH LOCATION
OF LONGJIN BRIDGE - T3B

Checked	-	Drawn	XCF
Approved	-	Scale	A3 1:100
Sketch no.	FIGURE 1.8	Date	08-04-2009

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 - 4 ALL COORDINATES REFER TO HONG KONG (1980) METRIC GRID SYSTEM.

- LEGEND:
- TRENCH TOP LINE
 - - - TRENCH BOTTOM LINE
 - ▣ BASEMENT STRUCTURES OF FORMER TERMINAL BUILDING
 - ▨ PAVILION EDGE
 - ↕ EXCAVATION SLOPE

Rev	Description	By	Date

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KAI TAK DEVELOPMENT
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 DEVELOPMENT – FURTHER ARCHAEOLOGICAL
 EXCAVATION AT NORTH APRON
 OF FORMER KAI TAK AIRPORT

Drawing title
 OVERVIEW OF TRENCH LOCATION
 OF LONGJIN BRIDGE - T3A

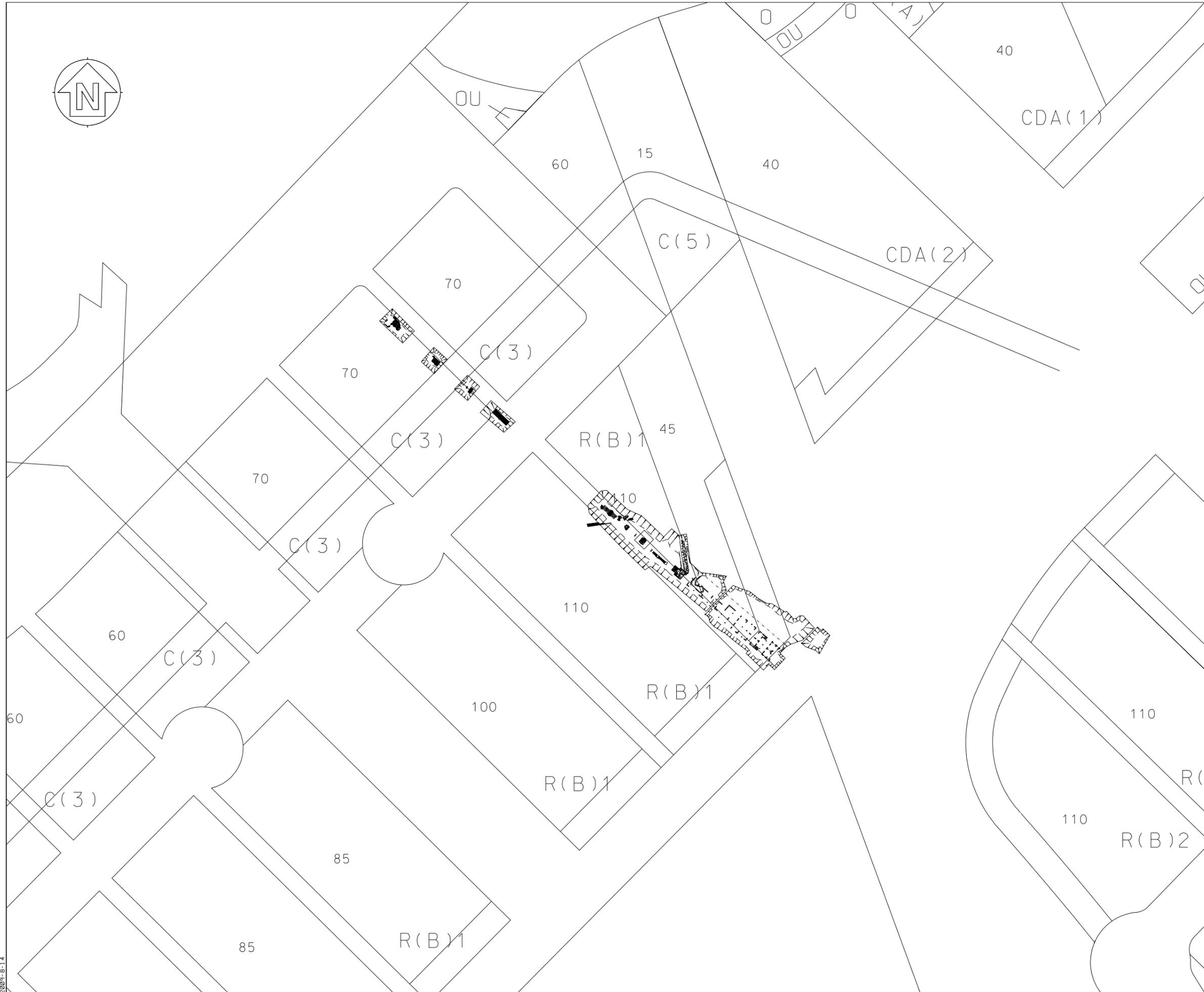
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Approved	-	Scale	A3 1:100
Sketch no.	FIGURE 1.9	Date	08-04-2009

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Appendix B

***Longjin Bridge and Formation Kowloon City Pier
Locations in Outline Zoning Plan***



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- 2 ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
- 3 ALL LEVELS REFER TO HONG KONG PRINCIPAL DATUM (P. D.).
- 4 ALL COORDINATES REFER TO HONG KONG (1980) METRIC GRID SYSTEM.

LEGEND:

- TRENCH TOP LINE
- - - - TRENCH BOTTOM LINE

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 DESIGN AND CONSTRUCTION

CONTRACT NO. KL/2008/05 KAI TAK
 DEVELOPMENT - FURTHER ARCHAEOLOGICAL
 EXCAVATION AT NORTH APRON
 OF FORMER KAI TAK AIRPORT

Drawing title
 LONGJIN BRIDGE AND FORMERS
 KOWLOON CITY PIER LOCATIONS IN
 OUTLINE ZONING PLAN

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Approved	-	Scale	A1 1:1000 A3 1:2000
Sketch no.	APPENDIX B	Date	08-04-2009

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Appendix C

Further Archaeological Excavation – Structural Assessment Report

**Agreement No. CE 35/2006(CE)
Kai Tak Development Engineering Study
cum Design and Construction of Advance Works
– Investigation, Design and Construction**

**FURTHER ARCHAEOLOGICAL EXCAVATION –
STRUCTURAL ASSESSMENT REPORT**

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ABSTRACT

Inspections were conducted on site to assess the structural integrity of the remains of Longjin Bridge and Former Kowloon City Pier listed below:

As observed on site, all the remains identified are standalone elements resting on soils individually. Complicated structures involving structural member(s) supported on another member(s) (such as a bridge deck wholly supported by supporting piers or abutments) were not discovered.

The granite decking composed of 5 nos. and 9 nos. of granite slabs placed longitudinally are found in the seaward side and landward side of the Bridge respectively. The supporting pillars are solid mass granite structures in hexagonal shape supported by granite footing stones and cobble layer. The seaward end structure of Longjin Bridge, the wall sections of Longjin Bridge and the foundation of Pavilion for Greeting Officials are also found to be solid mass granite structures. The landing steps and supporting pillars of Former Kowloon City Pier are concrete structures, with rebars found in some of the remains.

In general, all the items of remains identified on site are currently in a stable condition. However, the loose fragments, such as individual or small granite blocks, concrete or sandy mortar, at the surface of the remains, will likely be subject to movement, should there be external disturbance, such as winds, stormwater, surface runoff or groundwater/tidal movement etc. Therefore, it is recommended that these loose fragments should be secured by proper means.

The possible sources of impacts on the structural integrity of the remains of Longjin Bridge and Former Kowloon City Pier have been identified. These include disturbance due to adjacent developments, stormwater and surface runoff, groundwater / tidal water and disturbance due to illegal access by humans to the remains.

In view of the possible impacts identified above, and with reference to the Development Bureau Technical Circular (Works) No.11/2007 "Heritage Impact Assessment Mechanism for Capital Works projects", it is recommended to delineate a buffer zone of 50m measured horizontally away from the identified remains of Longjin Bridge and Former Kowloon City Pier (which shall include the space vertically above and the ground below the plan area of the control zone) for better control over the potential impacts arising from the developments adjacent to the remains.

1 INTRODUCTION

1.1 Background

- 1.1.1 In order to ascertain the possible remains of the Longjin Bridge and archaeological potential in the North Apron area of the former Kai Tak Airport, the archaeological investigation of the environmental impact assessment under Agreement No. CE 35/2006(CE) Kai Tak Development Engineering Study was completed in May 2008. During the archaeological investigation, the survived sections of Longjin Bridge were successfully identified in the Trench AA5.
- 1.1.2 The Longjin Bridge represents a unique and valuable historical structure in the 19th century Hong Kong history. Therefore, it has been recommended that the survived sections of the Longjin Bridge be preserved in-situ and integrated into the future Kai Tak Development.
- 1.1.3 As stipulated in the Section 13.5 of the Revised Archaeological Impact Assessment Report (the Revised Report) for the Schedule 3 Designated Project “Kai Tak Development” undertaken under Agreement No. CE 35/2006(CE), the mitigation measures in form of further archaeological investigations are recommended to be carried out along the known and predicted alignment of the Longjin Bridge and the Old Kowloon City Pier.
- 1.1.4 Maunsell Consultants Asia Limited (MCAL) was instructed by Civil Engineering and Development Department (CEDD) of the Government of the Hong Kong Special Administrative Region to undertake the further archaeological excavation at the North Apron area of the former Kai Tak Airport under an Additional Services of Agreement No. CE 35/2006(CE). Under the Additional Services, MCAL was required to conduct an assessment of the visual structural integrity of the remains of Longjin Bridge identified during the further archaeological excavation.
- 1.1.5 The further archaeological excavation works were carried out during the period from 31 October 2008 to 20 February 2009 under supervision of archaeologist Mr. Steven Ng. The field recording and land surveying of the archaeological remains identified were completed on 23 February 2009.

1.2 Objective and Structure of Report

- 1.2.1 The objective of this report is to present the findings of the assessment of visual structural integrity of the Longjin Bridge and Former Kowloon City Pier remains identified during the further archaeological excavation.
- 1.2.2 Following this introductory section, the structure of this Further Archaeological Excavation Report is set out below:
- Section 2 reviews the documents examined for carrying out the structural assessment and provides a description of the structure of Longjin Bridge and Former Kowloon City Pier;
 - Section 3 presents the details and findings of the visual inspections of the remains identified on site;
 - Section 4 identifies possible impacts on the structural integrity of the remains and presents recommendation; and
 - Section 5 presents a summary of the report and recommendation.

2 DESKTOP STUDY

2.1 Documents Examined

2.1.1 Reference has been made to the following documents in carrying out the assessment of visual structural integrity of the Longjin Bridge remains identified during the further archaeological excavation:

- Territory Development Department, 2000 *Comprehensive Feasibility Study for the Revised Scheme of South East Kowloon Development* (Agreement No. CE 32/99), Section 12.4.2 .3, Hong Kong, Hong Kong SAR Government.
- Archaeological Assessments Ltd. 2002 *Comprehensive Feasibility Study for the Revised Scheme of Southeast Kowloon Development – Archaeological investigation*, Territory Development Department.
- ERM HK Ltd. 2003 *Southeast Kowloon Development, Site Investigation at North Apron of Kai Tak Airport: Archaeological Investigation – Findings for Trenches AT1-AT10*.
- Ove Arup & Partners HK Ltd 2001. *Comprehensive Feasibility Study for the Revised Scheme of South East Kowloon Development – Cultural Heritage Impact Assessment*. Territory Development Department.
- Maunsell Consultants Asia Limited. 2008. *Archaeological Impact Assessment Report of Engineering Study cum Design and Construction of Advance Works –Investigation, Design and Construction*.
- Poul Beckmann and Robert Bowles, 2004. *Structural Aspects of Building Conservation*.
- 魯金 1991 《九龍城寨史話》，香港，三聯書店。科大衛、陸鴻基、吳倫霓霞 1986 《香港碑銘彙編》，第一冊，香港，市政局。 1903 *Map of Survey District No.1 of Kowloon City Survey No.5* .
- 科大衛、陸鴻基、吳倫霓霞 1986 《香港碑銘彙編》，第一冊，香港，市政局。
- 何佩然 2004 《地換山移：香港海港及土地發展一百六十年》，香港，香淘商務印書館。

2.2 Description of structure

2.2.1 The history of the construction and modifications phases of the Longjin Bridge and Former Kowloon City Pier has been reviewed. The Longjin Bridge and Former Kowloon City Pier were built in 1873 and 1920s respectively. Longjin Bridge underwent four phases of modification. Details are described in the paragraphs below.

2.2.2 Construction: in 1873, the original Bridge was built of granite, measuring 199.998m long and 1.998m wide, and was laid in the direction of N131°. The works were completed in 1875¹.

2.2.3 At the landward end of the Bridge, there was a substantial two-storey pavilion. It was used to greet Chinese imperial officials. Locals named it as the “Pavilion for Greeting Officials”. Two stone tablets were erected inside the pavilion with inscriptions on them recording the 1873 and 1892 works of the Bridge. The pavilion was demolished during the reclamation of Kai Tak residential development between 1916 and 1920. The entrance stone tablet of the pavilion which reads as “Longjin (龍津)” still remained at headquarter of Lok Sin Tong (樂善堂) in Kowloon City.

¹ 魯金 1991 《九龍城寨史話》，香港，三聯書店。科大衛、陸鴻基、吳倫霓霞 1986 《香港碑銘彙編》，第一冊，香港，市政局。 1903 *Map of Survey District No.1 of Kowloon City Survey No.5* .

- 2.2.4 Phase 1 modification: in 1892, a timber extension was added to the seaward end of this Bridge, measuring 79.99m long. The seaward end was extended, measuring 3.999m wide. The extension works were funded by Lok Sin Tong, a local charitable organization of Kowloon City Market, established in the 1880s. The timber extension was laid in the direction of N118°. ²
- 2.2.5 Phase 2 modification: Longjin Bridge was repaired by timber works and the works were completed in 1900. ³
- 2.2.6 Phase 3 modification: in 1910, the timber extension of the Bridge was replaced by a concrete structure. A wooden shelter was built at the seaward end of the timber extension. ⁴
- 2.2.7 Phase 4 modification: between 1916 and the early 1920s, the granite section of the Bridge was demolished during past site works associated with reclamation for the residential development in Kowloon City. ⁵
- 2.2.8 Kowloon City Pier: the Longjin Bridge was given a new name, the Kowloon City Pier, upon completion of the final extension works in the early 1920s. The 1892 original timber extension of the Bridge was demolished and a new concrete extension of about 60m length was added to the seaward end of the original Longjin Bridge. The distance of the seaward end of the Former Kowloon City Pier to the 1924 seawall measured 112m which is based on the early 1930s historic map in scale of 1:2,400. A causeway in form of seawall was constructed for the Former Kowloon City Pier in 1933 and the Pier was rebuilt between 1936 and 1937⁶. The duration of service of the Former Kowloon City Pier is from the early 1920s to August 1942.
- 2.2.9 Buried Period: the buried history of the Bridge and the Pier reflects the progress of urban development of Kowloon Bay since 1916. The northern section of the Bridge was buried in reclamation land due to development of Kai Tak Bund. However, the southern section of the Bridge in this time remained exposed and a new concrete extension of Bridge, namely Former Kowloon City Pier, was constructed and linked with the southern section of the Bridge. For Japanese military reason, both the southern section of the Bridge and the Pier were demolished and buried in a new reclamation land of Kai Tak Airport in 1942. Due to increase in demand for civil aviation in the late 1950s, a new Kai Tak Terminal Building was opened in 1960s. During construction of the Terminal Building basement, the decking of the northern section of the Bridge was demolished.

² 科大衛、陸鴻基、吳倫霓霞 1986 《香港碑銘彙編》，第一冊，香港，市政局。

³ Ove Arup & Partners HK Ltd 2001 *Comprehensive Feasibility Study for the Revised Scheme of South East Kowloon Development* (Agreement No. CE 32/99), Section 12.6.6.6, Hong Kong, Territory Development Department of Hong Kong SAR Government.

⁴ Territory Development Department, 2000 *Comprehensive Feasibility Study for the Revised Scheme of South East Kowloon Development* (Agreement No. CE 32/99), Section 12.4.2 .3, Hong Kong, Hong Kong SAR Government.

⁵ 魯金 1988, 1997 《九龍城寨史話》，香港，三聯書店。

⁶ 何佩然 2004 《地換山移：香港海港及土地發展一百六十年》，香港，香港商務印書館。

3 INSPECTION FINDINGS

3.1 Details of Inspections

3.1.1 The further archaeological excavation works were carried out during the period from 30 October 2008 to 20 February 2009.

3.1.2 The items of remains identified during the archaeological excavation are listed below:

- Granite decking (GD1, GD2);
- Supporting pillars (SP1, SP2 and SP6);
- Seaward end (also as Pier-end-structure, PES) of Longjin Bridge;
- Wall sections of Longjin Bridge;
- Landing steps and supporting pillars of Former Kowloon City Pier; and
- Foundation stones of side walls of Pavilion for Greeting Officials.

3.1.3 Inspections were conducted on site to assess the structural integrity of the remains of Longjin Bridge identified. Initial inspection was first conducted on 27 November 2008 to provide an overview of the remains identified as well as to identify key structures. Detailed inspections were then conducted on 13 December 2008 and 22 January 2009 to examine the structural integrity of each item of the remains identified. Details of the inspections are summarized in **Table 3.1** below:

Table 3.1 Details of Site Inspections

Date	Form of Inspections	Representatives of the Consultants
27 November 2008	Visual	Steven Ng (archaeologist) Anthony Lok (civil and structural engineer)
13 December 2008	Visual	Steven Ng (archaeologist) Anthony Lok (civil and structural engineer)
22 January 2009	Visual	Steven Ng (archaeologist) Anthony Lok (civil and structural engineer)

3.1.4 As observed on site, all the remains identified are standalone elements resting on soils individually. Complicated structures involving structural member(s) supported on another member(s) (such as a bridge deck wholly supported by supporting piers or abutments) were not discovered. Therefore, the structural assessment of the remains found was conducted based on visual inspection of the structural integrity of the individual items of remains only.

3.1.5 Details of the existing structural conditions of each of the Longjin Bridge remains examined during the inspections on site, as well as discussion of the inspection findings, are presented in the paragraphs below.

3.2 Inspection Findings of Remains of Longjin Bridge

3.2.1 The findings of the visual inspection of the remains of the Longjin Bridge are described and discussed below.

Granite decking (GD1 & GD2) and Supporting Pillar (SP1 & SP2) (Figure C1)

3.2.2 GD1 and GD2 are one and half span of granite decking and two supporting pillars (SP1 and SP2) were discovered adjacent to the 1924 seawall. The granite decking is composed of five nos. of beams placed longitudinally. The GD2 is a half span is loosely supported by one end at the supporting pier (SP2) and its stability currently relies on the soil support beneath the decking. GD1 is a full span loosely supported by the supporting pier (SP2) at one end and some granite blocks of supporting pier (SP1) at the other end.

- 3.2.3 The condition of the granite blocks in the decking GD1 and GD2 are in general intact except that a major crack in transverse direction is found at the mid-span location. Similar to the half span (GD2), the stability of this full span (GD1) also relies on the soil support beneath the decking. Any further removal of the soil beneath or around the granite decking (GD1 & GD2) would likely affect the stability of the granite decking, in particular the joint between the decking and the supporting piers. Therefore, it is important to prevent any ground movement, such as settlement and soil erosion/removal, beneath and adjacent to the granite decking.
- 3.2.4 Based on the findings of the SP6, it is believed that the supporting pillar (SP2) is constructed of 7 layers of granite blocks with rock and sandy mortar infill. The exposed surface area of the supporting pillar is in hexagonal shape with the top of the pillar covered with granite blocks laid in transverse direction. It is believed that the hexagonal shape of the pier is designed in order to reduce the drag force induced by current. As observed on site, the condition of granite blocks on top of the supporting pillar is generally intact. Although it is considered that further removal of the soil on the sides of the supporting pillar should not affect its stability, it is advised not to do so in order to avoid causing possible damage on the adjacent granite decking.
- 3.2.5 In addition to the supporting pillar (SP2), there are some granite blocks which are believed to be part of another supporting pillar (SP1) located at the other end of the full span (GD1). The supporting pillar (SP1) has been disturbed with about half of the pillar, in terms of plan area, observed on site. The surface layer of the granite blocks on top of the pillar was removed exposing the rock and sandy mortar infills. Protection of these rock and sandy mortar infills should be provided to avoid loss of the exposed fine sandy mortar or rock infill materials due to environmental disturbance, such as wind or surface runoff.

Seaward End of Longjin Bridge (Figures C2-C7)

- 3.2.6 Based on the site inspection, the seaward end (pier-end-structure, PES, is constructed of granite blocks on the sides and top surface with rock and sandy mortar infills. On the top of granite blocks of the seaward end, there are three layers of concrete surfacing which were paved subsequent to construction of the granite structures.
- 3.2.7 The seaward end had an overall length of 6.90m and was 4.94m in width. The top of the seaward end is at about +2.66mPD. The structure of the seaward end is believed to be found on coarse marine sand at about elevation of -0.8mPD.
- 3.2.8 The condition of the granite blocks on the top surface and the sides are generally good, except that a small portion of the granite blocks on the top surface at the north-western end was removed, exposing the rocks and sandy mortar infills inside the granite structure. Protection of these rock and sandy mortar infills should be provided to avoid loss of the exposed fine sandy mortar or rock infill materials due to environmental disturbance, such as wind or surface runoff. In addition, a crack was observed at the bottom layer of granite blocks underlying the rock and sandy mortar infills at the northern tip of the seaward end structure. Excavation of the supporting soil, especially underneath the cracked location, should be prohibited to prevent local collapse of the structure.
- 3.2.9 Part of the concrete surfacing on top of the granite structure was demolished in 1942. The remaining concrete surfacing found on site was observed with a few cracks. Signs of cement repair were also observed on the top concrete surfacing. Since the concrete surfacing rests on the granite structure at a very gentle slope, the cracks identified would not have significant impact on the stability of the concrete surfacing.
- 3.2.10 Furthermore, landing steps are found at the eastern and western sides of the seaward end structure. The eastern landing steps are generally in intact condition, while local damage to the surface of the western landing steps was found, exposing the rock and sandy mortar infills. Furthermore, a granite block is currently loosely located on top of the western landing steps which should be secured to prevent possible displacement due to disturbance by environments.

Supporting Pillar at SP6 (Figures C8-C14)

- 3.2.11 Deep excavation was carried out down to sea deposit layer (-2.0mPD) in order to expose the whole structure of supporting pillar SP6. It was found that the side walls of the supporting pillar SP6 is composed of seven layers of granite blocks placed in hexagonal shape. The side walls of the supporting pillar were infilled with granite blocks or rocks arranged in an orderly manner and bound together by sandy mortar in brown.
- 3.2.12 Below this hexagonal pier are three layers of granite blocks arranged in longitudinal and transverse directions respectively which act as the footing for the supporting pillar. The footing of the pillar is then supported by a thick layer of cobbles, which serve as the rubble mound foundation for supporting pillar. The footing together with the rubble mound foundation helps to spread the loading of the supporting pillar onto the underlying stratum.
- 3.2.13 Each of the footing stones measured 300mm (W) x 200mm (H) x 1500mm (L). The footing stones and the supporting cobbles are founded on grey coarse marine sand. The lowermost of the third layer of footing stone are at elevation of -2.0mPD.
- 3.2.14 The granite decking of the Longjin Bridge is believed to rest on the top of this hexagonal supporting pier SP6. As observed on site, the whole structure of the supporting pillar SP6 is in general stable. However, since the surface layer of granite blocks on the top was removed, a large area of the rock and sandy mortar infills was exposed. Individual loose fragments of granite blocks and fine sandy mortar materials were observed on the top portion of the supporting pillar. Excessive vibration should therefore be prevented to avoid displacement of the loose materials which may affect the overall stability of the structure.
- 3.2.15 Furthermore, appropriate protection measure should be adopted to prevent erosion of the exposed sandy mortar or loose fragments of granite blocks and fine sandy mortar materials due to disturbance by environmental disturbance, such as wind or surface runoff. Excavation of the marine sand beneath or adjacent to the supporting pillar SP6 should also be strictly prohibited in order to protect the structure of the supporting pillar SP6 from collapse.

Wall section of Longjin Bridge (Figures C15-C21)

- 3.2.16 The landward portion of Longjin Bridge is a solid mass. A number of the wall sections of the Longjin Bridge were discovered in T3b, T3c and T3d. These wall sections are composed of side walls of granite blocks with rock and sandy mortar infills. The walls are in general in a stable condition but some of the rockfills loosely spread over the area enclosed by the foundation walls and may be subject to movement should there be external disturbance, such as surface runoff or groundwater. Therefore, appropriate protection measures should be adopted to prevent movement of the loose remains on top of the wall sections.
- 3.2.17 It is observed that the wall sections of Longjin Bridge comprise at least seven layers of granite blocks arranged in longitudinal and latitudinal directions respectively which act as the side wall for the landward portion of the Bridge. The range of side wall granite blocks measured between 1000mm (L) x 300mm (W) x 200mm (H) and 2200mm (L) x 300mm (W) x 200mm (H).
- 3.2.18 The landward portion of the Longjin Bridge is found on a layer of granite stones arranged in transverse direction which act as the footing of the structure. The thickness of the footing stones is about 200mm. Below the footing stones is a stratum of grey coarse marine sand. Excavation of the soil below and adjacent to the footings of the wall sections should be prohibited to prevent collapse of the wall sections.

3.3 Inspection Findings of Remains of Former Kowloon City Pier

- 3.3.1 A total of 47 supporting pillars and 2 landing steps of Former Kowloon City Pier were discovered, as shown in **Figures C22 to C25**. The decking structure was demolished already.

- 3.3.2 Based on the remains of the supporting pillars observed on site, the Pier is believed to be piled deck structure, in which a concrete deck slab was supported by vertical and inclined pillars. From structural point of view, the vertical pillar mainly provided vertical support whereas the lateral resistance of the Pier derived from the inclined pillars. The concrete pillars of the Pier were classified into the following four types with the number of each type indicated.
- Type 1: single vertical pillar (14 nos.);
 - Type 2: single vertical pillar with one inclined pillar (11 nos.);
 - Type 3: single vertical pillar with two inclined pillars (15 nos.); and
 - Type 4: single vertical pillar with more than two inclined pillars (7 nos.).
- 3.3.3 The 2 landing steps are in good condition, but the supporting structure at the upper end of the landing steps have been damaged. The stability of the landing stairs currently relies on the soil underneath the stairs.
- 3.3.4 Excavation of the soil beneath the landing steps should therefore be avoided in order to protect the remains from collapse. Backfilling of the soil beneath the landing stairs is proposed to enhance its stability but should be carried out in a careful manner.
- 3.3.5 The 47 nos. of supporting pillars are in stable condition, except for the loose fragments above and around the pillars. Protection measures should be adopted to prevent movement of these loose fragments due to external disturbance.
- 3.3.6 In addition, protruding rebars were observed in some of the remains of concrete structures. Protection measures of the exposed rebar should be adopted to prevent further corrosion of the re-bars.

3.4 Inspection Findings of Remains of Pavilion for Greeting Officials

- 3.4.1 Remains of the three side foundation wall stones and two granite slabs, placed horizontally, of Pavilion of Greeting Officials were identified in T3a, as shown in **Figures C26 & C27**. The foundation consists of walls of granite blocks in rectangular shape infilled with rocks and sandy mortar.
- 3.4.2 The structures, including the foundation walls and infill materials, are in general in a stable condition. However, it is observed that some of the rockfills loosely spread over the top of the area enclosed by the foundation walls. These loose materials may be subject to movement should there be external disturbance, such as surface runoff or groundwater. Therefore, protection measures should be adopted to prevent displacement of these loose materials.
- 3.4.3 In addition to the foundation walls, two granite slabs are found in T3a which are resting on the soil in a stable manner. The present condition of the granite slabs is good. The granite slabs each measured 140cm long, 20cm wide and 20cm thick.

4 IDENTIFICATION OF IMPACTS AND RECOMMENDATION

4.1 Possible Impacts on Structural Integrity of Remains

- 4.1.1 The possible sources of impacts on the structural integrity of the remains of Longjin Bridge and Former Kowloon City Pier are identified as follows:

Disturbance due to adjacent developments

- 4.1.2 Based on the current approved OZP of Kai Tak Development, there would be residential and commercial developments around the remains of the Longjin Bridge. Such developments may involve piling works and construction traffic adjacent to the remains of the pier.

- 4.1.3 The developments will likely cause vibration to the remains of the Longjin Bridge, Pavilion for Greeting Officials and Former Kowloon City Pier affecting its structural integrity. Furthermore, it is anticipated that basements / underground shopping street would be constructed in the adjacent developments which involve massive excavation and dewatering. All these construction activities would likely induce ground movement to the areas where archaeological heritages are located.

Stormwater and surface runoff

- 4.1.4 During wet seasons, heavy rainstorms will result in a large quantity of surface runoff. Since the remains are in local low areas (the uppermost of SP6 is at +2.26mPD and the highest point of northern portion of Longjin Bridge is at +2.81mPD), the surface runoff in adjacent areas will rush down to the exposed trenches and flush away the loose fragments of the archaeological heritages.

Groundwater / tidal water

- 4.1.5 The archaeological heritages are located close to the waterfront and in a low level, so some of the archaeological remains are subject to the influence by groundwater or tidal water variation. The variation of groundwater or tidal water may cause loss of sandy mortar infills of the archaeological heritages. Furthermore, the groundwater / tidal water would also accelerate the corrosion problems of the protruding re-bar of some of the archaeological remains.

Disturbance due to illegal access by humans to the remains

- 4.1.6 The archaeological remains have been publicized to the public. Illegal access by the public and nearby construction workers is possible which may disturb the structural integrity of the archaeological remains.

4.2 Recommendation

- 4.2.1 In view of the possible impacts identified above, and with reference to the Development Bureau Technical Circular (Works) No.11/2007 "Heritage Impact Assessment Mechanism for Capital Works projects", it is recommended to delineate a buffer zone of 50m measured horizontally away from the identified remains of Longjin Bridge and Former Kowloon City Pier (which shall include the space vertically above and the ground below the plan area of the control zone) for better control over the potential impacts arising from the developments adjacent to the remains.

5 CONCLUSION

5.1 Summary

- 5.1.1 Relevant documents in relation to the remains of Longjin Bridge and Former Kowloon City Pier identified have been reviewed. The history of the construction and modifications phases of the Bridge and the Pier are also presented.
- 5.1.2 Inspections were conducted on site to assess the structural integrity of the remains of Longjin Bridge and Former Kowloon City Pier listed below:
- Granite decking (GD1, GD2);
 - Supporting pillars (SP1, SP2 and SP6);
 - Seaward end (also as Pier-end-structure, PES) of Longjin Bridge;
 - Wall sections of Longjin Bridge;
 - Landing steps and supporting pillars of Former Kowloon City Pier; and
 - Foundation stones of side walls of Pavilion for Greeting Officials.
- 5.1.3 As observed on site, all the remains identified are standalone elements resting on soils individually. Complicated structures involving structural member(s) supported on another member(s) (such as a bridge deck wholly supported by supporting piers or abutments) were not discovered.
- 5.1.4 The granite decking was composed of 5 or 9 nos. of granite slabs placed longitudinally. The supporting pillars are solid mass granite structures in hexagonal shape supported by granite footing stones and cobble layer. The seaward end structure of Longjin Bridge, the wall sections of Longjin Bridge and the foundation of Pavilion for Greeting Officials are also found to be solid mass granite structures. The landing steps and supporting pillars of Former Kowloon City Pier are concrete structures, with rebars found in some of the remains.
- 5.1.5 In general, all the items of remains identified on site are currently in a stable condition. However, the loose fragments, such as individual or small granite blocks, concrete or sandy mortar, at the surface of the remains, will likely be subject to movement, should there be external disturbance, such as winds, stormwater, surface runoff or groundwater/tidal movement etc. Therefore, it is recommended that these loose fragments should be secured by proper means. To protect the bridge remains and secure the fragments, it is suggested that the remains should first be covered with a layer of geotextile. It is then overlaid with a minimum 300mm thick layer of sand layer which shall not contain any rocks or sharp objects. No compaction shall be conducted for this layer. The trench above the 300mm thick sand fill layer shall be backfilled with generally fine fill materials without any large rocks, boulders or sharp objects. Only light compaction with close supervision should be allowed. The area after backfilling should be fenced off to prevent vehicles and construction plant passing onto the area.
- 5.1.6 The possible sources of impacts on the structural integrity of the remains of Longjin Bridge and Former Kowloon City Pier have been identified. These include the following:
- Disturbance due to adjacent developments;
 - Stormwater and surface runoff;
 - Groundwater / tidal water; and
 - Disturbance due to illegal access by humans to the remains.

5.2 Recommendation

- 5.2.1 In view of the possible impacts identified above, and with reference to the Development Bureau Technical Circular (Works) No.11/2007 “Heritage Impact Assessment Mechanism for Capital Works projects”, it is recommended to delineate a buffer zone of 50m measured horizontally away from the identified remains of Longjin Bridge and Former Kowloon City Pier for better control over the potential impacts arising from the developments adjacent to the remains.

Appendix C

Figures

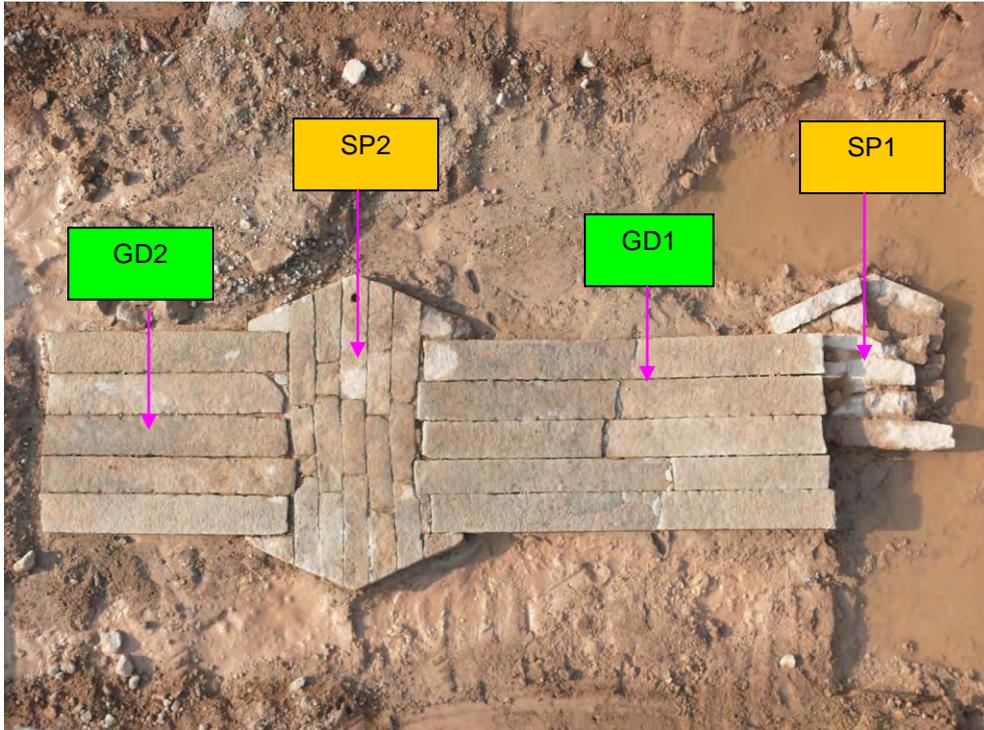


Figure C1 Top View of SP1, SP2, GD1 and GD2

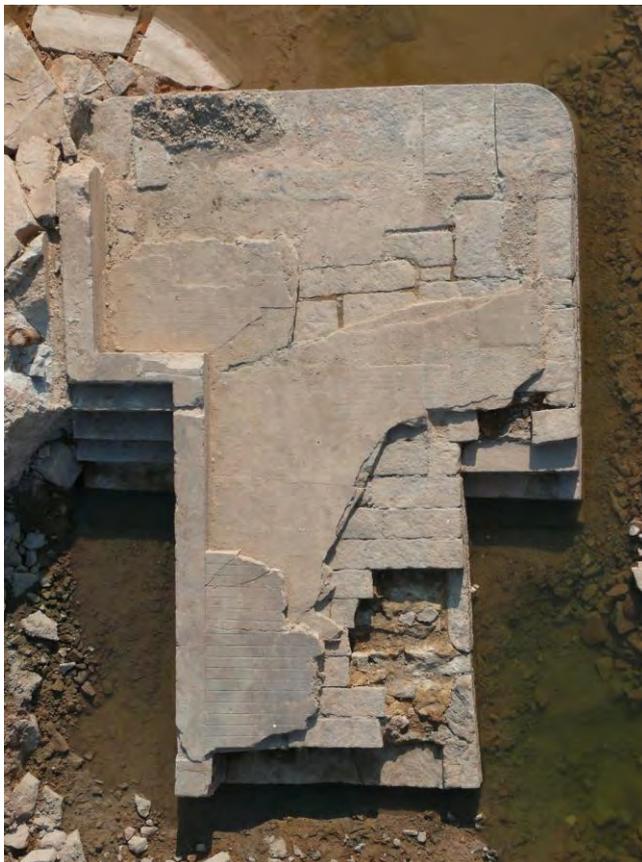


Figure C2 Top View of Seaward End of Longjin Bridge



Figure C3 Side View from West of Seaward End of Longjin Bridge



Figure C4 Side View from South of Seaward End of Longjin Bridge

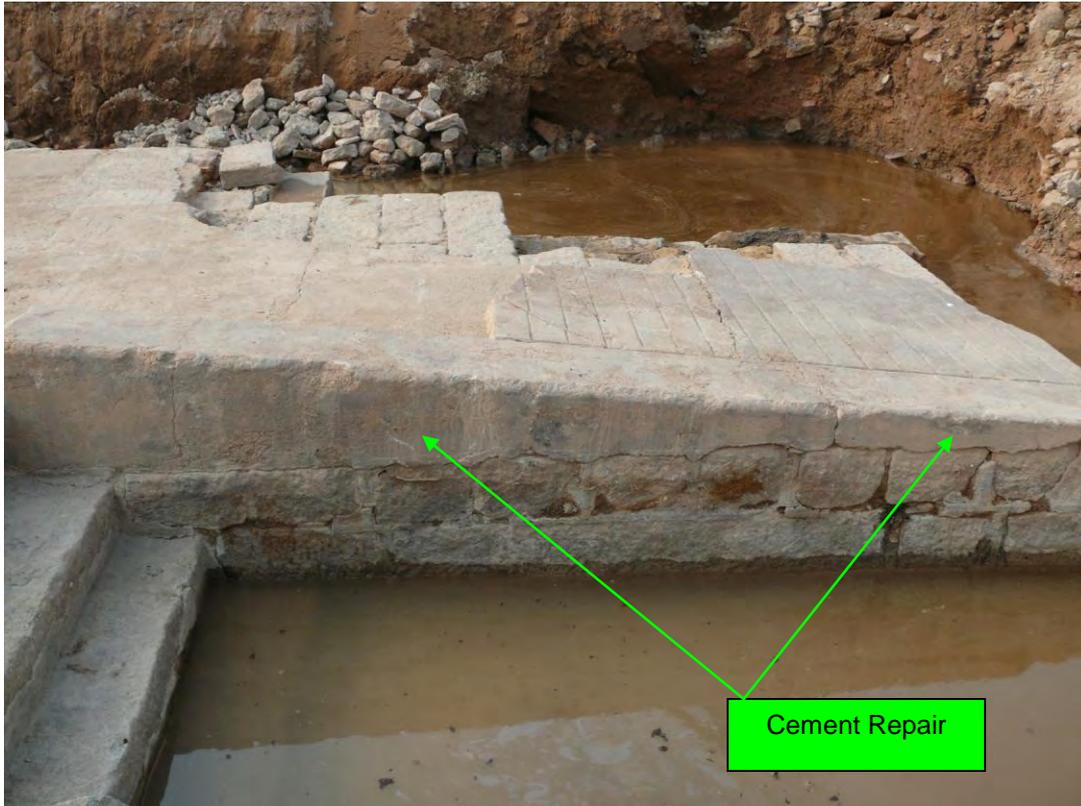


Figure C5 Side View from East of Seaward End of Longjin Bridge



Figure C6 Side View from North of Seaward End of Longjin Bridge



Figure C7 Three Layers of Seaward End of Longjin Bridge



Figure C8 Supporting Pillar SP6 of Longjin Bridge



Figure C9 Internal Structure of SP6 (View From West)



Figure C10 Rocks and Sandy Mortar Infill of SP6 (View From North)



Figure C11 Top View of SP6



Figure C12 Three Layers of Footing Stones of SP6 (View From East)



Figure C13 Close-up of Footing Stones of SP6



Figure C14 Cobber Layer of SP6



Figure C15 Top View of Remains of Longjin Bridge in T3b

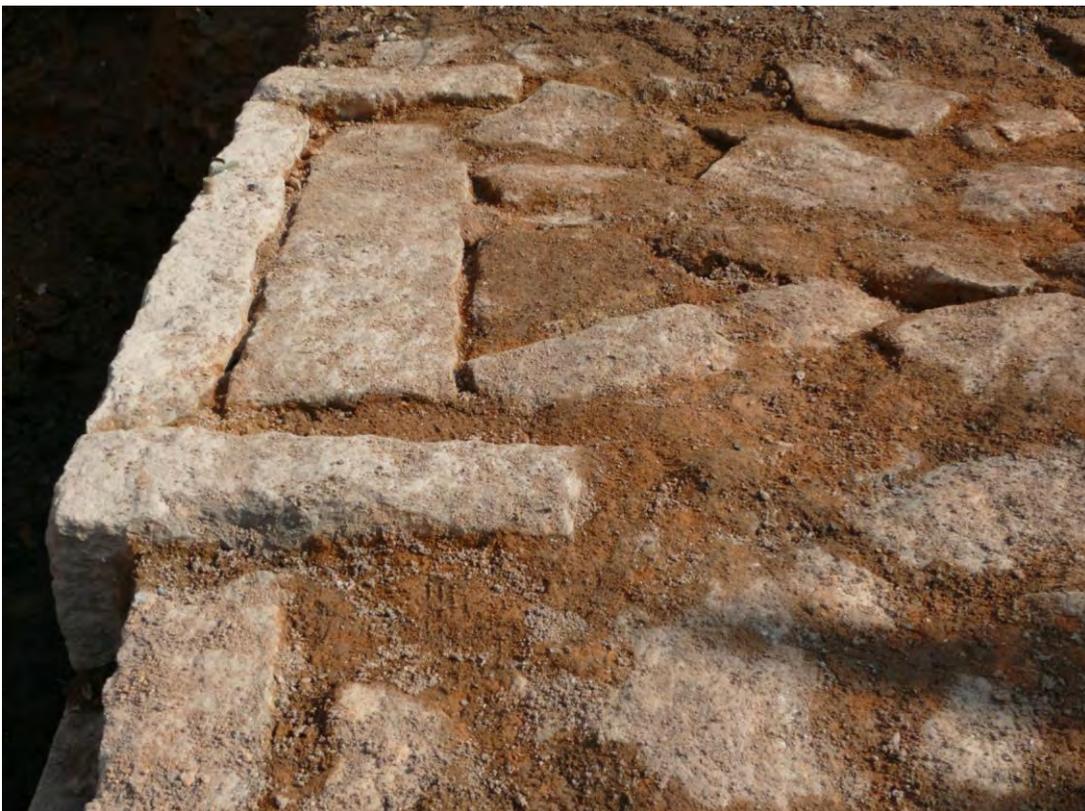


Figure C16 Close-up of Granite Blocks Bonded Together by Sandy Mortar



Figure C17 Eastern Side Wall of Longjin Bridge in T3b



Figure C18 Eastern Side Wall and Footing Stones of Longjin Bridge in T3b



Figure C19 Top View of Remain of Longjin Bridge in T3c



Figure C20 Top View of Remains of Longjin Bridge in T3d



Figure C21 The Western Side Wall of Remain of Longjin Bridge Discovered in T3d



Figure C22 Supporting Pillars of Former Kowloon City Pier (View form south)



Figure C23 Landing Steps and Supporting Pillars



Figure C24 Top View of Landing Steps (wide portion) and Supporting Pillars (narrow portion) of Former Kowloon City Pier



Landing Steps of Wide Portion



Pillar of Wide Portion



Pillar of Narrow Portion



Pillar of Wide Portion



Pillar of Wide Portion



Pillar with Timber Fender of Narrow Portion

Figure C25 Selected Pillars of Former Kowloon City Pier



Figure C26 Three Side Wall Foundation Stones of Pavilion for Greeting Officials (View from North)



Figure C27 Wall Edge Stones of Pavilion of Greeting Officials in T3a

Responses to Comments

**Agreement No. CE 35/2006(CE)
Kai Tak Development Engineering Study
cum Design and Construction of Advance Works
– Investigation, Design and Construction**

Further Archaeological Excavation Report

Responses to Comments

Comments Received

Date Received

- | | | |
|----|--------------------------------|---------------|
| 1. | Antiquities & Monuments Office | 25 March 2009 |
| 2. | CEDD | 23 March 2009 |

**Agreement No. CE 35/2006(CE)
Kai Tak Development Engineering Study
cum Design and Construction of Advance Works
– Investigation, Design and Construction**

Further Archaeological Excavation Report

Responses to Comments

<u>No.</u>	<u>Comments</u>	<u>Responses</u>
1.	<p>Antiquities & Monuments Office, ES, letter ref.: () in LCS AM 64/3/2 dated 25 March 2009</p> <p>I refer to your letter dated 17.3.2009. Comments on the captioned draft report received on 18.3.2009 are as follows:</p> <p><u>General comments</u></p> <p>1. It is noted that some of the objectives and tasks stated in the Proposal of Further Archaeological Excavation cannot be fully complies.</p> <p>According to the Proposal attached to your letter dated 17.10.2008,</p> <ul style="list-style-type: none"> ● The captioned report would present all the findings about the entire Longjin Bridge and other relevant items of historical significance such as Kowloon Fort, Pavilion for Greeting Officials, 1924 seawall, pre-world war II or after World War II disturbance to these items in full details (4.2(5)). ● The Structural Assessment Report which would be separately prepared and certified by registered structural engineer would be appended in the captioned report (5.7) 	<p>The findings of the 1924 seawall were presented in the Final Archaeological Impact Assessment Report of Agreement No. CE 35/2006 (CE) Kai Tai Development Engineering Study cum Design and Construction of Advance Works.</p> <p>"The entire Longjin Bridge and other relevant items of historical significance" should be understood as <i>"all archaeological findings of excavated trenches in this further excavation."</i></p> <p>With the understanding mentioned above, all archaeological findings revealed in the excavated trenches were presented in the further excavation report.</p> <p>Thus, the section 4.2(5) of the proposal was completely fulfilled.</p> <p>Section 6 of the report covers the content of the Structural Assessment Report. Section 6 of the report will be included as an appendix to report. Certification by registered structural engineer is not applicable to the current conditions because all the remains found are standalone elements resting on soils individually as explained in Section 6.1.2 of the report.</p>

<u>No.</u>	<u>Comments</u>	<u>Responses</u>
	<ul style="list-style-type: none"> ● The measured plan, side view and section drawings in scale 1:20 would be prepared (5.8). ● The archaeological features, artifacts and field records would be processed and analyzed in accordance with the requirements of the Guidelines for Handling of Archaeological Finds and Archive of the AMO (5.8). ● Representative findings with archaeological or historical significance would be dated, photographed, drawn and assessed,... The special findings would be presented in the captioned report (5.8). <p>However, the captioned report is deficient in fulfilling the above objectives and tasks. You may wish to note that the excavation report is very likely to be viewed by concerned groups and general public upon request. The report will also be presented to AAB for discussion. As such, a long list of comments is prepared as below for amendment.</p> <p>2. The following two plans showing all features discovered in the two investigation conducted in April and October 2008 at appropriate scale and size must be provided:</p> <ul style="list-style-type: none"> ● A plan with clear labels for all features discovered. ● A southwest side view plan with clear labels and reduced level marked on all the features discovered. <p>The terms used for all features discovered should be consistent. For instance, both "granite slabs" and "granite decking (GD)" are found in the report. Besides, both "Old Kowloon City Pier" and "Former Kowloon City Pier" are found in the report. Please use consistent terminology throughout the report.</p>	<p>The measured plans of those features with high significance in scale of 1:20 were prepared. The scale of these plans was modified in order to fit to A4 size report. The measured plans in scale of 1:20 will be submitted in the revised report.</p> <p>The archaeological findings, field records and will be processed and analyzed in accordance with the requirements of the Guidelines for Handling of Archaeological Finds and Archive of the AMO.</p> <p>A new section will be added to the report to present the representative findings.</p> <p>Please refer to our responses above.</p> <p>Two plans of appropriate scale and size showing all features discovered in the two investigations conducted in April and October 2008 will be provided in the revised report.</p> <p>The plan will be included in the revised report.</p> <p>The side view plan will be prepared accordingly and included in the revised report.</p> <p>The terms used in the revised report will be made consistent.</p>

<u>No.</u>	<u>Comments</u>	<u>Responses</u>
	<p>If abbreviations are used, please provide a list of abbreviation and make sure such abbreviations are consistent in the report. An appendix to explain the abbreviation and terminology is required.</p> <p>3. Please mark the exact location of each trench/excavated area on a 1:1000 map. The following should be provided for each trench/excavated area:</p> <ul style="list-style-type: none"> ● Photos showing complete sections of the trench; ● Measured drawings showing sections of the trench (correspond with the photos above); ● A table summarizing stratigraphic information of the trench; ● A table summarizing the information of all features discovered such as the measurements and level readings. <p>4. Presentation problem is noted in the tables showing strata of trenches excavated. The relationship between strata and the features discovered should be clearly shown in the table.</p> <p>5. A new section should be added after Chapter 6. This chapter should summarize the findings of this excavation. Detailed analysis and discussion on the findings (such as the level difference, structural characteristics, later disturbance, any gap of knowledge) of the Longjin Bridge, the Pavillion for Greeting Officials, the Former Kowloon city Pier, the Kowloon Fort, the 1920 and 1930 seawall shall be included in this chapter.</p> <p>6. Please check the typos and grammatical mistakes.</p> <p>7. The report should have a non-technical summary, both in Chinese and English.</p> <p>8. A table of Responses to Comments shall form part of the report.</p>	<p>Abbreviation table will be incorporated in the revised report.</p> <p>The trenches plan will be marked in 1:1:000 plan.</p> <p>The drawings will be incorporated in the revised report.</p> <p>The table will be incorporated in the revised report.</p> <p>The table will be incorporated in the revised report.</p> <p>The presentation will be modified in the revised report.</p> <p>A new section will be set up accordingly in the revised report.</p> <p>The typos will be checked and corrected.</p> <p>The non-technical summary will be prepared for revised report.</p> <p>This table of Responses to Comments will be incorporated into the revised report.</p>

<u>No.</u>	<u>Comments</u>	<u>Responses</u>
<u>Specific comments</u>		
Section Comment		
1.12	Please delete "as an archaeological site for public education and tourism purposes." since such purposes have not yet been confirmed.	"As an archaeological site for public education and tourism purposes." will be deleted.
1.2.4	Please delete "licensed" as no licence has been applied for this excavation.	The "licensed" will be deleted.
2.1.2	Please delete "for display at proposed museum or historic path in future." since such arrangement has not yet been confirmed.	"for display at proposed museum or historic path in future." will be deleted accordingly.
3.2.1	The first sentence should read as "Schematic plans showing the side and top views of the Longjin Bridge and the Former Kowloon City Pier were worked out based on available information in order to provide technical information for engineers to carry out the excavation design." The Former Kowloon City Pier cannot be found in Figures 2 and 3.	Former Kowloon City Pier will be marked in Figures 2 and 3.
3.3.4(1)	Please check the date (1902, 1903 or 1905?) of the map with the Mapping Office of the Lands Department and amend all relevant parts if required.	This map was collected in Public Archives Office and no exact date of the map was recorded in the Office.
3.4.4	Apart from the porcelain plate as shown in Figure 57, are there any other artifacts collected? If yes, a table including details of all the artifacts collected shall be provided.	Some artifacts were discovered in the seabed deposit, but significant artifacts had been collected and they will be presented in the revised report.
4.2	"Quangdong" should read as "Guangdong".	Text will be amended accordingly.
4.2.4	Please provide the source regarding the rebuilt date of the Kowloon Fort.	The source will be provided.
4.2.5	Please check the date of construction of the Kowloon Walled City.	The construction year of Former Walled City will be searched and included in the revised report.

<u>No.</u>	<u>Comments</u>	<u>Responses</u>
4.2.7	The paragraph states that Hong Kong was a centre of opium smuggle after 1858. Please provide any source as evidence.	The source will be provided accordingly. Four Imperial Chinese Customs stations were set up in 1868 in Junk Island, Ma Wan Island, Kwoloon City and Cheung Chau and were surrounding Hong Kong Island. This is an evidence of opium smuggling in the period.
4.2.9	The paragraph states the timber extension was modified to concrete in 1900. Please check the date (1900?) For details of the Former Kowloon City Pier, please refer to Challenges for an evolving city: 160 years of port and land development in Hong Kong, 2004.	The date will be checked.
4.2.14	Please provide evidence to support that Sir Henry Blake was landing at Lonjin Bridge in 1898.	This will be provided accordingly.
4.3.2	What is the meaning of "campaign of fieldwork"?	The words will be amended.
4.3.4	"suspected stone pavement" should read as "stone slab".	The sentence will be rewritten accordingly.
4.3.5	The last sentence should read as "This investigation comprised five trenches (AA1 to AA5) which were designed to test areas not covered by previous archaeological fieldworks due to accessibility problem."	The sentence will be rewritten accordingly.
4.4.5	Please check the date (1900?). Please refer to our comments on 4.2.9.	The dated will be checked.
4.4.8	For details of the Former Kowloon City Pier, please refer to Challenges or an evolving city: 160 years of port and land development in Hong Kong, 2004. Please also refer to our comments on 4.2.9,	The publication will be referred.

<u>No.</u>	<u>Comments</u>	<u>Responses</u>
5.1.1	<p>Please check whether "Figure 7" should be "Figure 5".</p> <p>Please check the date and scale of Kowloon City Survey (Sheet No. 5).</p> <p>Based on Kowloon City Survey (Sheet No. 5) and Figure 14, the Longjin Bridge can be divided into several parts, i.e. the Pavilion for Greeting Officials, bridge without supporting pillar, bridge with supporting pillars, seaward end structure, timber extension section and the Former Kowloon City Pier. Please add labels for the above sections and mark the length and width of each section in relevant plans, drawings and table.</p> <p>Referring to point 3 of the General comments above, the measurements of all features discovered in each trench should be provided.</p> <p>Please compare the above two sets of measurement data.</p>	<p>The figure number will be reviewed.</p> <p>The measurements of all features discovered in each trench will be provided.</p>
5.1.2	<p>" five/nine numbers of longitudinal granite slabs" can read as "five/nine granite slabs/planks/blocks". Please use appropriate terms to describe the findings.</p>	<p>The sentence will be rewritten accordingly.</p>
5.3.1	<p>A plan showing Dock F/Terminal Building and its spatial relationship with the trenches excavated should be provided.</p>	<p>A new plan showing Dock F and its spatial relationship with trenches will be provided.</p>
5.3.2	<p>Please provide a map supporting that the northern part of Ti area was occupied by residential buildings in 1920s to 1942.</p>	<p>The map was already provided in the draft report. Please refer to Figure 10.</p>
5.3.5	<p>The heading before 5.3.5 should be "The 1930s Retaining Seawall".</p> <p>Please provide photos and measured drawings showing the 20m retaining seawall discovered.</p>	<p>The drawing and photos will be provided in the revised report.</p>

<u>No.</u>	<u>Comments</u>	<u>Responses</u>
	<p>5.3.7 Please confirm whether excavation for the "alternative route" has been completed. If yes, please confirm whether the feature discovered looks the same as the image shown in Figure 14.</p> <p>It is stated that the "alternative route" is for "passages or lorry". Please provide any source as evidence.</p>	<p>A feature as evidence of passage route was found in the seawall.</p>
	<p>5.3.8 to 5.3.9 The heading before 5.3.8 should be "The Former Kowloon City Pier".</p> <p>The description in these paragraphs is difficult to understand. Structurally, the Former Kowloon City Pier can be divided into two parts, one is narrow, the other is wide. Description, photos and measured drawings of the remains of these two parts should be provided.</p> <p>Discussion on the Former Kowloon City Pier is oversimplified in these two paragraphs. More discussion and analysis on the types and characteristics of the broken concrete columns and wooden piles should be provided.</p>	<p>The sections 5.38 to 5.39 will be amended.</p> <p>The discussion and analysis on the types and characteristics of Former Kowloon City Pier will be provided.</p>
	<p>5.3.10 The heading before 5.3.10 should be "The Seaward End (Pier-End Structure (PES)) of Longjin Bridge".</p> <p>Structural comparison between the Seaward End of Longjin Bridge and SP6 should be provided.</p>	<p>The heading will be amended accordingly.</p> <p>This will be provided accordingly.</p>
	<p>5.3.12 Please provide photos and drawings showing the exact locations of the scars of two modifications. Details and measurements shall be provided.</p>	<p>The photos and relevant drawings will be provided in the revised report.</p>
	<p>5.3.14 Please provide photos and drawings showing the locations of cement repairing.</p>	<p>The photos and relevant drawings will be provided in the revised report.</p>

<u>No.</u>	<u>Comments</u>	<u>Responses</u>
5.5	Photos and measured drawings of the front, back, left and right views of SP6 should be provided.	The photos and relevant drawings will be provided in the revised report.
5.5.4	Photos and drawings showing the layer of cobbles should be provided.	The photos and relevant drawings will be provided in the revised report.
5.6.2	L3a, b, c as shown in Figure 55 are found missing in Table 5.4.	L3a, b and c will be put into the table 5.4 for consistence.
5.6.3	What is the meaning of "blow basement"? The information of the landing portion is confusing. Please refer to our comment on Figure 49.	The words will be amended. Your comment on the Figure 49 will be referred.
5.6.4	Please check the scale of the old map.	The scale of the old map will be checked.
5.6.5	What is the meaning of "mated to historic map (1:1000) evidence"?	The words will be amended.
5.6.6	The layer of grey marine sand cannot be found in Table 5.4. Photos and drawings showing this layer of grey marine sand should be provided.	Photos and drawing will be provided.
5.6.7	Please check the term "lesser seal writing style".	The "lesser seal" or "minuscule script" in Chinese is 小篆. This writing style is commonly using in official and personal seals.
5.7.1	A plan showing the Terminal Building and its spatial relationship with the trenches excavated should be provided.	The plan will be provided.
5.7.3	What is the meaning of "blow basement"?	The words will be amended.
5.7.5	Discussion on the footing of landward section of Longjin Bridge is not sufficient.	The further discussion of footing will be provided in revised report.

<u>No.</u>	<u>Comments</u>	<u>Responses</u>
	<p>Chapter 6 Please attach the full Structural Assessment Report certified by registered structural engineer as an Appendix.</p> <p>The objectives of the structural assessment shall include, but not limited to the followings,:-</p> <ol style="list-style-type: none"> 1. Overall stability and robustness 2. Integrity, stability and load-capacity of structural components 3. Excessive deflections or vibration, cracking 4. Measurements of defect <p>The Report shall include, but not limited to the followings,:-</p> <ol style="list-style-type: none"> 1. Summary 2. List of content 3. Terms of reference 4. Documents examined 5. Descriptions of structure 6. Inspections: who, how and when 7. Additional information 8. Calculation checks 9. Discussion of evidence 10. Conclusions 11. Recommendation: any preventive measures, testing, and further works, etc. 	<p>Section 6 of the report covers the content of the Structural Assessment Report. Section 6 of the report will be included as an appendix to report. Certification by registered structural engineer is not applicable to the current conditions because all the remains found are standalone elements resting on soils individually as explained in Section 6.1.2 of the report.</p> <p>According to the Proposal submitted to you on 17 October 2009, the objective of the visual structural integrity inspection is to assess whether the remains of Longjin Bridge can remain in its identified positions in a stable manner without any additional supports. The content of the structural assessment will be reviewed according to this objective.</p>
7.1.1	This paragraph is not understandable.	The section will be revised.
7.1.3	<p>Line 4: please check the period "1860s and the 1890s" as the bridge was first built in 1873.</p> <p>"Former Kowloon City" should read as "Former Kowloon City Pier".</p>	<p>The sentence will be amended.</p> <p>The words will be amended.</p>

<u>No.</u>	<u>Comments</u>	<u>Responses</u>
7.2.2	Please rewrite this paragraph with reference to the Structural Assessment Report and our comments on 3.2.1	Section 7.22 will be rewritten making reference to the structural assessment.
7.2.3	Please provide a comparison between the Longjin Bridge and other piers within Victoria Harbour.	The comparison between Longjin Bridge and other piers in Victoria Harbour Hong Kong Island side will be conducted. The comparison result will be incorporated in the revised report.
8.1.1	Please delete "by AMO".	"By AMO" will be deleted.
8.1.2	Please correct typos of the convention.	The typos will be checked and corrected.
8.1.4	Same as our comments on 5.3.7, please provide any source to support that the "alternative landing route" is for "passages and lorry".	The evidences of alternative landing route will be incorporated in the revised report.
8.1.8	Please rewrite this paragraph with reference to the Structural Assessment Report.	Section 8.18 will be amended making reference with structural assessment of Longjin Bridge.
8.1.9	We reserve our comment on this paragraph as photos and drawings showing the layer of marine sand have not been provided.	The photos and drawings showing the layer of marine sand will be provided for your further comment.
8.1.11 8.1.13	We reserve our comment on this paragraph as the Structural Assessment Report has not been provided.	Sections 8.11 to 8.13 will be revised making reference with structural assessment of Longjin Bridge for your further comment.
8.2.1	Please amend this paragraph as ".... The Guidelines for Cultural Heritage Impact Assessment of the AMO, ...".	The sentence will be revised.
8.2.3	Please provide photos and drawings showing the "typical parts" and full justifications.	The relevant photos and drawing will be provided if necessary.
8.2.4	Full justifications shall be provided for further archaeological excavation.	The justification for further excavation will be stated in the revised report. (refer to the response to comment of figure 49)
Bibliography	Sources of all maps and photos should be included.	The source of all maps and photos will be included in the revised report.

<u>No.</u>	<u>Comments</u>	<u>Responses</u>
	<p>Figure No.</p> <p>Comments</p>	
1	<p>The location of each trench is not clear. T1 and T2 are merged together. The arrows pointing to the trenches are placed wrongly on the plan. Please mark the exact location of all trenches/excavated areas on a 1:1000 map.</p>	<p>The figure will be amended. The arrow point direction will be revised accordingly.</p>
2	<p>Please check the scale and enlarge the figure. Appropriate scale and size are required.</p> <p>For the image of the Longjin Bridge, please refer to Photos C and G of Chapter 12 of the EIA report for Comprehensive Feasibility Study for the Revised Scheme of South East Kowloon Development (by Dr. Hase).</p> <p>Please rewrite the caption. It should be a schematic plan showing the side and top views of the landing portion of the Longjin Bridge and Pavilion for Greeting Officials.</p>	<p>The scale will be enlarged.</p> <p>Chapter 12 of the EIA report for Comprehensive Feasibility Study for the Revised Scheme of South East Kowloon Development will be reviewed, where any image(s) of the Longjin Bridge is appropriate that the image(s) will incorporate the image(s) into revised report.</p>
3	<p>Please enlarge the figure.</p> <p>Please rewrite the caption. It should be a schematic plan showing the side view of SP6 of the Longjin Bridge.</p>	<p>The figure will be enlarged accordingly.</p>
4	<p>It seems that the figure is not significant. Please consider deleting it.</p>	<p>The figure will be deleted.</p>
5	<p>Please provide the scale and check the date (1902, 1903 or 1905?) with the Mapping Office of the Lands Department. Please also add measurements (length and wide) for each parts of the Bridge on the map.</p>	<p>The scale will be provided.</p> <p>The map is collected in Public Archives Office and no exact date of this map is provided by the Office.</p>
6	<p>Please add legend, scale and provide the source of the map.</p>	<p>Legend, scale and the source of the map will be provided accordingly.</p>
7	<p>Please specify the date of the map and provide the source.</p>	<p>The source and the date of the map will be provided in the revised report.</p>

<u>No.</u>	<u>Comments</u>	<u>Responses</u>
8 to 11	Please provide the sources and rewrite the captions.	The source of Figures 8 to 11 will be provided in the revised report and their caption will be rewritten accordingly.
12	Please provide the source. Please rewrite the caption. The runways cannot be regarded as "new".	The source of Figure 12 will be provided in the revised report and its caption will be rewritten accordingly.
13	What is the purpose of showing the nullah?	South to nullah is an original location of Kai Tak Bund where is the original location of Former Kowloon City Pier.
14	Please provide the source and scale.	The source and the scale of Figure 14 will be provided in the revised report.
15	Please provide the source and improve the quality.	The source of Figure 15 will be provided in the revised report. However, the quality of this figure was limited by the original source.
16 & 17	Which parts of T1 do these sections refer to? Please indicate the locations of these sections on a map showing the entire layout of T1. Measured drawings of these sections should also be provided.	The parts of T1 will be mentioned in the revised report. The relevant drawings will also be provided in the revised report.
19	This figure is incomplete. Most of the retaining seawall is not shown.	The land survey of Former Kowloon City Pier and retaining seawall was conducted by survey team of CEDD. Figure 19 was provided by the team and we will contact the team to collect detail survey map(s) of the retaining seawall.
22	Structurally, the Former Kowloon City Pier can be divided into two parts, one is narrow, and the other is wide. Please provide photos of these two parts. The orientation of these photos should be the same.	Photography of two sections of Former Kowloon City Pier will be provided in the revised report.
24	Please indicate the locations of these columns.	The locations will be provided.
26	Please provide photos showing the front view and side view (from East/North East) of the Seaward End of the Longjin Bridge.	The relevant photography will be provided.

<u>No.</u>	<u>Comments</u>	<u>Responses</u>
28	The plan showing the Seaward End of Longjin Bridge is not complete. To facilitate understanding the details of the plan, please add appropriate legends and four side views drawings.	The detail plan of Seaward end of Longjin Bridge will be prepared for revised report. Side view plan of retaining seawall should be provided by survey team of CEDD and we will contact the team.
29	Which part of the Seaward End of Longjin Bridge are you referring to? Please indicate the location of cement repairing clearly on a plan.	It is northern end of seaward end. The repairing part is very clearly shown in this figure.
30	Which part of T2 does this section refer to? Please indicate the location of this section on a map showing the entire layout of T2. Measured drawing of this section should also be provided.	It is a part of eastern section wall of T2 near to seaward end. This photography is showing a complete stratification of T2.
32 to 35	In Figure 32, four views, i.e. front, back, left and right, are noted. Photos of these four views should be provided instead of views from east and south. Measured drawings of the four views should also be provided.	Four views of SP6 will be provided in the revised report.
43	The feature drawings are incomplete. Full details of feature in plan should be provided with legends. Referring to para. 5.5.4 of the text, there is a layer of cobbles. But it cannot be found in the drawings.	The reason of a layer of cobble not shown in this figure is that this further excavation was limited by site safety. The depth of excavation was not allowed to exceed the depth of sheet piles, and therefore the bottom of cobble layer is unknown. Taking account of this reason, the layer was not indicated in Figure 43.
46 & 47	Which parts of TP3a do these sections refer to? Please indicate the locations of these sections on a map showing the entire layout of TP3a. Measured drawings of these sections should also be provided.	Figure 46 is western wall section and Figure 47 is eastern wall section of T3a. They will be indicated in a map and relevant drawings will also be provided accordingly.

<u>No.</u>	<u>Comments</u>	<u>Responses</u>
49	<p>Please indicate which part is the Pavilion for Greeting Officials and which part is the Longjin Bridge. Is the excavation on the Pavilion and the Bridge of this part completed? It seems that there are gaps in the northwest part of the Pavilion and the southwest of the Bridge.</p> <p>Please advise whether the original features in this area have been disturbed by construction foundations. If yes, the areas of disturbance should be clearly shown on the drawing.</p>	<p>The parts of the Pavilion for Greeting Officials and the Longjin Bridge will be indicated in the revised report.</p> <p>The excavation of those parts of Longjin Bridge and the Pavilion for Greeting Officials were limited by the trench T3a.</p> <p>Based upon that, the further excavation for the remains of landing part of Longjin Bridge and the other parts of Pavilion for Greeting Official should be considered by relevant government departments.</p>
51 & 53	Please indicate the location of the two granite slabs clearly on the feature plan for T3a.	The slabs are located at northwest portion of the Pavilion and they will be shown in plan of T3a.
52	Please explain in relevant part of the text why there are only three sides of wall foundation stones of the Pavilion for Greeting Officials discovered. Was the northern side of wall foundation stones disturbed?	The northern side wall foundation stones had been destroyed by construction of Terminal Building and all of them are missing in T3a.
54 & 55	<p>Details of the photo and the drawing are not matched.</p> <p>The label "Wall Foundation Stones" covers the features showing in the photo.</p>	The figure 54 will be improved.
56	Please provide a photo showing the eastern section of wall foundation stones of the Pavilion for Greeting Officials.	The photography of eastern section of the Pavilion foundation stones will be provided.
57	<p>The seal of "Made in the Regime of Tongzhi" is not clear.</p> <p>Photos showing the front view of the porcelain plate should be provided.</p>	<p>A new photo in good solution will be provided. The front view of the plate will be provided.</p>
58	<p>Layers 6 and 7 are not clearly divided.</p> <p>Measured drawing of this section should be provided.</p>	The figure will be improved.

<u>No.</u>	<u>Comments</u>	<u>Responses</u>
	<p>59 & 60 The orientation of the photo and plan should be the same.</p> <p>Footing stones cannot be found in Figure 60.</p>	<p>The orientations photo and drawing will be revised.</p> <p>The footing stones are showing in Figures 63 and 64.</p>
	<p>65 & 66 What features do you want to show in these photos?</p> <p>Clear plan, side view drawings and photos of T3c should be provided.</p>	<p>Figure 63 was shown stratification of T3c, Figure 66 was shown a top view of remain of Longjin Bridge of T3c.</p>
	<p>70 Eastern side view plan should be provided.</p>	<p>Eastern side view plan will be provided.</p>
	<p>73-75 These figures are not understandable and too small. Please revise.</p>	<p>The figures 73 to 75 will be enlarged and presented in the revised report.</p>
	<p>76 Please provide the source.</p>	<p>The source will be provided.</p>
	<p>App A We reserve our comment on the figure as it is not clear. Please enlarge this figure to show the coordinates.</p>	<p>The figure will be enlarged in the revised report.</p>
	<p>App B What is the meaning of the yellow circle? Appropriate plans with legends shall be provided.</p>	<p>It will be improved.</p>
	<p>Please submit the revised report to this Office for further comments as soon as possible. Thank you for your kind attention.</p>	<p>The revised report will be submitted after the meeting with AMO regarding the draft report on 3 April.</p>
<p>2. CEDD, letter ref.: ,dated 23 March 2009</p> <p>I refer to the draft Further Archaeological Excavation Report submitted to LCSD by your letter of 17 March 2009 and have the following comments.</p> <p>In accordance para. 2.1.2, the objective is to ascertain the extent of the possible remains of the Longjin Bridge in order to facilitate formulation of Conservation Management Plan (CMP). The report should highlight the key issues that need to be considered and possible options to facilitate the formulation of the CMP.</p>		<p>The revised report will address the key issues that need to be considered and possible options to facilitate the formulation of the CMP.</p>

<u>No.</u>	<u>Comments</u>	<u>Responses</u>
	<p>It seems not desirable to continue further archaeological excavation as recommended in para. 8.2. You should ascertain the likelihood of the extent of the possible remains based on your findings and suggest measures to deal with possible scenarios to facilitate the formulation of CMP.</p>	<p>Refer to the AMO comment on Figure 49, this further excavation was limited by trenches, it is possible some missing parts are existing at unexcavated areas, it is believed the areas between T1 and T3a, and areas between T3a, T3b, T3c and T3d would have high archaeological potential.</p> <p>The CMP will also be reviewed or revised accordingly.</p>

**Agreement No. CE 35/2006(CE)
Kai Tak Development Engineering Study
cum Design and Construction of Advance Works
– Investigation, Design and Construction**

Further Archaeological Excavation Report

Responses to Comments

Comments Received

Date Received

1. Leisure and Cultural Services Department, AMO

30 April 2009

Agreement No. CE 35/2006(CE)
Kai Tak Development Engineering Study
cum Design and Construction of Advance Works
– Investigation, Design and Construction

Further Archaeological Excavation Report

Responses to Comments

<u>No.</u>	<u>Comments</u>	<u>Responses</u>
1.	<p>Leisure and Cultural Services Department, AMO letter ref. () in LCS AM 64/3/2 dated 30 April 2009</p> <p>I refer to your letter dated 20.4.2009. Our comments on the captioned report are as follows:</p>	
	<i>Main Text:</i>	
	<p>Abstract</p> <ul style="list-style-type: none"> • Data recording should be regarded as part of the excavation works. So the whole period of excavation should be from 30 Oct 2008 to Feb 2009. • “supporting pier” instead of “supporting pillar” should be used throughout the report. Please amend relevant parts of the report accordingly. • The fourth paragraph states “Longjin Bridge was one of the major diplomacy issues between Britain and China in the late 1890s”. This description may not be precise. In fact, the Bridge is associated with the issue of the Kowloon Walled City and after 1899 no argument on the Bridge was recorded. • Please delete the last two sentences in the fourth paragraph. • Please highlight the significance of the site after burial of the Bridge in respect of the development of Kai Tak Airport. 	<p>The date has been amended and is now consistent throughout the Final Report.</p> <p>It is confirmed that “pillar” is a corrected term. Relevant text has been amended.</p> <p>The description of this historical event has been reviewed. Text has been revised accordingly.</p> <p>The last two sentences have been deleted.</p> <p>Text has been added accordingly.</p>
	<p>1.1.2</p> <ul style="list-style-type: none"> • The description of Longjin Bridge (historical resource?) in this paragraph is not precise. Please amend. 	<p>“Historical resource” has been revised as “historic remains”.</p>
	<p>1.2.4</p> <ul style="list-style-type: none"> • Data recording should be regarded as part of the excavation works. So the whole period of excavation works should be from 30 Oct 2008 to Feb 2009. 	<p>The dates have been reviewed and revised.</p>

<u>No.</u>	<u>Comments</u>	<u>Responses</u>
Section 2	<ul style="list-style-type: none"> The objectives and scope stated in this section should be same to those listed in the Proposal of Further Archaeological Excavation. 	<p>The objectives and scope stated in Section 2 has been reviewed and made consistent with those in the Proposal.</p>
4.2.13	<ul style="list-style-type: none"> The paragraph states “Longjin Bridge is a key issue of Sino-British diplomacy relationship ...”. This description may not be precise. In fact, the Bridge is associated with the issue of the Kowloon Walled City and after 1899 no argument on the Bridge was recorded. 	<p>The paragraph has been revised.</p>
4.4	<ul style="list-style-type: none"> The description for Phases 2 to 4 modification should be substantiated by direct evidence from archive research. Burial period (after construction and modification) should be added in this section. The relationship between the site burial and the development of Kai Tak Airport should be highlighted. 	<p>Direct evidence has been quoted in the footnote of the report.</p> <p>The relationship between the site burial and the development of Kai Tak Airport has been highlighted.</p>
Section 5	<ul style="list-style-type: none"> A table summarizing the information of all features discovered such as the measurements and level readings should be provided. 	<p>The Table 5.1 has been revised. Dimension and height levels of all features discovered were provided. The levels can also be found in Table 7.1.</p>
Table 5.1	<ul style="list-style-type: none"> The following three sets of measurements of the Bridge should be provided: <ul style="list-style-type: none"> 1. measurements mentioned in the tablet inscriptions 2. measurements from the map of 1903 3. measurements from excavation result Please correct the year of timber extension of the Bridge. Please provide evidence to support the construction year of: <ul style="list-style-type: none"> 1. Pavilion for Greeting Officials 	<p>Refers to above response for Section 5.</p> <p>Refers to above response for Section 5. With reference to the discussion in meeting among LCSD/AMO, CEDD/KDevO and MCAL on 30 April 2009, “measurement” has been revised as “approximate dimension” accordingly.</p> <p>Same as above.</p> <p>Same as above.</p> <p>The construction year has been checked.</p> <p>Same as above.</p> <p>Same as above.</p>

<u>No.</u>	<u>Comments</u>	<u>Responses</u>
	<p>2. Replacement of Timber Extension</p> <p>3. Concrete Extension of the Bridge</p> <p>4. Retaining Seawall of Kowloon City Pier</p> <p>5. Reconstruction of Kowloon City Pier</p>	<p>Same as above.</p> <p>Same as above.</p> <p>Same as above.</p> <p>Same as above.</p>
5.1.2	<ul style="list-style-type: none"> “decking” instead of “walkway” is used in other parts of the report. Please check. 	<p>“Decking” has been used instead of “walkway” throughout the Final Report.</p>
	<ul style="list-style-type: none"> Please state clearly that the granite decking composed of 5 and 9 nos. of granite slabs are found in the seaward side and landward side of the Bridge respectively. Relevant old photos should be provided as illustration. 	<p>It is confirmed that five granite blocks are used as decking at seaward portion and nine blocks are used as decking in landward portion of the Longjin Bridge. The relevant sections have been amended accordingly. Relevant old photos have been provided.</p>
5.3.7	<ul style="list-style-type: none"> Please provide evidence to support the interpretation regarding the function of retaining seawall. 	<p>The evidence has been described in the Final Report.</p>
5.3.9	<ul style="list-style-type: none"> For each type of the pillars, please provide the number discovered and describe its distribution. 	<p>The grid numbering for these supporting pillars of Former Kowloon City Pier has been provided in the Final Report.</p>
	<ul style="list-style-type: none"> “columns” instead of “pillars” is found in other part of the report. Please be consistent. 	<p>“Pillars” has been used instead of “columns” throughout the final Report.</p>
5.3.12	<ul style="list-style-type: none"> The last few sentences are not relevant to the discussion of the Seaward End. Please delete them. 	<p>They have been deleted.</p>
5.3.14	<ul style="list-style-type: none"> The interpretation regarding the Seaward End should be substantiated by direct evidence from archive research. 	<p>The relevant information has been reviewed and the construction year has been deleted.</p>
5.4	<ul style="list-style-type: none"> Observation on the presence of timber extension and interpretation of the trench findings are missing. Reasons for not excavating the remaining area of T2 shall be stated clearly. 	<p>A new sub-section 5.54 has been added to Final report for description of the finding of timber extension.</p>
5.5.3	<ul style="list-style-type: none"> Please provide illustrations to demonstrate the faxed angles for construction of a hexagonal pillar. 	<p>The “faxed angles” has been revised to “fixed angles”.</p>
5.5.4	<ul style="list-style-type: none"> Please state whether the granite blocks are dressed or not for footing stones. 	<p>All the footing stones of SP6 are dressed granite slabs.</p>

<u>No.</u>	<u>Comments</u>	<u>Responses</u>
	<ul style="list-style-type: none"> • The dimensions, thickness and extent of the layer of cobbles should be provided. 	<p>The dimensions, thickness and extent have been provided. Details refer to Figures 49 to 52.</p>
5.5.5	<ul style="list-style-type: none"> • Please check the figure numbers. 	<p>Figure numbers have been rectified.</p>
5.5.7	<ul style="list-style-type: none"> • Findings of the re-excavation and measurements of the features discovered are missing. 	<p>Sub-section 5.57 has been moved to Section 5.3.16.</p>
5.6.3 5.6.5	<ul style="list-style-type: none"> • Please prove explicitly that the three sides of wall foundation stones discovered belong to the Pavilion. Side view drawings of the walls should be provided to show the relevant details. • Please advise whether the fourth side wall has been disturbed or is still buried underground. • Please elaborate the relationship between the Pavilion and the Longjin Bridge in terms of the construction time and method based on field findings. • Please state the relationship between the Pavilion and the two granite slabs. How to prove these slabs were part of the Pavilion. • Regarding the triangular structures, please state whether excavation for the structure has been completed, how the excavation findings match with the setting shown in historical photos and the measurements from the map of 1903. • Referring to the R to C table, further excavation for the remains of landing part of Longjin Bridge and the other parts of Pavilion for Greeting Official are recommended. Please explain why no complete excavation for these parts was conducted. Please seek advice from CEDD on whether the further excavation is justified and can be arranged shortly. 	<p>The remains discovered in the original location of the Pavilion which are consistent with this historic map (Figures 61 and 63). It is therefore presumed those findings are remains of landing portion of the Bridge and the edge structure of the pavilion.</p> <p>Since excavation was limited by the existing ex-Terminal Building basement structures, the existing of fourth (northern) side wall is uncertain.</p> <p>The granite blocks of southern edge are directly interfacing with the landing portion of the Bridge. It is believed that the restoration works of the Pavilion and construction works of the Bridge were carried out in same year of 1873.</p> <p>The original pavilion floor was demolished. Two granite blocks were dug out within the original location of Pavilion is presumed as component of the Pavilion. The excavation was limited by basement structure. Hence, the functions of these two granite blocks are uncertain.</p> <p>The excavation was limited by basement structure. The entire structures are likely unknown yet.</p> <p>The excavation was limited by basement structure and further excavation was not proceeded for safety reason.</p> <p>With reference to the discussion in the meeting among AMO, CEDD and MCAL on 30 April 2008, this further excavation fulfilled search of the Pavilion remains. Therefore, it is considered not necessary to carry out a supplementary excavation of any suspected existing remains of the Pavilion in this stage.</p>

<u>No.</u>	<u>Comments</u>	<u>Responses</u>
5.6.6	<ul style="list-style-type: none"> Please provide evidence to substantiate the interpretation that the marine sand was used as foundation filled material to support the pavilion floor. Can the marine sand be regarded as subsequent disturbance? 	The description of this sub-section has been revised accordingly.
Table 5.6	<ul style="list-style-type: none"> Please check the mPD of the lowermost of L7. 	The level has been checked and revised.
5.7.3	<ul style="list-style-type: none"> Please elaborate how the finding is consistent with the map evidence. 	By the dimension, direction and the location, the findings (granite blocks) are consistent with the historic map of 1903 (scale; 1:1,000).
5.7.3, 5.8.3, 5.9.3	<ul style="list-style-type: none"> The length and width of the northern portion discovered in T3b, T3c and T3d are the same. Please clarify. 	Those sections have been revised.
	<ul style="list-style-type: none"> Please provide a plan to clearly show the alignment of the Longjin Bridge discovered in T3a to d. 	The plan has been provided in the Final Report.
5.7.5	<ul style="list-style-type: none"> Please advise whether footing stones were found in the western side wall of the Bridge in T3b. If yes, please provide relevant photo, plan and side view drawing. 	Since the excavation was limited by basement concrete, the western side wall was not identified.
5.8	<ul style="list-style-type: none"> Please illustrate more on the findings of T3c. 	More descriptions have been added.
5.8.4	<ul style="list-style-type: none"> Please provide photo, plan and side view drawings as illustration. 	They have been added in the Final Report.
5.9	<ul style="list-style-type: none"> Please advise whether footing stones were discovered in T3a, T3c and T3d. 	Footing stones were identified in T3b and t3d.
Figure 81 and 83	<ul style="list-style-type: none"> Information on the southeast corner of the plans is not clear. 	The figures have been revised.
Section 6	<ul style="list-style-type: none"> A table summarizing the quantity, the layer and location of finds unearthed should be provided. 	The Table 6.1 has been revised accordingly.
	<ul style="list-style-type: none"> Characteristics of Bridge and Pier should be addressed in a separate chapter. 	It has been moved to the Chapter 7.
Section 7	<ul style="list-style-type: none"> Please provide a conclusive remark on the completeness and preservation condition of the entire Bridge. 	The conclusive remark has been provided in 7.2.4 of the revised report.
	<ul style="list-style-type: none"> What are CS1 and CS2? 	CS1 and CS2 have been deleted.

<u>No.</u>	<u>Comments</u>	<u>Responses</u>
	<ul style="list-style-type: none"> • Workmanship, shape and strength of stone material, composition/strength of mortars, cracks/damage/deformation of all structures, buried environment and soils below the foundation of Bridge (any soil settlement) should be analyzed. 	<p>The objective of the structural assessment is to assess the stability of the remains by visual inspection. Appropriate content has been included in the report to meet this objective.</p>
6.4 to Section 8	<ul style="list-style-type: none"> • Please reorganize the content of section 6.4, sections 7 and 8. • A table to summarize the stone material, dressed or not, size, methods, layers, etc for the pavilion, northern section, decking, supporting pier footing stones, cobble layer and PES shall be provided after discussion on the Bridge characteristics. 	<p>Section 6.4 has been moved to Section 7.</p> <p>A new Table 7.1 has been added accordingly.</p>
Section 9	<ul style="list-style-type: none"> • Please provide a conclusive remark on the completeness and preservation condition of the entire Bridge. • Please also discuss whether the timber extension is present or not. 	<p>The conclusive remark has been provided in para. 9.1.9 of the report.</p> <p>The timber extension of the Bridge is confirmed to have been demolished.</p>
9.1.1	<ul style="list-style-type: none"> • Data recording should be regarded as part of the excavation works. So the whole period of excavation should be from 30 Oct 2008 to Feb 2009. 	<p>The text has been revised accordingly.</p>
9.1.2	<ul style="list-style-type: none"> • The paragraph states "Longjin Bridge was one of the major diplomacy issues between Britain and China in the late 1890s". This description may not be precise. In fact, the Bridge is associated with the issue of the Kowloon Walled City and after 1899 no argument on the Bridge was recorded. 	<p>The sentence has been deleted.</p>
9.1.3	<ul style="list-style-type: none"> • Please delete the first sentence. 	<p>It has been deleted.</p>
9.1.4	<ul style="list-style-type: none"> • Please provide evidence to support the interpretation regarding the function of the retaining seawall. 	<p>The evidence has been provided.</p>
9.1.5	<ul style="list-style-type: none"> • Observation on the preservation condition of other supporting piers should be provided. 	<p>Text on the preservation condition of other supporting piers has been provided</p>
9.1.6	<ul style="list-style-type: none"> • Please prove explicitly that the three sides of wall foundation stones discovered belong to the Pavilion. 	<p>Please refer to sub-sections 5.63 to 5.65.</p>

<u>No.</u>	<u>Comments</u>	<u>Responses</u>
9.2	<ul style="list-style-type: none"> • Paragraphs regarding other condition survey and the zoning issue should be deleted. <p><u>Appendix A:</u></p> <p><u>General Comments</u></p> <ul style="list-style-type: none"> • Please advise the meaning of “r” found in most of the figures. • Labels for significant features discovered should be added. • Scales should be provided for all drawings. N.T.S. drawings in this appendix are not acceptable. • Please overlay all the features discovered on 1:1000 topographic maps of Kai Tak area. <p><u>Specific Comments</u></p>	<p>Section 9.2 has been deleted.</p> <p>The “r” has been deleted.</p> <p>They have been added accordingly.</p> <p>The scale has been added.</p> <p>The features have been marked on 1:1000 map.</p>
1.1	<ul style="list-style-type: none"> • Features discovered cannot be clearly shown. • Some of them are highlighted in red, some are not. Please clarify • Labels for trench no. and different sections of the Longjin Bridge should be added. • As a general overview plan, please consider deleting unnecessary information, such as the sloping sign, the cross in the middle of the supporting columns of Former Kowloon City Pier, cut line x-x, y-y, view A and B. • Please use colour grids to indicate the frame of figures and highlight the figure nos. 	<p>The features have been shown clearly.</p> <p>Red lines are indicating outline of features measured by photography survey images.</p> <p>These have been added accordingly.</p> <p>Unnecessary information has been deleted, except sloping sign.</p> <p>These have been used when appropriate.</p>
1.2	<ul style="list-style-type: none"> • Please delete unnecessary information, such as the two crosses (one in the middle of the supporting columns of Former Kowloon City Pier), cut line x-x, y-y, view A and B. • The drawings of some columns/pillars are found incomplete. 	<p>Unnecessary information has been deleted.</p> <p>This has been rectified.</p>
1.3	<ul style="list-style-type: none"> • A group of dotted lines is found in the centre of T1. Please explain what it is. 	<p>The dotted lines indicate the trench bottom as shown in the legend.</p>

<u>No.</u>	<u>Comments</u>	<u>Responses</u>
	<ul style="list-style-type: none"> Columns as indicated in Figure 1.1 are found missing in Figure 1.3. 	<p>Figure 1.3 only indicates the seaward end and the 1930's seawall. Supporting pillars of Former Kowloon City Pier are therefore not shown in Figure 1.3.</p>
1.5	<ul style="list-style-type: none"> Please add labels for the SPs, GDs and 1924 seawall or any later disturbance. 	<p>Labels have been added accordingly.</p>
1.6	<ul style="list-style-type: none"> Apart from the features shown in the centre of the trench bottom, information for the remaining part of the trench bottom is found missing. Or just simply misplace the field drawing. 	<p>Please note that the dotted lines indicate the trench bottom.</p>
1.7	<ul style="list-style-type: none"> Apart from the features shown in the east corner of the trench bottom, information for the remaining part of the trench bottom is found missing. 	<p>Please note that the dotted lines indicate the trench bottom.</p>
1.8	<ul style="list-style-type: none"> Apart from the features shown in the centre of the trench bottom and the terminal building basement, information for the remaining part of the trench bottom is found missing. 	<p>Please note that the dotted lines indicate the trench bottom. The terminal building basement has been added.</p>
1.9	<ul style="list-style-type: none"> Please add a label for the two granite slabs. 	<p>The label has been added.</p>
	<ul style="list-style-type: none"> Please mark the part of Longjin Bridge and the part of Pavilion for Greeting Officials on the plan. 	<p>Longjin Bridge and the part of Pavilion for Greeting Officials has been marked accordingly.</p>
2.1	<ul style="list-style-type: none"> The side view drawings are not clear. 	<p>The side view has been made clear.</p>
	<ul style="list-style-type: none"> Please delete unnecessary information, such as the sloping sign, the cross in the middle of the supporting columns of Former Kowloon City Pier, cut line x-x, y-y, view A and B. 	<p>Unnecessary information was deleted, except sloping sign.</p>
2.2	<ul style="list-style-type: none"> The side view drawing is not clear. Please delete unnecessary information, such as the cross in the middle of the supporting columns of Former Kowloon City Pier, cut line x-x, y-y, view A and B. 	<p>High solution of side view has been added.</p> <p>Unnecessary information was deleted, except sloping sign.</p>
	<ul style="list-style-type: none"> The drawings of some columns are found incomplete. 	<p>This has been rectified.</p>
2.3	<ul style="list-style-type: none"> The side view drawing does not match with the corresponding side of the Seaward End. 	<p>It has been made to match with each other.</p>

<u>No.</u>	<u>Comments</u>	<u>Responses</u>
2.4	<ul style="list-style-type: none"> The side view drawings are not clear. 	High solution of side view has been added.
2.5	<ul style="list-style-type: none"> Please provide the northeast side view drawing. 	The northeast side view drawing has been added.
2.6	<ul style="list-style-type: none"> Apart from the features shown in the east corner of the trench bottom, information for the remaining part of the trench bottom is found missing. 	The remaining parts are existing basement structures which have been added to the drawing.
2.7	<ul style="list-style-type: none"> Please provide the southwest side view drawing. 	This has been provided in the Final report.
	<ul style="list-style-type: none"> Footing stones on the plan are found missing. 	It has been provided in the Final Report.
2.8	<ul style="list-style-type: none"> The two granite slabs are missing. Please mark the part of Longjin Bridge and the part of Pavilion for Greeting Officials on the plan. Area with foundation of terminal building is not shown. Side view drawings for the three walls of the Pavilion should be provided. 	<p>It has been shown in Figure 1.9.</p> <p>They have been marked on the plan.</p> <p>It has been shown in Figure 1.9.</p> <p>It has been added in Final Report.</p>
3.1	<ul style="list-style-type: none"> The side view drawing is not clear. mPD data of all the features should be shown in a table. Each important feature shall mark with level readings which are consistent with relevant tables and text should be marked. 	<p>High solution of side view has been provided in Final Report.</p> <p>The mPD data of the feature has been provided in Final Report.</p> <p>Each important feature has been marked with level readings.</p>
4.1	<ul style="list-style-type: none"> Please show the existing box culvert, AA2, foundation columns of terminal building. Please add labels for significant features discovered. 	<p>Box culvert and location of AA2 have been provided.</p> <p>The labels have been added in Final Report.</p>
AppB-1	<p><u>Appendix B</u></p> <ul style="list-style-type: none"> Please clearly overlay all features discovered on the OZP at an appropriate scale. 	This has been prepared accordingly.

<u>No.</u>	<u>Comments</u>	<u>Responses</u>
	<p><u>Appendix C</u></p> <ul style="list-style-type: none"> <li>• Please advise whether the report is prepared and certified by a registered structural engineer. Please refer to comments on section 7. <li>• Please state clearly that the granite decking composed of 5 and 9 nos. of granite slabs are found in the seaward side and landward side of the Bridge respectively. Relevant old photos should be provided as illustration. <li>• Please indicate the locations of CS1 and CS2. <li>• Please check whether the Seaward End has two or three layers. <li>• Please provide the size and describe the present condition of the two granite slabs. <li>• Please provide more details on the Detailed Condition Survey, such as the objectives, scope of work, any guidelines, party responsible for conducting the survey, etc. <li>• Please elaborate more on the strict conditions recommended in the third point. <li>• Both "pillar" and "column" are found. Please be consistent. 	<p>The report has been prepared and certified by the Consultants.</p> <p>The text has been revised accordingly.</p> <p>The CS1 and CS2 have been deleted.</p> <p>Three layers. Text has been amended.</p> <p>The present condition is good. The granite slabs each measured 135cm long, 40cm wide and 18 cm thick.</p> <p>The recommendation for the Detailed Condition Survey has been deleted and will be addressed in the CMP.</p> <p>The recommendation for the strict conditions has been deleted and will be addressed in the CMP.</p> <p>"Pillar" was used instead of "column" throughout the Final Report.</p>
	<p>All R to C tables should be attached to the report.</p> <p>Further comments on the report will be discussed in our meeting in this afternoon.</p>	<p>This and all previous R to C tables have been included the report.</p>

**Agreement No. CE 35/2006(CE)
Kai Tak Development Engineering Study
cum Design and Construction of Advance Works
– Investigation, Design and Construction**

Further Archaeological Excavation Report

Responses to Comments

<u>Comments Received</u>	<u>Date Received</u>
1. Leisure and Cultural Services Department, AMO (email)	5 June 2009
2. Leisure and Cultural Services Department, AMO (email)	23 June 2009
3. Leisure and Cultural Services Department, AMO (email)	14 July 2009
4. Leisure and Cultural Services Department, AMO (email)	29 July 2009

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Further Archaeological Excavation Report

Responses to Comments

<u>No.</u>	<u>Comments</u>	<u>Responses</u>
1.	Leisure and Cultural Services Department, AMO email dated 5 June 2009	
	<p>Abstract</p> <ul style="list-style-type: none"> • Please mention the name “Lung Tsun Stone Bridge”. <p>Chapter 1</p> <p>1.1.2</p> <ul style="list-style-type: none"> • The description of the remains of Longjin Bridge (historical resource?) in this paragraph is not precise. Please amend. • Please delete “as an historical site” in the last sentence. <p>Chapter 2</p> <p>2.2.1</p> <ul style="list-style-type: none"> • Please check: “1898 pillars of the concrete extension” <p>Chapter 3</p> <p>3.1.1</p> <ul style="list-style-type: none"> • Please delete “such as historic map no. CXXXVII-NE8”. <p>3.3.5</p> <ul style="list-style-type: none"> • “Trench AA5” is not understandable here as the details of the investigation from March to May 08 have not been introduced in previous chapters. <p>Chapter 4</p> <ul style="list-style-type: none"> • <p>Chapter 5</p> <p>Table 5.1</p> <ul style="list-style-type: none"> • Please check the source numbers in the last two columns of the table. 	<p>The text has been revised accordingly.</p> <p>The “historical resource “has been revised as “historical structure”.</p> <p>“As an historical site” in the last sentence has been deleted.</p> <p>After counter checking, the “1898 pillars of the concrete extension” amended as “1910 pillars of the concrete extension”.</p> <p>Map no. CXXXVII-NE8 has been deleted.</p> <p>Trench AA5 has been deleted.</p> <p>The source numbers in the last two columns of the table have been checked and amended.</p>

<u>No.</u>	<u>Comments</u>	<u>Responses</u>
	<ul style="list-style-type: none"> Please check the measurements and level readings of all features discovered throughout the report. A table summarizing the information of all features discovered including the measurements and level readings should be provided. 	<p>The measurements and level readings of all features discovered throughout the report have been cross-checked.</p>
5.1.2	<ul style="list-style-type: none"> Please amend the fourth line as "...nine longitudinal granite slabs placed in parallel ...". 	<p>The fourth line has been amended accordingly.</p>
5.3.6	<ul style="list-style-type: none"> Lines 3 to 4: please check the measurements. Last line: please check the figure numbers. 	<p>The measurements and figure numbers described in section 5.36 have been amended.</p>
5.3.10	<ul style="list-style-type: none"> Line 3: please check the measurements. 	<p>The measurements described in section 5.3.10 have been amended.</p>
5.3.14	<ul style="list-style-type: none"> Please state the result of re-excavation. 	<p>The result of re-excavation has been added.</p>
5.4.3	<ul style="list-style-type: none"> Please check the description of the last line. 	<p>The description of the last line has been checked and revised.</p>
5.5.2	<ul style="list-style-type: none"> Please advise whether both the width and depth of cobbles are 1m. 	<p>The width and depth of cobbles of all about 1 m.</p>
5.6.6	<ul style="list-style-type: none"> Please review the description in this paragraph. 	<p>The description in this paragraph has been reviewed and amended.</p>
5.6.7	<ul style="list-style-type: none"> Please provide illustrations to substantiate the description in this paragraph. 	<p>Please refers to drawing AF4.1.</p>
5.6.9	<ul style="list-style-type: none"> Please replace "regime" by "reign". 	<p>"Regime" has been amended as reign.</p>
	<p>Chapter 6</p>	
6.1.1	<ul style="list-style-type: none"> Please delete "According to the raw material". 	<p>"According to the raw material" has been deleted.</p>
6.1.4	<ul style="list-style-type: none"> Please check the figure number. 	<p>The figure number has been checked.</p>
6.3.2	<ul style="list-style-type: none"> Please combine 6.3.2 and 6.3.3. Please replace "regime" by "reign". 	<p>The sections 6.3.2 and 6.3.3 has been combined.</p> <p>"Regime" has been amended as reign.</p>

<u>No.</u>	<u>Comments</u>	<u>Responses</u>
	<p>Chapter 7</p>	
7.2.3	<ul style="list-style-type: none"> Both “supporting pillars” and “supporting columns” are found in the report. Please be consistent. 	<p>All “supporting columns” were amended as “supporting pillars” throughout the report.</p>
7.2.4	<ul style="list-style-type: none"> Please elaborate more on the “proper means”. 	<p>The “proper means” has been fully interpreted in the Section 7.24.</p>
	<p>Chapter 8</p>	
8.2.4	<ul style="list-style-type: none"> “dress” should read as “dressed” in the first line and Table 8.1. 	<p>“Dress” has been amended as “dressed”.</p>
Table 8.1	<ul style="list-style-type: none"> The information provided in the column of Dimensions of Excavated Remains should be corresponded with those in the other chapters. 	<p>Dimensions of Excavated Remains described in Table 8.1 have been cross-checked with main text.</p>
	<p>Chapter 9</p>	
9.1.5	<ul style="list-style-type: none"> Please consider using “possible” instead of “believe” in the last sentence. 	<p>“Possible” has been amended accordingly.</p>
	<ul style="list-style-type: none"> Section 9 should include the recommendations. Please supplement accordingly. 	<p>The recommendations have been supplement.</p>
	<p>Figures</p>	
15	<ul style="list-style-type: none"> Please check the figure numbers. 	<p>Figure numbers have been cross checked.</p>
18	<ul style="list-style-type: none"> “Retaining seawall” should be replaced by “1930s’ seawall”. 	<p>“Retaining seawall” has been amended.</p>
19	<ul style="list-style-type: none"> “Retaining seawall” should be replaced by “1930s’ seawall”. 	<p>“Retaining seawall” has been replaced.</p>
	<ul style="list-style-type: none"> The drawings of some pillars of Former Kowloon City Pier are found incomplete. 	<p>The drawings have been revised.</p>
	<ul style="list-style-type: none"> Please delete “View A, View B, Cut Line x-x, Cut Line Y-Y”. 	<p>“View A, View B, Cut Line x-x, Cut Line Y-Y” have been deleted.</p>
19-24	<ul style="list-style-type: none"> Both “supporting pillars” and “supporting columns” are found in the report. Please be consistent. 	<p>All “supporting columns” were amended as “supporting pillars” throughout the report.</p>
57	<ul style="list-style-type: none"> Please check figure numbers. 	<p>Figure numbers have been cross checked.</p>

<u>No.</u>	<u>Comments</u>	<u>Responses</u>
65	<ul style="list-style-type: none"> Please add pointer to show the two granite slabs. 	Pointers have been added for tow granite slabs.
77-78	<ul style="list-style-type: none"> The remains of the Bridge cannot be clearly shown. 	This figure has been revised.
	Appendix A	
1.1A	<ul style="list-style-type: none"> The drawings of some pillars of Former Kowloon City Pier are found incomplete. Please add labels of all SPs, GD1 and GD2. These features should be clearly shown on the plan. Please use different pointers to mark the Pavilion for Greeting Officials and landing portion of Longjin Bridge. The two granite blocks in relation to the Pavilion for Greeting Officials are missing. For the side view, please check the pointer locations of SP1, SP2 and 1924 seawall. Please check the location of T3c. 	<p>The drawings have been revised.</p>
1.1B	<ul style="list-style-type: none"> Please check the year of timber extension. Please add labels of all SPs, GD1, GD2, CS1 and CS2. The two granite blocks in relation to the Pavilion for Greeting Officials are missing. The drawings of some pillars of Former Kowloon City Pier are found incomplete. 	<p>The year of timber extension has been checked.</p> <p>The drawings have been revised.</p> <p>The drawings have been revised.</p> <p>The drawings have been revised.</p>
1.2	<ul style="list-style-type: none"> The drawings of some pillars of Former Kowloon City Pier are found incomplete. 	The drawings have been revised.
1.7	<ul style="list-style-type: none"> Please add label to show the part of Longjin Bridge. Please add arrow to link the Enlarged View A with the plan. 	The drawings have been revised.

<u>No.</u>	<u>Comments</u>	<u>Responses</u>
	<p>4.1</p> <ul style="list-style-type: none"> • Please add labels of all SPs, GD1, GD2, CS1 and CS2. • The drawings of some pillars of Former Kowloon City Pier are found incomplete. • The two granite blocks in relation to the Pavilion for Greeting Officials are missing. • AA2A is not clear. • Is it possible to show the foundation of the terminal building? <p>Appendix B</p> <ul style="list-style-type: none"> • Please amend the figure according to the above comments on figures. <p>Appendix C</p> <ul style="list-style-type: none"> • Please refer to the above comments and amend relevant parts accordingly. <p>3.4.1</p> <ul style="list-style-type: none"> • Both “2 granite slabs” and “2 granite blocks” are found in the report. Please be consistent. <p>3.4.2</p> <ul style="list-style-type: none"> • Please elaborate more on the protection measures. <p>Fig. C1</p> <ul style="list-style-type: none"> • Please add label of SP1. 	<p>The drawings have been revised.</p>
2.	<p>Leisure and Cultural Services Department, AMO email dated 23 June 2009</p> <p>General comments:</p> <ul style="list-style-type: none"> • It is noted that the report has not been fully amended according to our discussion in the meeting on 4.6.2009. • Please check the measurements and level readings again and make sure that they are consistent throughout the report. 	<p>Noted.</p> <p>The measurements and level readings of all features discovered throughout the report have been cross-checked.</p>

<u>No.</u>	<u>Comments</u>		<u>Responses</u>
	Abstract	<p>Specific comments:</p> <ul style="list-style-type: none"> • 3rd para.: “development control zone” should read as “buffer zone”. Please use “監控區” in the Chinese abstract and amend other relevant parts accordingly. • Please delete “(which shall include the space vertically above and the ground below the plan area of the control zone)”. Please amend the Chinese abstract and other relevant parts accordingly. • 提要第一段: “畫”應改為“劃” 	<p>The Chinese and English words have been amended accordingly.</p> <p>“(which shall include the space vertically above and the ground below the plan area of the control zone)” has been deleted, the Chinese abstract and other relevant parts accordingly have been amended accordingly.</p> <p>“畫” has been amended.</p>
	Chapter 4		
	4.1.3	<ul style="list-style-type: none"> • Figures 7a and 7b cannot be found. 	Figures 7a and 7b have been added.
	4.2.8	<ul style="list-style-type: none"> • Figure 7a cannot be found. 	Figures 7a has been added.
	4.3.5	<ul style="list-style-type: none"> • “pliers” should read as “pillars”. 	Pliers have been revised as “pillars”.
	Chapter 5		
	Table 5.1	<ul style="list-style-type: none"> • Source (6) cannot be found. • Source (7) is not used. 	<p>Table 5.1 has been revised accordingly.</p> <p>Table 5.1 has been revised accordingly.</p>
	5.1.2	<ul style="list-style-type: none"> • Please check the figure numbers. 	Figure numbers have been cross checked.
	5.6.8	<ul style="list-style-type: none"> • “granite blocks” should read as “granite slabs”. 	“granite blocks” has been ammended as “granite slabs”.
	5.8.3	<ul style="list-style-type: none"> • Please check figure no. 79. 	Figure numbers have been cross checked.
	5.10.1	<ul style="list-style-type: none"> • Some of the level readings are missing, such as top elevation of remains of Longjin Bridge in T3c, remains of Pavilion and landing portion, remains of Former Kowloon City Pier. Please check 	This section has been revised accordingly.

<u>No.</u>	<u>Comments</u>	<u>Responses</u>
	<p>Chapter 7</p>	<p>The elevation has been cross-checked and amended.</p>
7.2.3	<ul style="list-style-type: none"> • Please check figure nos. 7a and 7b. 	<p>Figure numbers have been cross checked.</p>
	<p>Chapter 9</p>	
9.1.8	<ul style="list-style-type: none"> • “granite slabs” should be used instead of “granite blocks”. 	<p>granite blocks” has been ammended as “granite slabs”.</p>
	<p>Figures</p>	
1	<ul style="list-style-type: none"> • “1930s’ seawall” should read as “1930’s causeway”. 	<p>“1930s’ seawall” has been amended as “1930’s causeway”.</p>
13	<ul style="list-style-type: none"> • “Retaining seawall” should be replaced by “1930s’ causeway”. 	<p>“1930s’ seawall” has been amended as “1930’s causeway”.</p>
15	<ul style="list-style-type: none"> • Please check the information in the blue boxes. 	<p>Information have been cross checked.</p>
18	<ul style="list-style-type: none"> • “Retaining seawall” should be replaced by “1930s’ causeway”. 	<p>“1930s’ seawall” has been amended as “1930’s causeway”.</p>
19	<ul style="list-style-type: none"> • “Retaining seawall” should be replaced by “1930s’ causeway”. 	<p>“1930s’ seawall” has been amended as “1930’s causeway”.</p>
	<ul style="list-style-type: none"> • “supporting columns” should read as “supporting pillars” • The drawings of some pillars of Former Kowloon City Pier are found incomplete. 	<p>“supporting columns” has been revised as “supporting pillars”</p> <p>Figures have been revised.</p>
	<ul style="list-style-type: none"> • Please delete “View A, View B, Cut Line x-x, Cut Line Y-Y”. 	<p>“View A, View B, Cut Line x-x, Cut Line Y-Y” have been deleted.</p>
20-24	<ul style="list-style-type: none"> • “supporting columns” should read as “supporting pillars”. 	<p>“supporting columns” has been revised as “supporting pillars”</p>
55	<ul style="list-style-type: none"> • Please add the label of “SP1” on the photo. Please check the locations of “GD1” and GD2”. 	<p>Figures have been revised.</p>

<u>No.</u>	<u>Comments</u>	<u>Responses</u>
56	<ul style="list-style-type: none"> • Please check the caption. "SP1" or "SP2"? 	Captions of SPs1 and 2 have been revised.
57	<ul style="list-style-type: none"> • Please check the information in the green boxes. 	Information have been cross checked.
65	<ul style="list-style-type: none"> • Please add pointer to show the two granite slabs. 	Figures have been revised.
69	<ul style="list-style-type: none"> • "Regime" should read as "reign". 	"Regime" has been amended as reign.
88	<ul style="list-style-type: none"> • Wrong figure number. 	Figure numbers have been revised.
90	<ul style="list-style-type: none"> • "Regime" should read as "reign". 	"Regime" has been amended as reign.
Appendix A		
1.1A	<ul style="list-style-type: none"> • "1924 causeway" should read as "1924 seawall". 	"1924 causeway" has been revised as "1924 seawall".
	<ul style="list-style-type: none"> • Please check the locations of labels "GD1" and "GD2". 	Figures have been revised.
1.1B	<ul style="list-style-type: none"> • Please check the locations of labels "GD1" and "GD2". 	Figures have been revised.
1.5	<ul style="list-style-type: none"> • Please check the locations of labels "SP1", "SP2", "GD1" and "GD2". 	Figures have been revised.
4.1	<ul style="list-style-type: none"> • "1924 causeway" should read as "1924 seawall". 	Figures have been revised.
	<ul style="list-style-type: none"> • Please check the locations of labels "GD1" and "GD2". 	Figures have been revised.
	<ul style="list-style-type: none"> • "1924 causeway" should read as "1924 seawall". 	Figures have been revised.
	<ul style="list-style-type: none"> • Existing box culvert is not clear. 	Figures have been revised.
Appendix C		
1.1.2	<ul style="list-style-type: none"> • "resource" should read as "structure". 	The "historical resource" has been revised as "historical structure".
1.1.5	<ul style="list-style-type: none"> • "31 December 2008" should read as "20 February 2009". 	"31 December 2008" has been revised as "20 February 2009".
2.2.8	<ul style="list-style-type: none"> • "seawall" should read as "causeway". 	The "seawall" has been revised as "causeway".

No.	Comments	Responses
3.1.1	<ul style="list-style-type: none"> • "31 December 2008" should read as "20 February 2009". 	"31 December 2008" has been revised as "20 February 2009".
3.2.7	<ul style="list-style-type: none"> • The dimensions and level do not match with those in Table 8.1. 	The section 3.27 has been cross check with Table 8.1 and amended according to the checking result.
3.2.14-15	<ul style="list-style-type: none"> • "supporting pier" should read as "supporting pillar". 	"supporting pier" has been revised as "supporting pillar".
3.4.3	<ul style="list-style-type: none"> • The dimensions do not match with those in Table 8.1. 	The dimensions has been cross check with Table 8.1 and amended according to the checking result.
4.2.2	<ul style="list-style-type: none"> • Please delete "For general civil engineering works outside the development control zone ...can be exempted." 	"For general civil engineering works outside the development control zone ...can be exempted." Has been deleted accordingly.
4.2.3	<ul style="list-style-type: none"> • Please delete this paragraph. 	This paragraph has been deleted.
5.1.2	<ul style="list-style-type: none"> • Please delete "CS1 and CS2". "(next to the 1924 seawall, SP1 to SP9)" should read as "SP1, SP2 and SP6". 	The information has been deleted.
5.1.5	<ul style="list-style-type: none"> • The measures mentioned in 7.2.4 of the main text cannot be found in Appendix C. 	The measures mentioned in 7.2.4 of the main text have been cross checked with in Appendix C.
Fig. C1	<ul style="list-style-type: none"> • Please add label of SP1. Please check the locations of labels "GD1" and GD2". 	Figures have been revised.
Fig. C22-25	<ul style="list-style-type: none"> • "supporting columns" should read as "supporting pillars". 	"supporting pier" has been revised as "supporting pillar".
3.	<p>Leisure and Cultural Services Department, AMO email dated 14 July 2009</p> <p>1. The elevation and dimension figures should be consistent throughout the report. It is found that some figures do not correspond with paragraph 5.10.1, Table 8.1 and Figure 1.1A. Please check the elevation/dimension figures again, especially those in the following paragraphs:</p>	Paragraph 5.10.1, Table 8.1 and Figure 1.1A have been checked and updated accordingly.

<u>No.</u>	<u>Comments</u>		<u>Responses</u>
	Main text		
5.3.3		Line 3	Text has been revised as "The top elevation of this causeway was at 3.32 mPD."
5.3.12		Line 4	Text has been revised as "The top of the decking is about +2.66 mPD."
5.5.2		Line 2	Text has been revised as "...at supporting pillar SP6 down to its uppermost of first layer of footing stone at -0.80mPD."
5.6.4		Line 2	Text has been revised as "The length of the landing portion remains is 5.25m and the width is 4.8m (Figures 61 to 68, AF1.9)."
5.7.4		Line 4	Text has been revised as "The side walls were constructed of five layers of granite blocks with the top elevation of the first layer at 2.23 mPD and the bottom elevation of the footing stones at +0.60mPD. The range of side wall granite blocks measured between 1000mm (L) x 300mm (W) x 200mm (H) and 2200mm (L) x 300mm (W) x 150mm/220mm (H) (Figures 74 to 76)."
5.8.3		Line 3	Text has been updated as "The top elevation of the remains is at 1.22mPD and the length of the excavated remains is about 3m (Figure 78)."
5.8.4		Line 6	Text has been revised as "The longitudinal blocks each measure 1200mm (L) x 300mm (W) x 200mm (H)."
5.9.4		Line 5	Text has been updated as "The top elevation of the first layer of blocks is at 2.37mPD...".
9.1.7		Line 2	Text has been revised as "An additional grid was excavated at the granite supporting pillar SP6 down to near the bottom of the pillar's footing stones at -2.0mPD."
9.1.10		Line 2	Text has been revised as "... the basement floor of the Former Terminal Building between +0.60mPD to+2.81mPD at Trenches T3a, T3b, T3c and T3d."
	Appendix C		
3.2.7		Line 3	Text has been revised as "The top of the seaward end is at about 2.66mPD. The structure of the seaward end is believed to be found on coarse marine sand at about elevation of -0.8mPD."

<u>No.</u>	<u>Comments</u>	<u>Responses</u>
	<p>3.2.11 Line 1</p> <p>3.2.13 Line 3</p> <p>4.1.4 Lines 2 and 3</p>	<p>Text has been revised as "Deep excavation was carried out down to sea deposit layer (-2.0mPD)..."</p> <p>Text has been revised as "The lowermost of the third layer of footing stone are at elevation of -2.0mPD."</p> <p>Text has been revised as "...areas (the uppermost of SP6 is at 2.26mPD and the highest point of northern portion of Longjin Bridge is at 2.81mPD),..."</p>
	<p>2. Line 4 of para. 5.8.3, Figure 79 should be 78.</p> <p>3. Line 3 of para. 9.1.15, "buff" should be "buffer".</p> <p>4. Figure 1, the word "causeway" is missing in the box for T1.</p> <p>5. Figure 18, "retaining seawall" should read as "1930's causeway.</p> <p>6. Figure 20, "columns" should read as "pillars".</p> <p>7. Please delete para. 4.2.2 in Appendix C.</p> <p>8. Please attach all the R to C tables to the report.</p>	<p>Figure no has been revised accordingly.</p> <p>Text has been revised accordingly.</p> <p>"Causeway" has been added to Figure 1.</p> <p>Figure name has been revised accordingly.</p> <p>Figure name has been revised accordingly.</p> <p>Para. 4.2.2 has been deleted.</p> <p>The R to C tables have been attached to this submission.</p>
<p>4.</p>	<p>Leisure and Cultural Services Department, AMO email dated 29 July 2009</p> <p>I refer to your letter dated 20.7.2009 attaching the captioned report. Our comments on the report are as follows:</p> <p>1. 5.7.4: Please check the size of wall granite blocks.</p> <p>2. 5.8.3: Line 4, please check the length of the excavated remains.</p> <p>3. Table 8.1: Second row on page 32, "Bottom elevation of SP6 footing stone; -0.8;" should read as "Uppermost of first layer of footing stone; -0.8;"</p>	<p>The size has been checked and revised.</p> <p>The length has been checked and revised.</p> <p>"Bottom elevation of SP6 footing stone; -0.8;" has been revised as "Uppermost of first layer of footing stone; -0.8;"</p>

<u>No.</u>	<u>Comments</u>	<u>Responses</u>
	<p>4. 9.1.15: With reference to 4.2.1 of the Structural Assessment Report, the sentence about vertical spacing is noted. For consistency, please add this sentence in 9.1.15.</p> <p>5. Figure 1: The word "causeway" is missing in the box for T1.</p> <p>6. Figure 18: "Retaining Seawall" in the second line of the caption should read as "1930's causeway".</p> <p>7. Figure 1.1A: Please add a table on the figure to present the following data for easy reference:</p> <p>a) original width and length of the Pavilion</p> <p>b) the maximum width of remains of Pavilion, Longjin Bridge and Kowloon City Pier from this excavation</p> <p>c) the length of remains of Pavilion, Longjin Bridge and Kowloon City Pier from this excavation</p> <p>d) the total extent in length of all remains discovered from this excavation</p> <p>8. Please provide a front page for the R to C table which should show all the comments received with date.</p> <p>9. Responses to our comments dated 5.6.2009 and 23.6.2009 are missing in the R to C table.</p> <p>10. Please provide response to our request for a foundation plan of the terminal building.</p>	<p>The vertical spacing has been added accordingly.</p> <p>"Causeway" has been added.</p> <p>"Retaining Seawall" has been revised accordingly.</p> <p>The relevant information has been added to the AF1.1A according.</p> <p>See above</p> <p>See above</p> <p>See above</p> <p>See above</p> <p>This has been provided in this submission.</p> <p>This has been provided in this submission.</p> <p>We have visited ArchSD for 3 times already and had a discussion with their concerned colleagues in which we had re-indicated the location and the extent of the structure, of which we need the as-built drawings. Nevertheless, based on the available information provided by ArchSD after detailed search of their records, no foundation plans of the terminal building structure at the location of Longjin Bridge can be found in their office.</p>