

**DRAINAGE IMPROVEMENT
WORKS AT YUEN LONG –
STAGE 2**

Contract No.: DC/2022/02

**Pre-Construction
Condition Survey
Report for Impacted
Graded Historic
Buildings**

**Wing Tat Civil Engineering
Company Limited**

Reference: P525672

Revision: 2

2023-12-22

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to life*

Document control record

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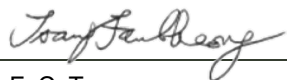
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**Contract No. PM 10/2022 -
Independent Environmental Checker for Drainage Improvement Works at
Yuen Long – Stage 2**

Verification of Condition Survey Report for Impacted Graded Historic Building

22 December 2023

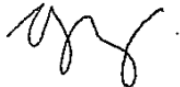
Dear Sir,

We refer to the Condition Survey Report for Impacted Graded Historic Building under the captioned Project, which was certified on 22 December 2023 by the Environmental Team (ET) Leader under Condition 2.1 of the EP.

We would like to inform you that we have no adverse comment on the captioned submission. Therefore, we hereby verify the abovementioned submission in accordance with EP Conditions 1.9 and 2.10.

Should you have any queries regarding the captioned, please contact our Hin Chan at 2828 5764 or the undersigned at 2828 5751.

Yours faithfully
for MOTT MACDONALD HONG KONG LIMITED



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1 Introduction

1.1 The Project Background

Drainage improvement works are proposed to be implemented under Contract No. DC/2022/02 “Drainage Improvement Works at Yuen Long – Stage 2” (hereafter referred to as “the project”). The works include construction of drainage channels and stormwater drains in Tai Wo, Shan Ha Tsuen, Ha Che, Sung Shan New Village and Lin Fa Tei; but Shan Ha Tsuen is not covered in this EM&A programme.

The Project is a designated project under Schedule 2 of the Environmental Impact Assessment Ordinance (EIAO) (Cap.499). An Environmental Impact Assessment (EIA) Report together with an Environmental Monitoring and Audit (EM&A) Manual (hereafter referred to as the “approved EM&A Manual”) (Register No. AEIAR-229/2021) was prepared for the Project and approved by Environmental Protection Department (EPD) on 3 Jun 2021. An Environmental Permit (EP) (EP No. EP-596/2021) was issued on 28 September 2021. These documents are available through the EIAO Register.

Wing Tat Civil Engineering Co. Limited (WTCE) is the awarded Main Contractor of this project. Aurecon Hong Kong Limited has been appointed by WTCE to provide consultancy services for condition survey in this project.

1.2 Purpose and Objectives of Condition Survey

This report is prepared in accordance with the Section 25.32(12) of the Particular Specification, Section 2.10 of the EP and Table 10.1 of the approved EM&A Manual of this project. The aim of the survey is prevention of any possible damage during engineering works.

This report is to record in general terms the overall condition of the subject buildings and to propose monitoring and precautionary measures that are recommended to be implemented by the Contractor.

This report covers the entire aboveground structure of Built Heritage GB-01, GB-02 and GB-03 and forms part of this consultancy works to provide a true and accurate record of the state of the survey items, including the existing conditions in terms of cracking, concrete spalling or any other visible defect before the construction of the works.

1.3 Contents of the Report

The Report is structured as follows:

- Section 1 – Provides the project background and the objectives of this report;
- Section 2 – Describes the site details, scope and methodology of condition survey;
- Section 3 – Presents the survey findings – describes the information about the survey and summary of findings;
- Section 4 – Describes the proposed construction works adjacent to the subject building;
- Section 5 – Describes the proposed monitoring measures; and
- Section 6 – Conclusion.

2 Detailed Description of Condition Survey

2.1 Site Description

General information about the subject building is listed in **Table 2.1.1** to **Table 2.1.3**. The location plan is attached in **Appendix A**.

2.1.1 Lee Tat Bridge

No owner nor management party of the subject building can be found.

Name of House	Lee Tat Bridge (利達橋)
Address	Shui Tsan Tin, Pat Heung
Lot Number	N/A
Age of the Building	Built in 1903
No. of Storey	N/A
Form of Structure	Simple flat stone beam bridge with tarmac covering and modern metal railings set on both side of bridge deck
Feature	The pier of the bridge has a cutwater design; Abutments are built with granite blocks and rested on concrete foundation
Past and Present Use	Continued use as bridge for transport
Surrounding Environment	It serves to connect Kam Sheung Road with Shui Tsan Tin in Pat Heung

2.1.2 Lan Fong Study Hall

The owner and management party of the subject building is “Lan Fong Study Hall (蘭芳書室)”.

Name of Building	Lan Fong Study Hall (蘭芳書室)
Address	Chuk Hang, Pat Heung
Lot Number	DD111 Chuk Hang Lot
Age of the Building	Built in 1862, 161 years old
No. of Storey	2
Form of Structure	Brickworks structure with pitched roof and smaller vestibule at back
Feature	An inscription of “蘭芳書室” and above the main entrance
Past and Present Use	Study hall and school; abandoned at present.
Surrounding Environment	Within rural village surroundings and pond in front of the village.

2.1.3 St. John's Chapel

The current owner and management party of the subject building is "Following Thy Way (古道行)".

Name of Building	St. John's Chapel (聖若望小堂)
Address	No. 2 Cheung Po, Pat Heung
Lot Number	DD113 Tseung Po Lot
Age of the Building	Built in 1928, 95 years old
No. of Storey	1
Form of Structure	Whole building mainly brickworks structure with pitched roof and small annex structures at the back and side elevation; except the balcony as well as the rectangular pillars are reinforced concrete structure.
Feature	An inscription of "天主堂" above the main entrance
Past and Present Use	Religious services and elementary school; vacant at present.
Surrounding Environment	The building is located the corner of road junction between main road and slip road. The residential buildings are closely built at the northern side of chapel with less than 1m clearance.

2.2 Scope of Survey

2.2.1 Lee Tat Bridge

Subject to the accessibility of the target buildings, the survey should cover full bridge deck, abutments, piers and its foundation where are permitted to access and inspect. The inspection is visual and non-invasive and limited to areas which are exposed during the course of our inspection. The survey does not take up floor coverings, move fixings or undo electrical fittings.

2.2.2 Lan Fong Study Hall

Subject to the accessibility of the target buildings, the survey should cover all external facades, where are permitted to access and inspect. No internal inspection is allowed because internal maintenance would be undertaken subject to government agreement. The inspection is visual and non-invasive and limited to areas which are exposed during the course of our inspection. The survey does not take up floor coverings, false ceiling tiles, move furniture or fixings or undo electrical fittings.

2.2.3 St. John's Chapel

The scope of survey of the target buildings, the survey should cover all external facades, where are permitted to access and inspect. The inspection is carried out by visual and non-invasive method and limited to areas which are exposed during the course of our inspection. The survey does not take up floor coverings, false ceiling tiles, move furniture or fixings or undo electrical fittings.

2.3 Methodology

The survey is based on visual inspection without any destructive, non-destructive nor in-situ laboratory test. No installation of any instrumentation monitoring systems will be included. The survey findings are based on the result of visual inspection and photographs taken on site through the completion of survey fieldwork, on the date of our inspection, and does not reflect events or conditions after that date.

General appearance of the buildings, existing defects and fragile elements identified will be photographed during the comprehensive visual inspection externally. Location of the defects will be indicated on appropriate layout plan.

2.4 Presentation of Survey Findings

The report will be presented in a tabular format with illustrative photographs, together with not to scale sketches plan view. Based on the visual inspection, the existing conditions are detailed in **Section 3** "Survey Findings".

3 Survey Findings

3.1 Information about the Survey

3.1.1 Lee Tat Bridge

Table 3.1.1 Information about the Survey for Lee Tat Bridge		
Inspection Conducted by	Aurecon Structural Team	
Date of Inspection	16 Nov 2023	15 Dec 2023
Weather	Sunny	Cloudy
State of the building when inspected	Operating	
Accessibility	All areas are accessible.	

3.1.2 Lan Fong Study Hall

Table 3.1.2 Information about the Survey for Lan Fong Study Hall		
Inspection Conducted by	Aurecon Structural Team	
Date of Inspection	16 Nov 2023	15 Dec 2023
Weather	Sunny	Cloudy
State of the building when inspected	Vacant	
Accessibility	<p>All external areas are accessible except north elevation and;</p> <p>Internal areas of the building are not allowed for inspection due to internal maintenance would be undertaken subject to government agreement with the owner.</p>	

3.1.3 St. John's Chapel

Table 3.1.3 Information about the Survey for St. John's Chapel		
Inspection Conducted by	Aurecon Structural Team	
Date of Inspection	16 Nov 2023	15 Dec 2023
Weather	Sunny	Cloudy
State of the building when inspected	Vacant	
Accessibility	<p>All external areas are accessible except the north elevation as well as the pitched roof and;</p> <p>Internal areas of the chapel are not accessible until received permission from the property owner.</p>	<p>All external areas are accessible except the north elevation as well as the pitched roof and;</p> <p>All internal area of the chapel are accessible except the balcony.</p>

3.2 Summary of Findings

3.2.1 Lee Tat Bridge

The subject building was in a fair condition and operating at the time of inspection. All areas of the building were accessible and allow close examination. Due to safety concern, East Abutment was visually inspected in certain distant.

Damage to tarmac covering was found on the bridge deck. Crazeing was observed on the connection road to the bridge.

Mainly hairline cracks and minor cracks were found on the abutments and the pier structure. Rust stains of metal railing were also observed on the steel support structure near both sides of the bridge deck.

Debris and waste were observed stuck under the bridge deck.

Photo Record can be found in **Appendix D**.

Apart from the building elements with above-mentioned defects, other fragile elements are also identified, including the parapets installed on both edges of the bridge, water pipes as well as cables duct attached to both sides and underside of bridge deck.

Detailed table of survey findings, full photographic records, and marked plans are enclosed in **Appendices B, C and D** respectively.

3.2.2 Lan Fong Study Hall

The subject building was in a dilapidated status with danger warning sign was displayed at the main entrance and warning belt wrapped surround the building at the time of inspection. Growth of vegetation was noted on the roof and side yard of the building. The building structure next to storeroom at north elevation was collapsed.

The wood door at main entrance were decayed at west elevation; broken window glasses were observed at east, south and west elevation.

Several minor concrete spalling was observed on the window frame and door frame at south elevation.

Two major top-down cracking were observed at the corner of the building at the southwest elevation.

Follow up actions for defects are recommended and stated in the "Remark" column in **Appendix C**.

Apart from the building elements with significant defects, other fragile elements are also identified, including the Chinese pitched roof and structural timber elements. Recommendations for each element are stated in the "Remark" column in **Appendix C**.

Detailed table of survey findings, full photographic records, and marked plans are enclosed in **Appendices B, C and D** respectively.

3.2.3 St. John's Chapel

The subject building was in a dilapidated status with the door locked at the time of inspection. Growth of vegetation was noted on the roof, canopy and wall toe of the building. Tree branches falling on the roof at south elevation of the building was observed.

Timber members were decayed and found at the side entrance door, window frames and windows at south elevation.

Several concrete spalling was observed at the canopy of main entrance at west elevation.

The Backyard was fenced off with wire net, prohibiting the access to the north elevation.

In the second time of inspection, structural timbers were found decayed, minor cracks on wall were observed and spalling paint were observed in internal area of the building. Miscellaneous items were occupied most of the storeroom area.

Follow up actions for defects are recommended and stated in the "Remark" column in **Appendix C**.

Recommendations for each element are stated in the "Remark" column in **Appendix C**.

Detailed table of survey findings, full photographic records, and marked plans are enclosed in **Appendices B, C and D** respectively.

4 Proposed Construction Works

4.1.1 Lee Tat Bridge

With reference to the approved EIA Report (June 2021), the subject building is located at distance of 13.3m from the boundary of the drainage works. The proposed works near the bridge will consist of an approximately 4.8m wide rectangular channel adjacent to the entrance of Lin Fa Tei village to be deepened along the original alignment without natural bedding and with part of the flow diverted to the proposed 1650mm dia. storm drains underneath Kam Sheung Road. The subject building may be damaged by ground borne vibration, ground settlement or tilting and contact with machinery and equipment during the construction works.

4.1.2 Lan Fong Study Hall

The subject building is located within the drainage improvement works in Ha Che about 57.7m distance. New channels and pipes will be constructed along the existing stream. The construction activities include excavation works by heavy mechanical plant, concrete demolishing works on existing channel and other temporary works construction.

4.1.3 St. John's Chapel

The subject building is located within the study area of proposed drainage improvement works in Tai Wo about 50m distance. New channels and pipes will be constructed along the existing stream. The construction activities include excavation works by heavy mechanical plant, concrete demolishing works on existing channel and other temporary works construction.

4.2 Vibration Effects on the Subject Building

4.2.1 Lee Tat Bridge

The distances from the bridge to Works Boundary is about 13.3m. The locations of the subject building, the alignment of the proposed works and the associated works area are indicated in **Appendix A**.

With reference to the approved EIA Report (June 2021), Built Heritage situated in a distance less than 5m from the proposed works area is defined as in close proximity to the proposed works, where the construction works could significantly affect the building. Although the subject building is not situated in close proximity to the proposed excavation area, it may be affected by ground borne vibration and/ or other construction activities during the construction works.

4.2.2 Lan Fong Study Hall

The distances from the subject building to excavation works is 57.7m. The locations of the subject building, the alignment of the proposed drainage improvement works with associated works area are indicated in **Appendix A**.

With reference to the approved EIA Report for captioned project, the historic building may be significantly affected by ground-borne vibration, ground settlement or tilting and contact with machinery and equipment during construction activities.

4.2.3 St. John's Chapel

The distances from the subject building to excavation works is around 50m. The locations of the subject building, the alignment of the proposed drainage improvement works as well as the associated works area are indicated in **Appendix A**.

With reference to the approved EIA Report for captioned project, the graded historic building may be affected by ground-borne vibration, ground settlement or tilting due to the machinery and equipment during construction activities.

5 Proposed Monitoring Measures

The subject building is located at certain extent from the proposed construction works. Vibration, settlement and tilting monitoring should be undertaken during construction works to ensure that safe levels of vibration are not exceed. Installation of monitoring checkpoints shall be carried out in great care and adequate protection shall be provided so as to avoid unnecessary disturbance or damage to the historic building.

In accordance with Section 10.10.4 in the approved EIA Report (Registered No.: AEIAR-229/2021), Vibration, settlement and tilting monitoring should be undertaken during the construction works to ensure that safe levels of vibration, settlement or tilting are not exceeded. An Alert, Alarm and Action (AAA) vibration limit set at 5 / 6 / 7.5 mm/s for Grade 2 and 3 historic buildings, settlement limit set at 6/8/10mm, and tilting limit set at 1/2000; 1/1500; 1/1000 should be adopted. When the measured value reaches the alarm limit, the Project Manager and the Supervisor of this Contract will be notified. Once the action level is reached, the works will be ceased and mitigation measures shall be submitted to the Project Manager (PM) and the Supervisor by the Contractor.

5.1 Vibration Monitoring

A vibration monitoring point should be set at a distance of minimum 5m away from the subject building where is the closest point to the works area. A location map showing the proposed locations of vibration monitoring point is attached in **Appendix E**. The exact location of the check point should be determined and verified by a qualified structural engineer (hereafter "the Engineer") on site.

The works Contractor should assign an experience site staff to use the apparatus to carry out the vibration monitoring. The apparatus used for measurement should be approved by the Engineer before use.

The vibration monitoring should be conducted on daily basis on working days only when the construction works fall within a 30m radial distance from the subject building. The duration for the peak value obtained of vibration monitoring should be approved by the Engineer before construction works commence.

Such area has been marked on location map in **Appendix E**. An initial reading should be taken at the monitoring point prior to the commencement of works for reference.

Date, time, location of check point(s), results (maximum PPV), monitoring duration and location of construction works inducing ground-borne vibration should be properly recorded.

Considering the proximate location of the Lee Tat Bridge to the proposed site boundary and taking into account the overall fair structural condition of the building, it is advised to adhere to a ground-borne vibration limit of 7.5mm/s. For Lan Fong Study Hall and St. John's Chapel, although their distance to the site boundary is much farther than Lee Tat Bridge, they were in a dilapidated status. Adopting the same vibration limit of 7.5mm/s is recommended.

Empirical figures for the Alert, Alarm and Action Levels shown in **Table 5.1.1** to **Table 5.1.3** below should be implemented during vibration monitoring. The Engineer may review and/ or adjust the allowable limit of PPV based on actual engineering calculations and analysis. Antiquities and Monuments Office (AMO) will be alerted when the 3A levels have triggered.

5.1.1 Lee Tat Bridge

Instrument Type	Item Monitored	Alert Level	Alarm Level	Action Level
Vibration Monitoring	Horizontal Movement	5.0mm/s	6.0mm/s	7.5mm/s
Task to do by the Contractor		Notify Management	Notify the PM, the Supervisor and AMO	Cease Works and submit mitigation

	Contractor and AMO		measures to the PM, the Supervisor and AMO
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5.1.2 Lan Fong Study Hall

Table 5.1.2 Alert, Alarm and Action Levels and Corresponding Tasks for Vibration Monitoring for Lan Fong Study Hall				
Instrument Type	Item Monitored	Alert Level	Alarm Level	Action Level
Vibration Monitoring	Horizontal Movement	5.0mm/s	6.0mm/s	7.5mm/s
Task to do by the Contractor		Notify Management Contractor and AMO	Notify the PM, the Supervisor and AMO	Cease Works and submit mitigation measures to the PM, the Supervisor and AMO

5.1.3 St. John's Chapel

Table 5.1.3 Alert, Alarm and Action Levels and Corresponding Tasks for Vibration Monitoring for St. John's Chapel				
Instrument Type	Item Monitored	Alert Level	Alarm Level	Action Level
Vibration Monitoring	Horizontal Movement	5.0mm/s	6.0mm/s	7.5mm/s
Task to do by the Contractor		Notify Management Contractor and AMO	Notify the PM, the Supervisor and AMO	Cease Works and submit mitigation measures to the PM, the Supervisor and AMO

5.2 Ground Settlement Monitoring

Apart from vibration monitoring, ground settlement monitoring points should also be set up at the subject building. The exact locations of the ground settlement checkpoints for subject building should be determined by the Engineer on site.

The works Contractor should assign an experience site survey staff to use the theodolite to carry out the ground settlement monitoring. The theodolite used for measurement should be approved by the Engineer before use.

The ground settlement monitoring should be conducted on weekly basis for both Lan Fong Study Hall and St. John's Chapel, and on daily basis for Lee Tat Bridge. Monitoring frequency to subject building increases to daily basis when the construction works fall within a 30m radial distance from the subject building on working days. An initial reading should be taken at the monitoring point prior to the commencement of works for reference.

Date, time, location of check point(s), results (differences in total settlement) should be properly recorded.

The Alert, Alarm and Action Levels should be implemented during ground settlement monitoring as shown in **Table 5.2.1** to **Table 5.2.3** below.

5.2.1 Lee Tat Bridge

Table 5.2.1 Alert, Alarm and Action Levels and Corresponding Tasks for Ground Settlement Monitoring for Lee Tat Bridge

Instrument Type	Criterion	Alert Level	Alarm Level	Action Level
Ground Settlement Marker	Total Settlement	6.0mm	8.0mm	10.0mm
Task to do by the Contractor		Notify Management Contractor and AMO	Notify the PM, the Supervisor and AMO	Cease Works and submit mitigation measures to the PM, the Supervisor and AMO

5.2.2 Lan Fong Study Hall

Table 5.2.2 Alert, Alarm and Action Levels and Corresponding Tasks for Ground Settlement Monitoring for Lan Fong Study Hall

Instrument Type	Criterion	Alert Level	Alarm Level	Action Level
Ground Settlement Marker	Total Settlement	6.0mm	8.0mm	10.0mm
Task to do by the Contractor		Notify Management Contractor and AMO	Notify the PM, the Supervisor and AMO	Cease Works and submit mitigation measures to the PM, the Supervisor and AMO

5.2.3 St. John's Chapel

Table 5.2.3 Alert, Alarm and Action Levels and Corresponding Tasks for Ground Settlement Monitoring for St. John's Chapel

Instrument Type	Criterion	Alert Level	Alarm Level	Action Level
Ground Settlement Marker	Total Settlement	6.0mm	8.0mm	10.0mm
Task to do by the Contractor		Notify Management Contractor and AMO	Notify the PM and the Supervisor and AMO	Cease Works and submit mitigation measures to the PM, the Supervisor and AMO

5.3 Tilting Monitoring

Apart from vibration monitoring, tilting monitoring points should also be established at the subject building. The precise locations of the check points should be determined by the Engineer present on site.

The works Contractor should assign an experienced site staff to utilize the appropriate apparatus for carrying out tilting monitoring. The apparatus used for measurement should be approved by the Engineer before its use.

Tilting monitoring should be conducted on a weekly basis, and on daily basis for Lee Tat Bridge. An initial reading should be taken at each monitoring point prior to the commencement of any works for reference and baseline measurement.

The following information should be properly recorded during tilting monitoring: date, time, location of check point(s), and the results obtained (tilt angle or displacement).

The Alert, Alarm, and Action Levels should be implemented during tilting monitoring, as defined in **Table 5.3.1** to **Table 5.3.3** below.

5.3.1 Lee Tat Bridge

Table 5.3.1 Alert, Alarm and Action Levels and Corresponding Tasks for Tilting Monitoring for Lee Tat Bridge				
Instrument Type	Criterion	Alert Level	Alarm Level	Action Level
Tilting Marker	Inclination Change	1:2000	1:1500	1:1000
Task to do by the Contractor		Notify Management Contractor and AMO	Notify the PM, the Supervisor and AMO	Cease Works and submit mitigation measures to the PM, the Supervisor and AMO

5.3.2 Lan Fong Study Hall

Table 5.3.2 Alert, Alarm and Action Levels and Corresponding Tasks for Tilting Monitoring for Lan Fong Study Hall				
Instrument Type	Criterion	Alert Level	Alarm Level	Action Level
Tilting Marker	Inclination Change	1:2000	1:1500	1:1000
Task to do by the Contractor		Notify Management Contractor and AMO	Notify the PM, the Supervisor and AMO	Cease Works and submit mitigation measures to the PM, the Supervisor and AMO

5.3.3 St. John's Chapel

Table 5.3.3 Alert, Alarm and Action Levels and Corresponding Tasks for Tilting Monitoring for St. John's Chapel				
Instrument Type	Criterion	Alert Level	Alarm Level	Action Level
Tilting Marker	Inclination Change	1:2000	1:1500	1:1000
Task to do by the Contractor		Notify Management Contractor and AMO	Notify the PM, the Supervisor and AMO	Cease Works and submit mitigation measures to the PM, the Supervisor and AMO

5.4 Crack Monitoring

For cracks wider than 1mm on structural elements, installation of tell-tales is recommended to monitor the possible propagation of existing cracks.

Lee Tat Bridge

The location of the target cracks can be found with reference to Photo D13 in **Appendix D**.

Lan Fong Study Hall

The location of the target cracks can be found with reference to Photo D3 and D45 in **Appendix D**.

St. John's Chapel

The location of the target cracks can be found with reference to Photo D1, D6 and D43 in **Appendix D**.

5.5 Precautionary Measures

5.5.1 Lee Tat Bridge

For property owner (if any)

Removal of debris and waste under the bridge is recommended.

Replacement of parapets/parapets fixings is also recommended as they are found loosely held on the edge of the bridge.

Repaving the bridge surface should be considered to avoid possible damage to the underlaying material during construction activity.

Cracking on the abutment and pier was found in the subject building should be kept in view.

All large hanging objects/ loose objects outside/ inside the building should be taken down before the commencement of construction works. Where the object is found securely fixed at a place, regular monitoring of the condition of the fixing should be carried out.

For the Contractor

While there is no apparent structural defect on the bridge structure at the time of inspection, temporary support to the bridge structure should be provided if defect indicating the instability of the structure, e.g., widened cracks on the structure, deformation of electrical fittings, is noted after the commencement of works.

It is also recommended to remove debris and waste under the bridge, which are likely to affect the flow capacity of the existing river, to ensure the safety of work environment nearby.

As there was an undergoing HAD project (Construction of Bridge near Village Office at Shui Tsan Tin Tsuen, Pat Heung) near the subject building on the day of survey, it is encouraged to communicate with HAD's project representative for a mutually agreed works arrangement to minimize the impact to the subject building.

5.5.2 Lan Fong Study Hall

For property owner (if any)

Removal of vegetation on building structures prior to the commencement of works is recommended. Repair work to the interior structures should also be considered.

All large hanging objects/ loose objects outside/ inside the building should be taken down before the commencement of construction works. Where the object is found securely fixed at a place, regular monitoring of the condition of the fixing should be carried out.

For the Contractor

A buffer zone of a minimum 5m in size from the subject building should be marked out by temporary fencing and placed around the structures 2 weeks prior to the commencement of construction works. Provide a temporary cover shield to prevent falling objects from the subject building on pedestrian walkway in necessary.

While there is no apparent structural defect on the pitched roof and the timber slabs found at the time of inspection, propping system for temporary support to the pitched roof and/ or the timber slabs should be provided if defect indicating the instability of roof or the slab, e.g. slippage of roof tiles, widened cracks on beams, rotting of timber slat/ plank/ beams, is noted after the commencement of works. Provision of nylon sheet and/ or netting hanging under the roof may be needed if risk of falling off roof tiles is found after commencement of works.

Structural timber elements should be kept in view for further deterioration due to damp environment or fungi attack, weakening the strength of the timber elements.

Consent should be obtained from the property owner prior to any installation of monitoring devices and/ or temporary supporting system within the private premises.

5.5.3 St. John's Chapel

For property owner

Removal of vegetation on building structures and fallen tree branches on roof top prior to the commencement of works is recommended. Removal and repair work to the spalling on balcony at the main entrance should also be considered.

All large hanging objects/ loose objects outside/ inside the building should be taken down before the commencement of construction works. Where the object is found securely fixed at a place, regular monitoring of the condition of the fixing should be carried out.

For the Contractor

A buffer zone of a minimum 5m in size from the subject building should be marked out by temporary fencing and placed around the structures 2 weeks prior to the commencement of construction works.

While there is no apparent structural defect on the pitched roof and the timber slabs found at the time of inspection, propping system for temporary support to the pitched roof and/ or the timber slabs should be provided if defect indicating the instability of roof or the slab, e.g. slippage of roof tiles, widened cracks on beams, rotting of timber slat/ plank/ beams, is noted after the commencement of works. Provision of nylon sheet and/ or netting hanging under the roof may be needed if risk of falling off roof tiles is found after commencement of works.

Structural timber elements should be kept in view for further deterioration due to damp environment or fungi attack, weakening the strength of the timber elements.

Consent should be obtained from the property owner prior to any installation of monitoring devices and/ or temporary supporting system within the private premises.

6. Conclusion

6.1 Lee Tat Bridge

The subject building was operating at the time of inspection and was found in pristine status. Cracking on structure and grouting, crazing and damage to tarmac covering were observed at the subject building.

Apart from the defects found on site, other fragile elements which are in fair condition at the time of inspection were also identified. Follow up actions should be carried out with reference to the precautionary measures in Section 5 of this report and the Photo Record in **Appendix D**.

Since the subject building is in closely proximity to the works area, vibration monitoring, ground settlement monitoring, tilting monitoring and crack monitoring should be adopted before commencement of works and during the construction works.

6.2 Lan Fong Study Hall

The subject building was vacant at the time of inspection and was found in dilapidated status. Vegetation on roof and top-down cracking on wall was the major problem at the subject building.

Apart from the significant defects found on site, other fragile elements including concrete spalling on window frame and door frame which are in fair condition at the time of inspection were also identified. Follow up actions should be carried out with reference to the precautionary measures in Section 5 of this report and the Photo Record in **Appendix D**.

Since the subject building is in closely proximity to the works area, vibration monitoring, ground settlement monitoring, tilting monitoring and crack monitoring should be adopted before commencement of works and during the construction works.

6.3 St. John's Chapel

The subject historic building was vacant at the time of inspection and was found in dilapidated status. Vegetation on roof, balcony and wall was the major problem at the subject building. Tree branches falling on roof top was observed.

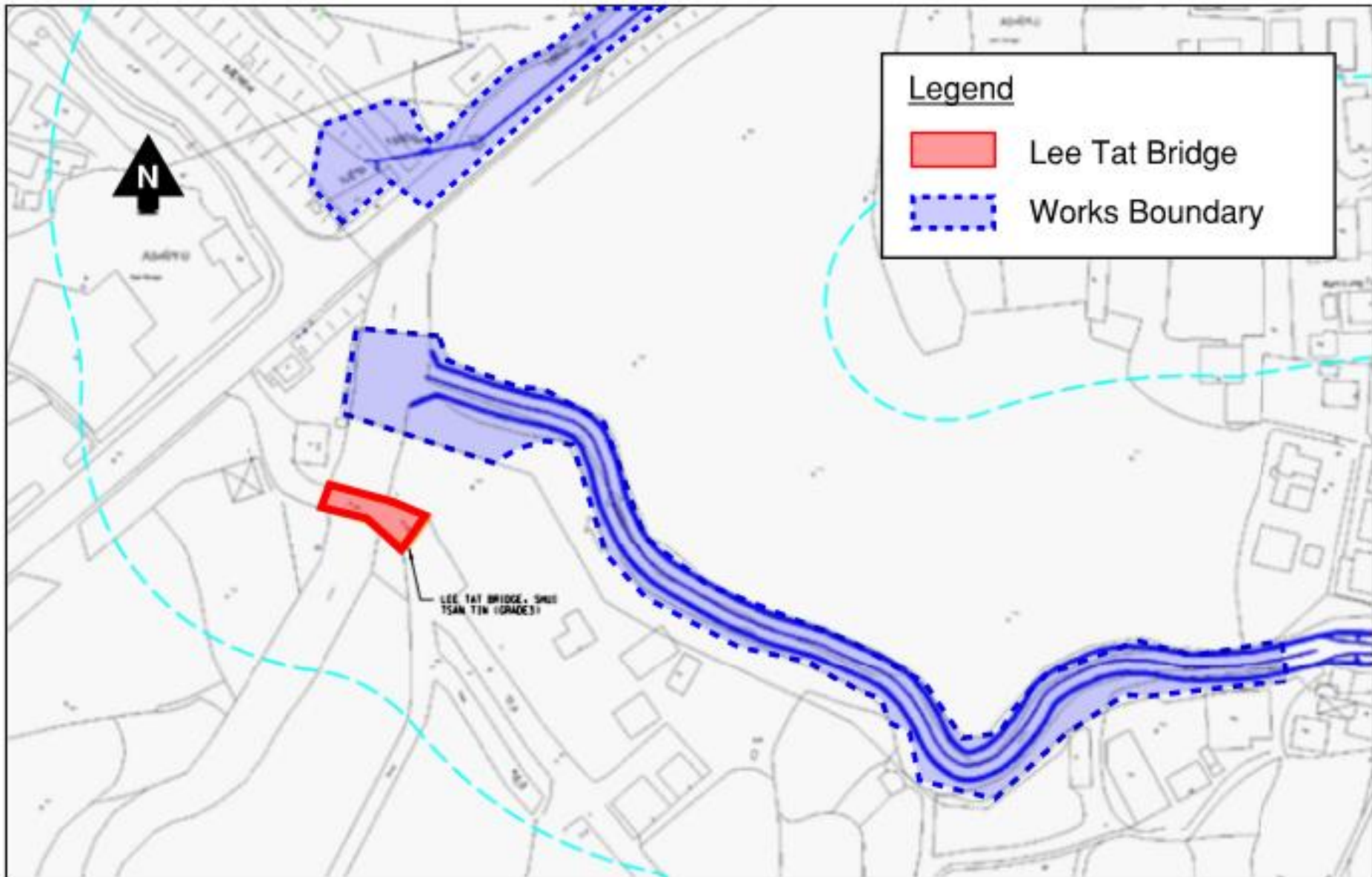
Apart from the significant defects found on site, other fragile elements including concrete spalling on balcony which are in fair condition at the time of inspection were also identified. Follow up actions should be carried out with reference to the precautionary measures in Section 5 of this report and the Photo Record in **Appendix C**.

Since the subject building is in closely proximity to the works area, vibration monitoring, ground settlement monitoring, tilting monitoring and crack monitoring should be adopted before commencement of works and during the construction works.

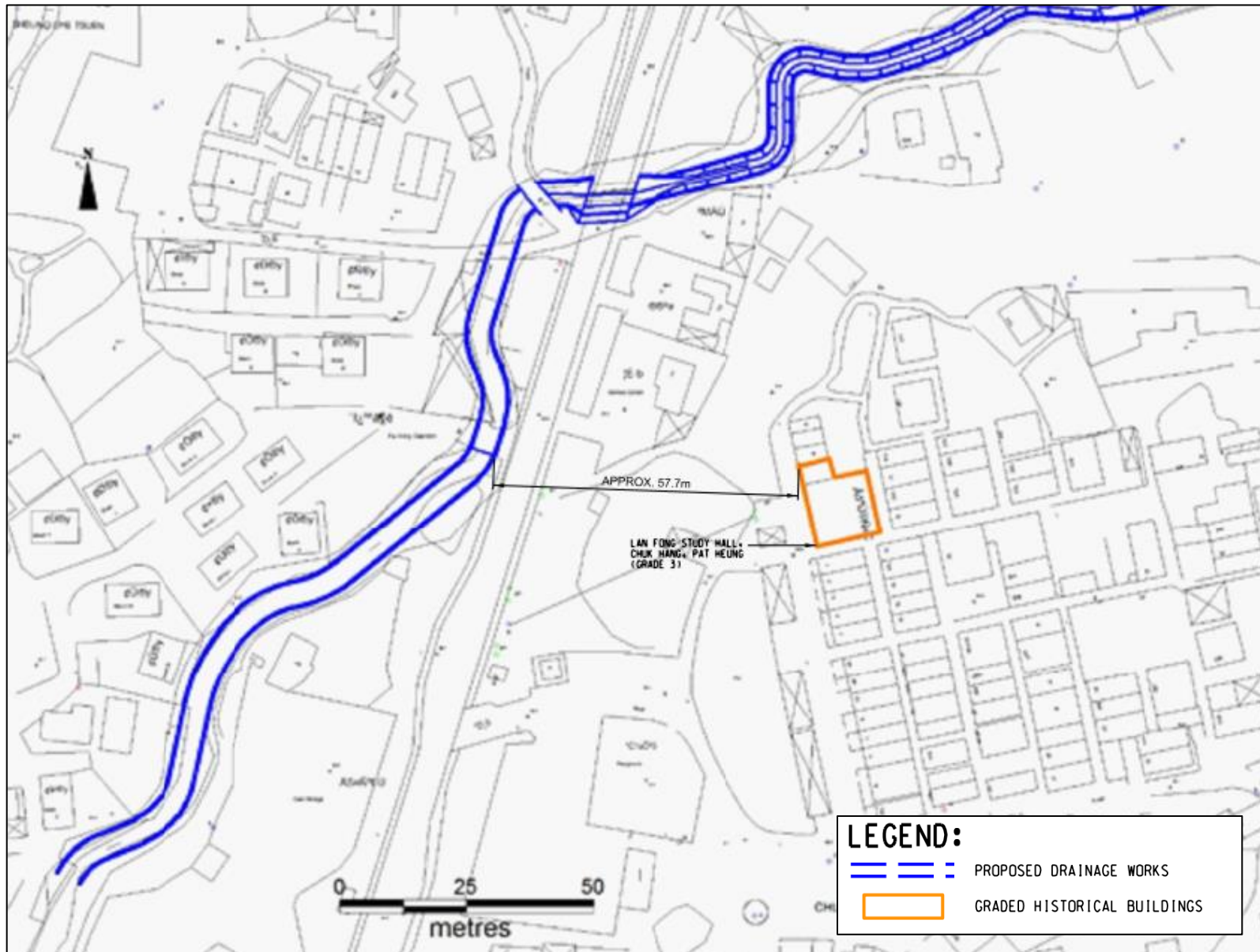
Appendix A

Location Plan

A1. Location Plan of Lee Tat Bridge at Shui Tsan Tin (Grade 3)



A2. Location Plan of Lan Fong Study Hall at Chuk Hang (Grade 3)



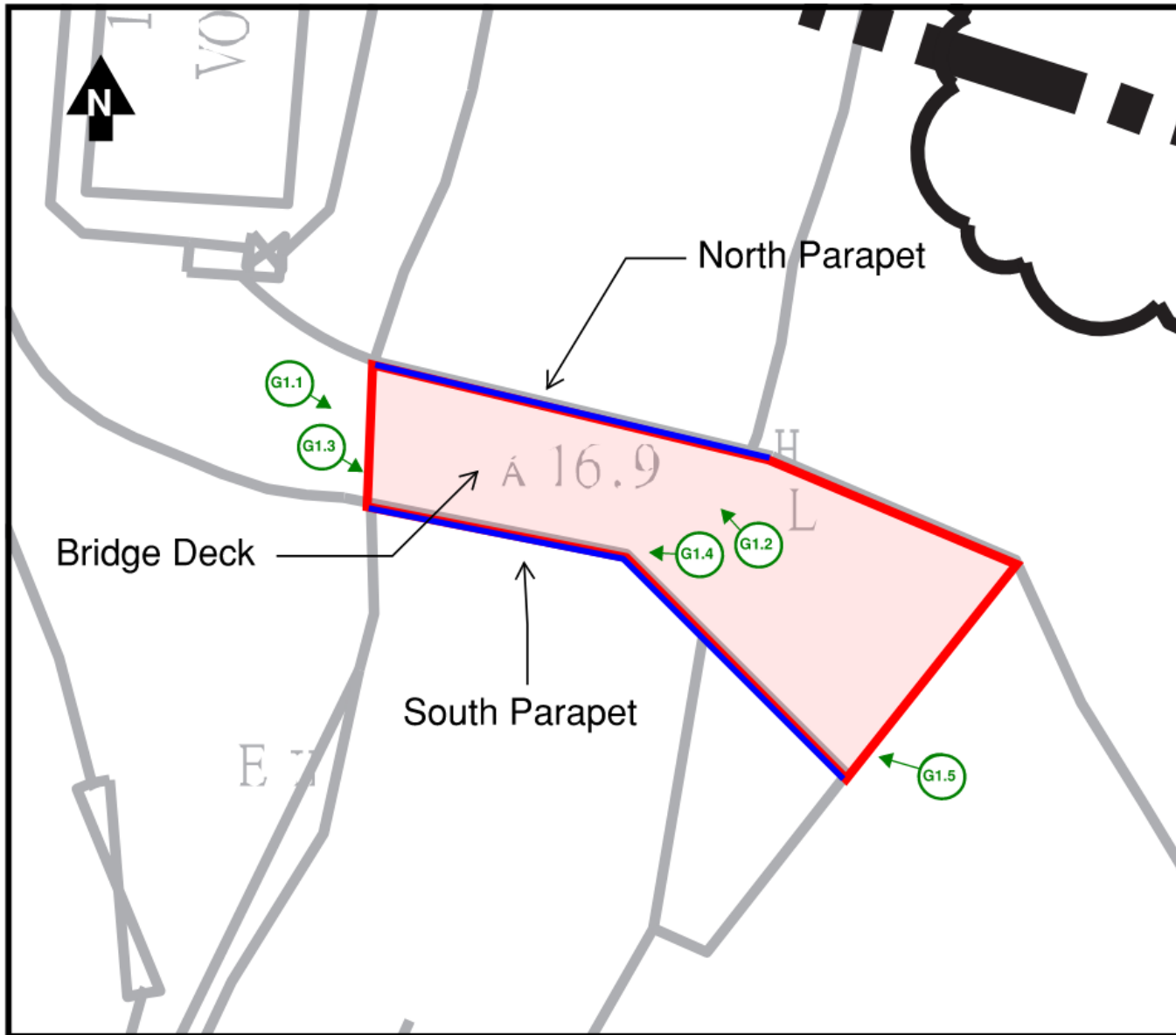
A3. Location Plan of St. John's Chapel at Cheung Po (Grade 2)



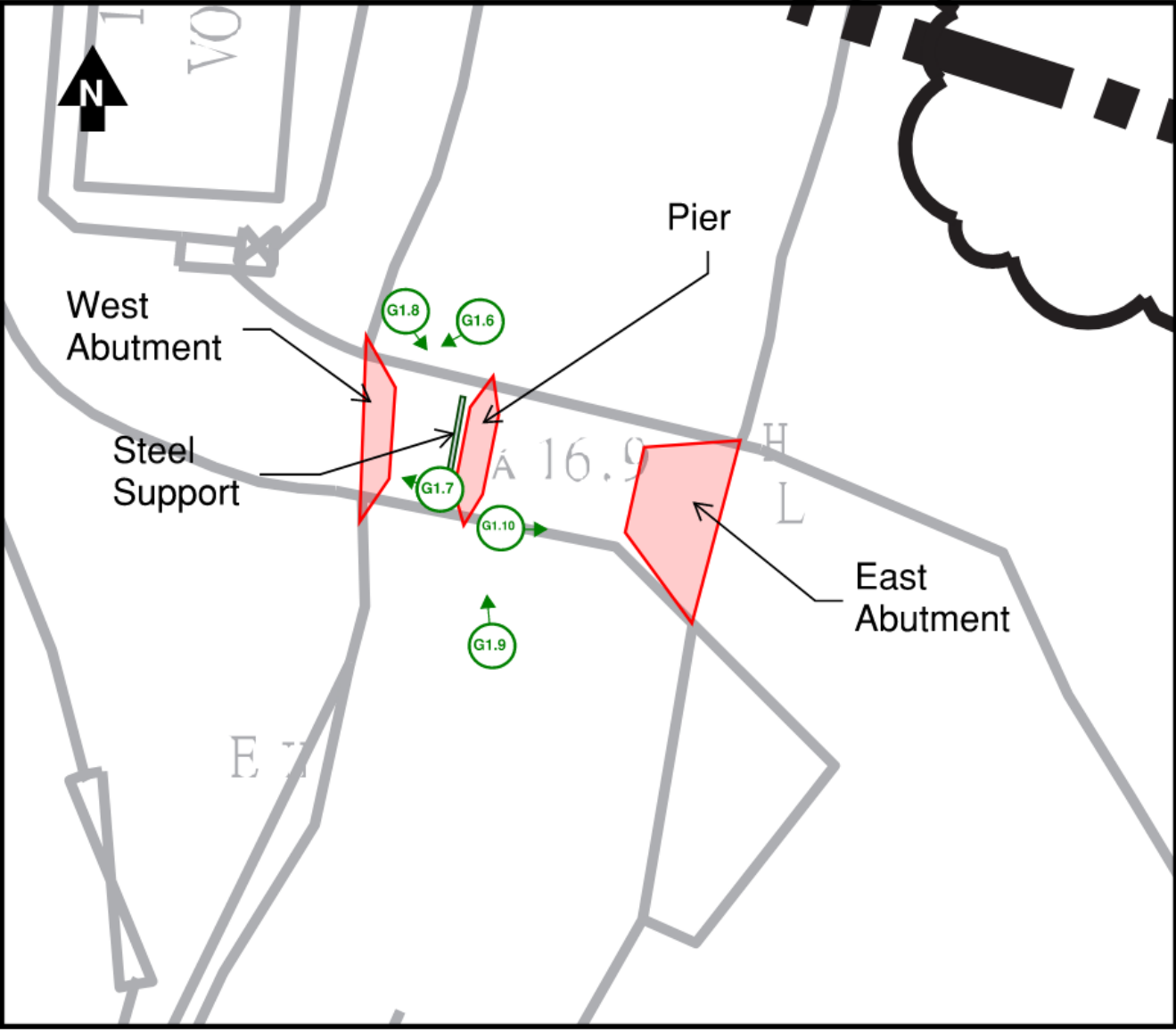
Appendix B

Marked Plans

B.1 Marked plan for Lee Tat Bridge at Shui Tsan Tin (Grade 3)
B1.1. Marked plan in general view

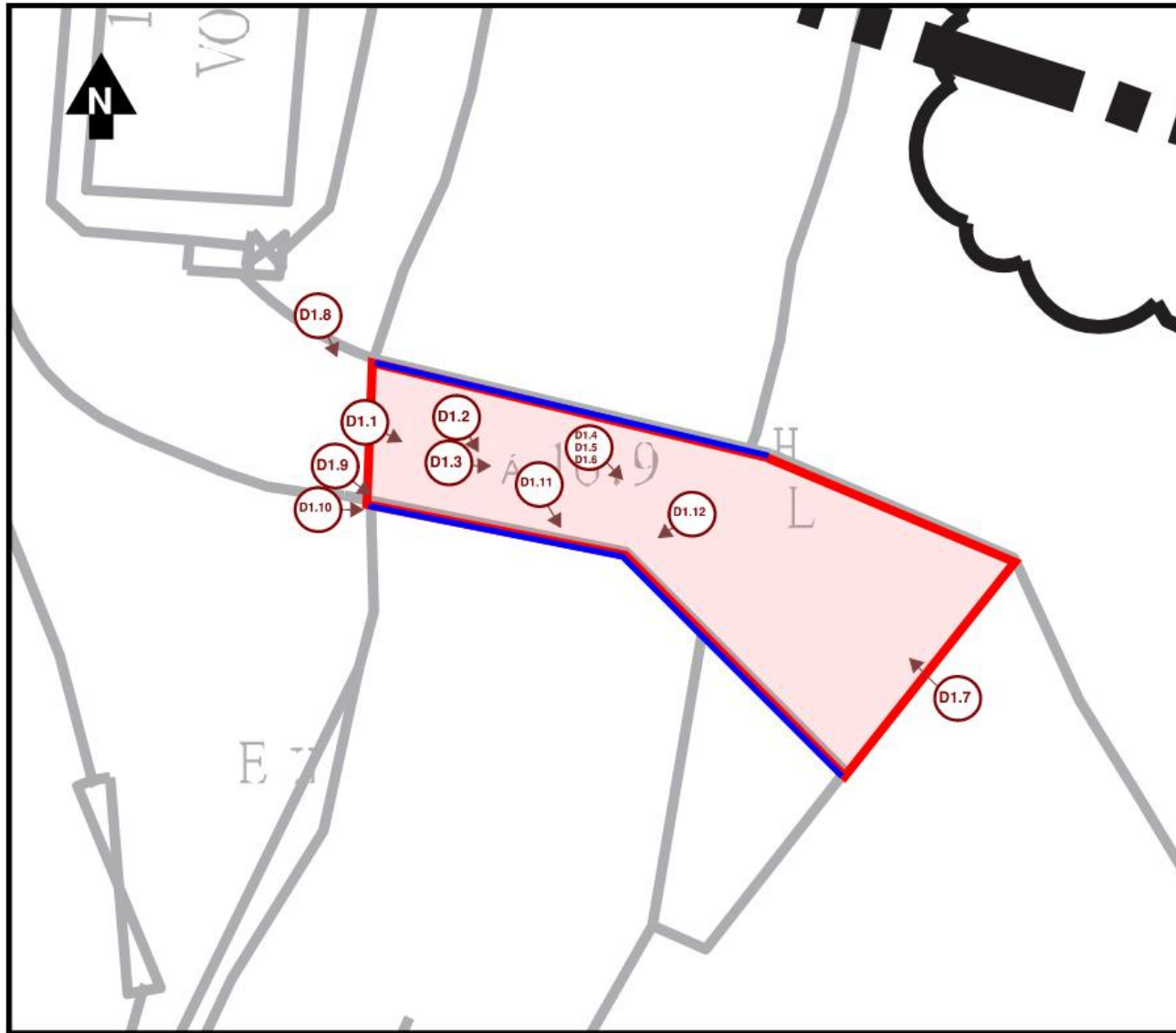


Top View

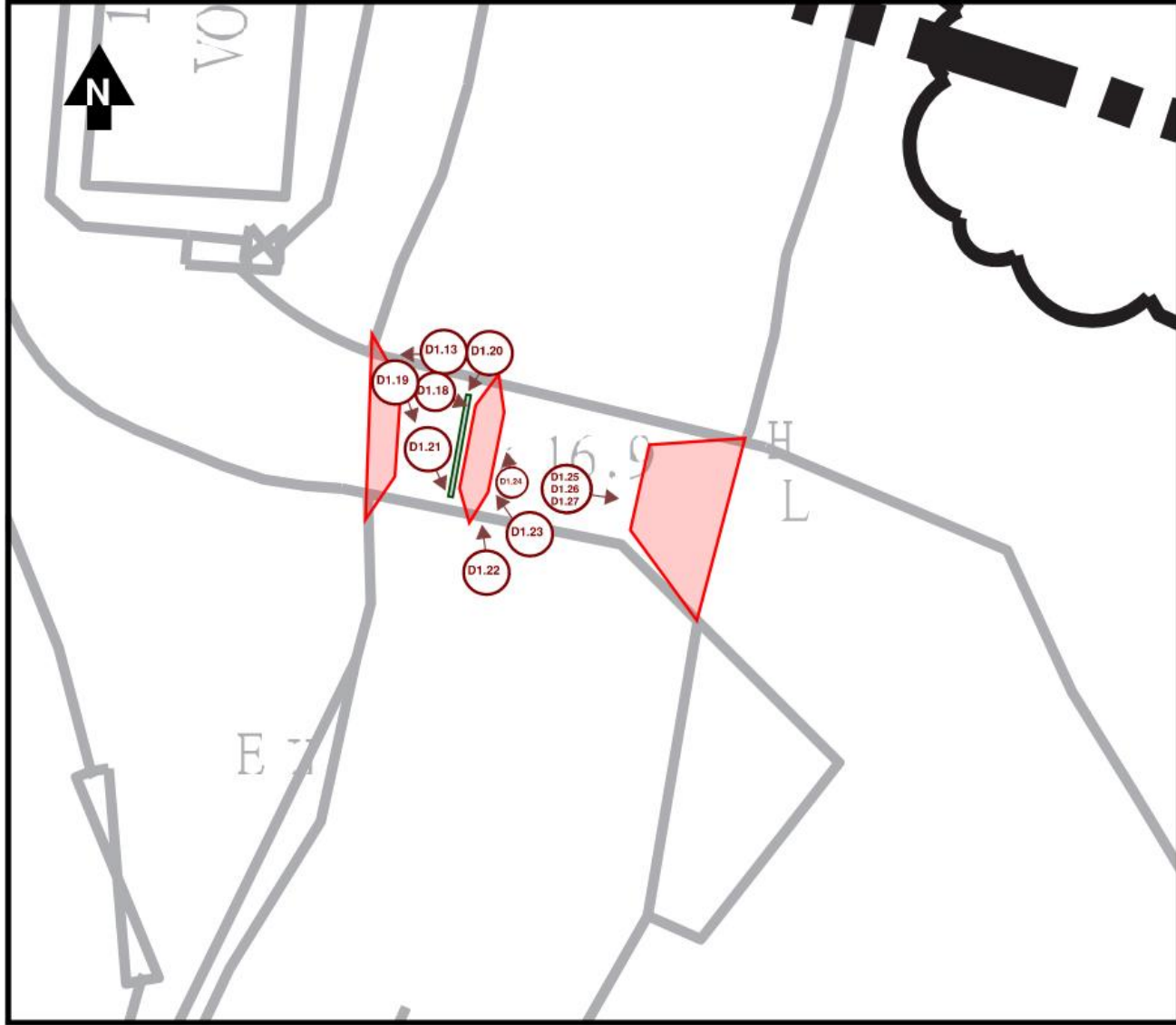


Section View

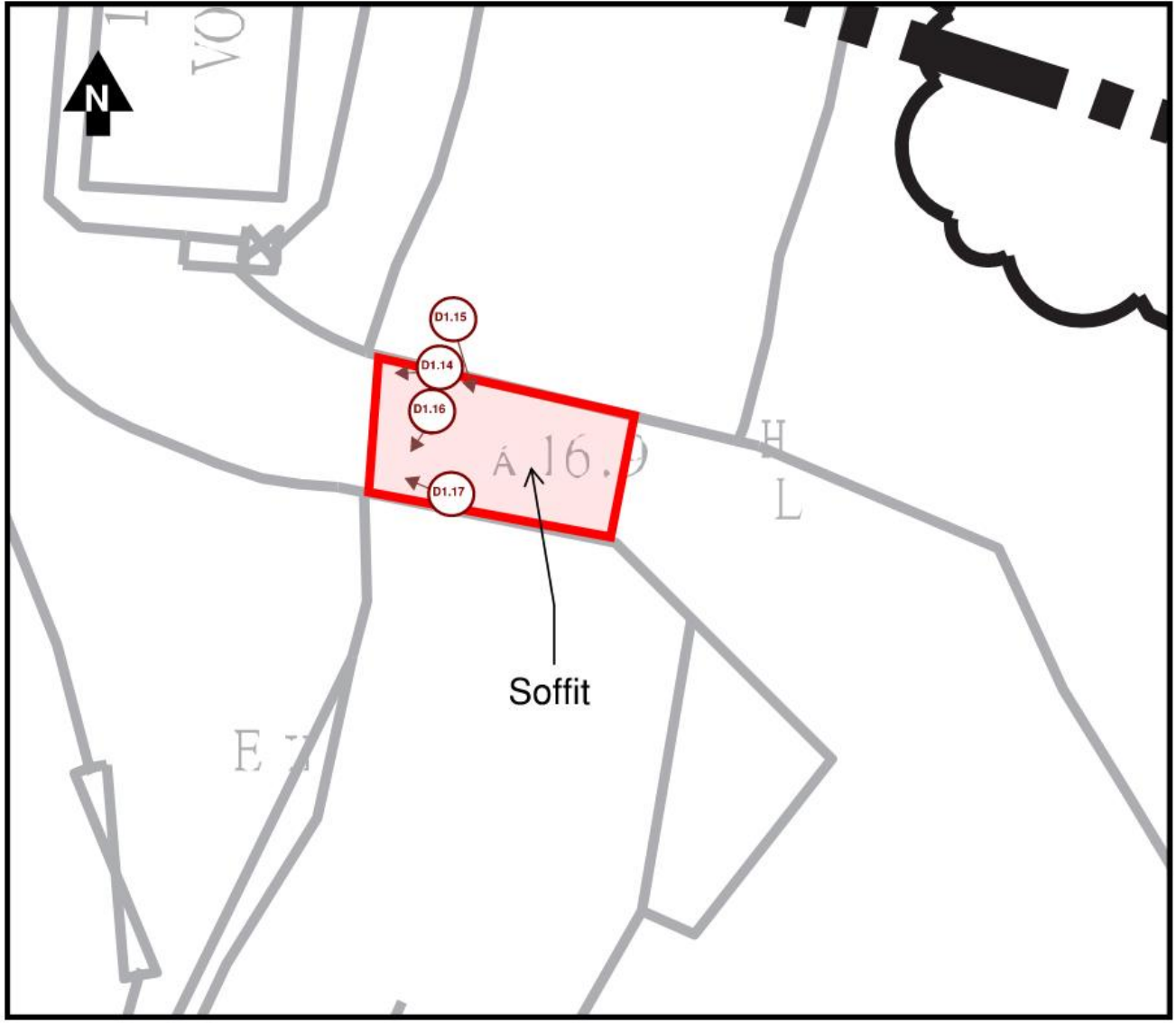
B.1.2. Marked plan in defects location view



Top View



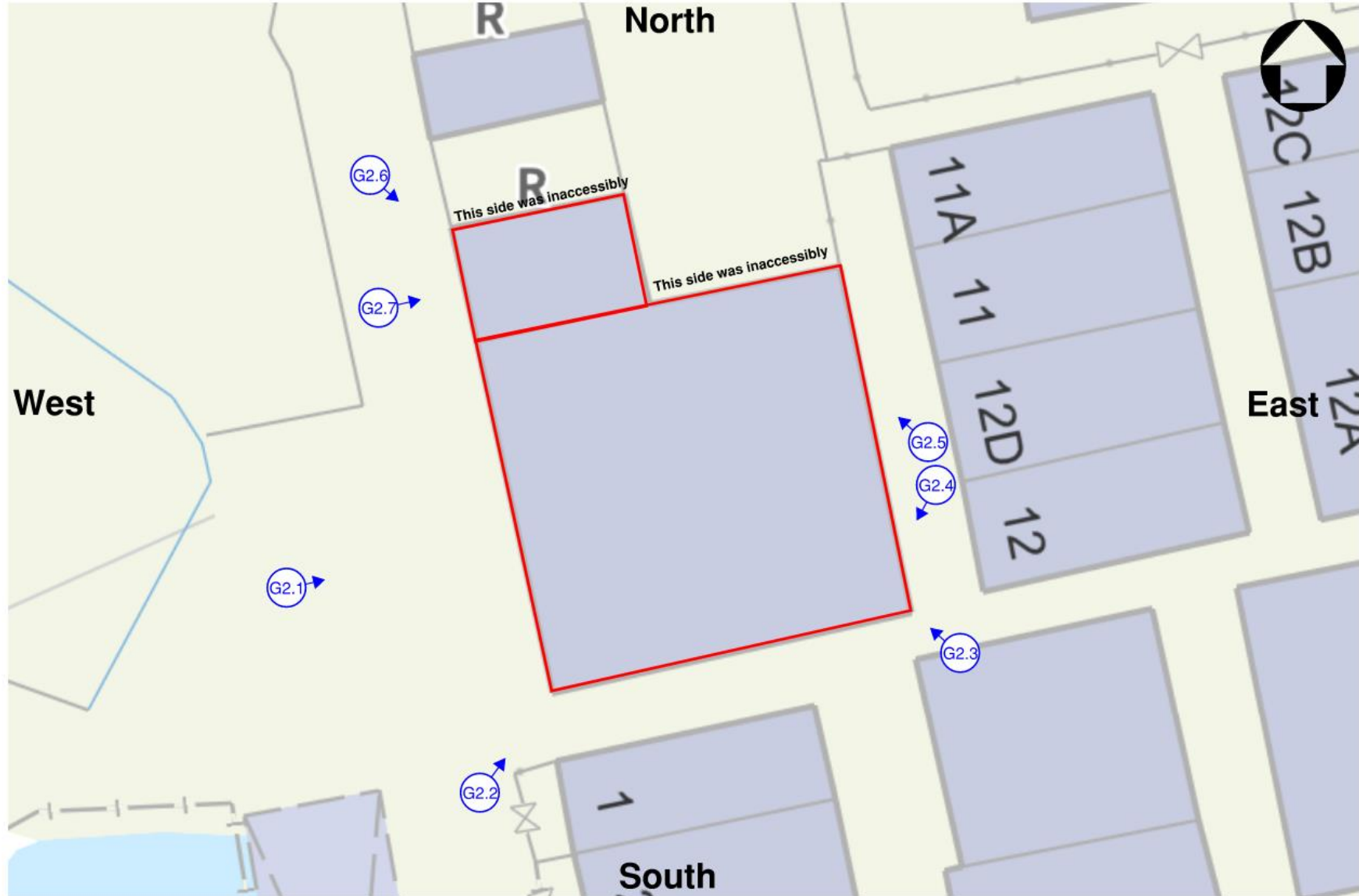
Section View



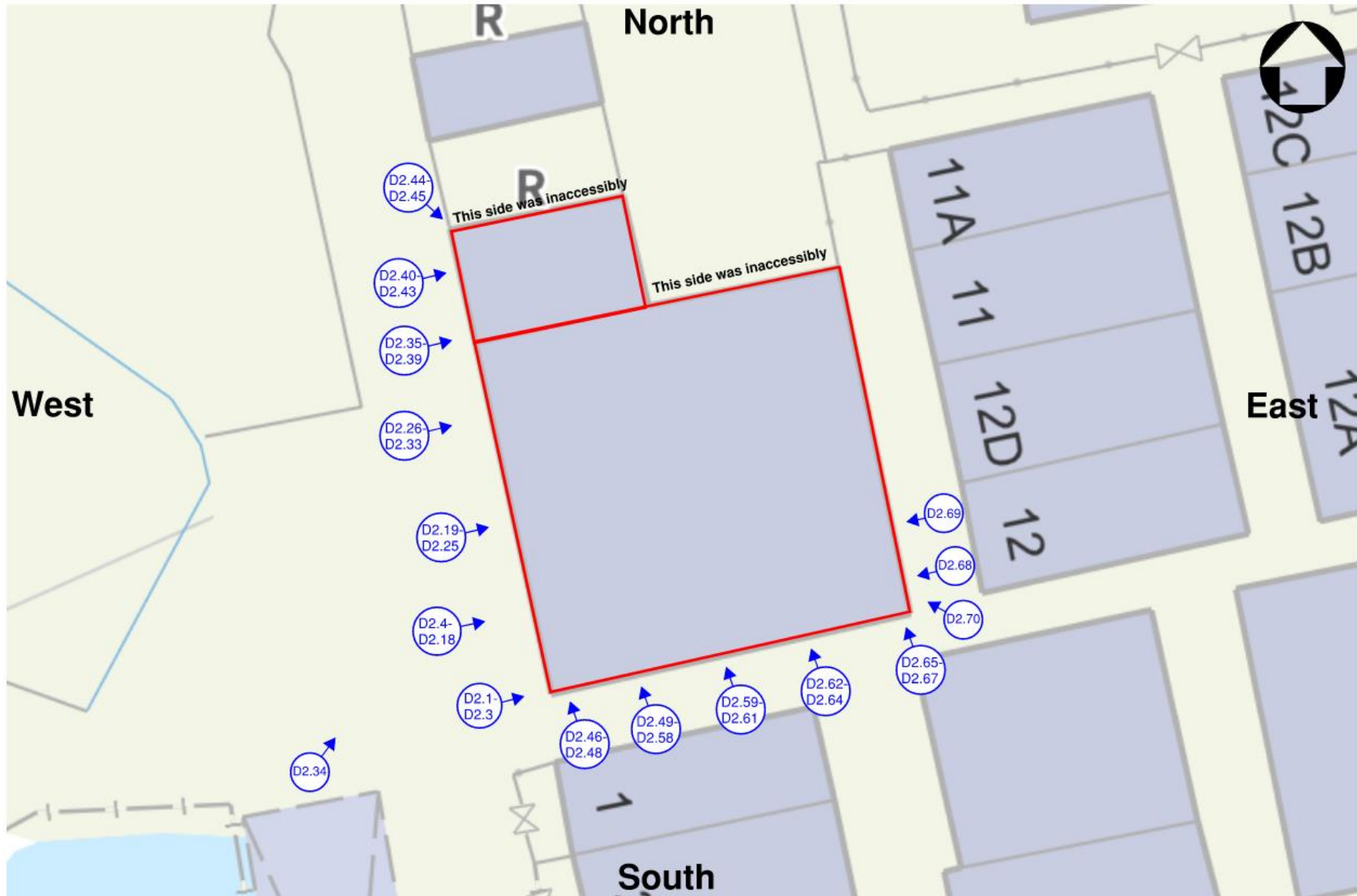
Plan View - Soffit

B.2 Marked plan for Lan Fong Study Hall at Chuk Hang (Grade 3)

B.2.1 Marked plan in general view

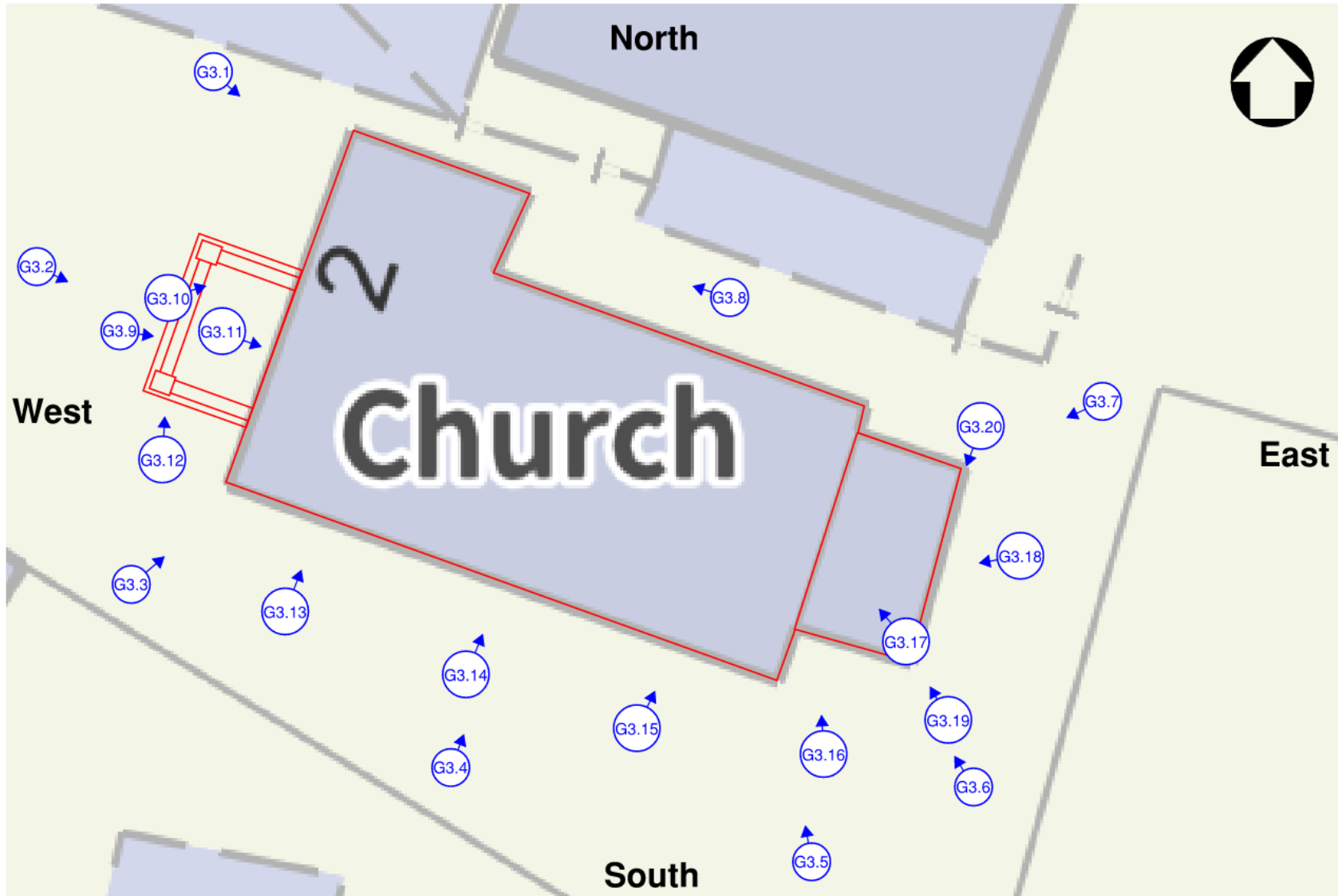


B.2.2 Marked plan in defects location view

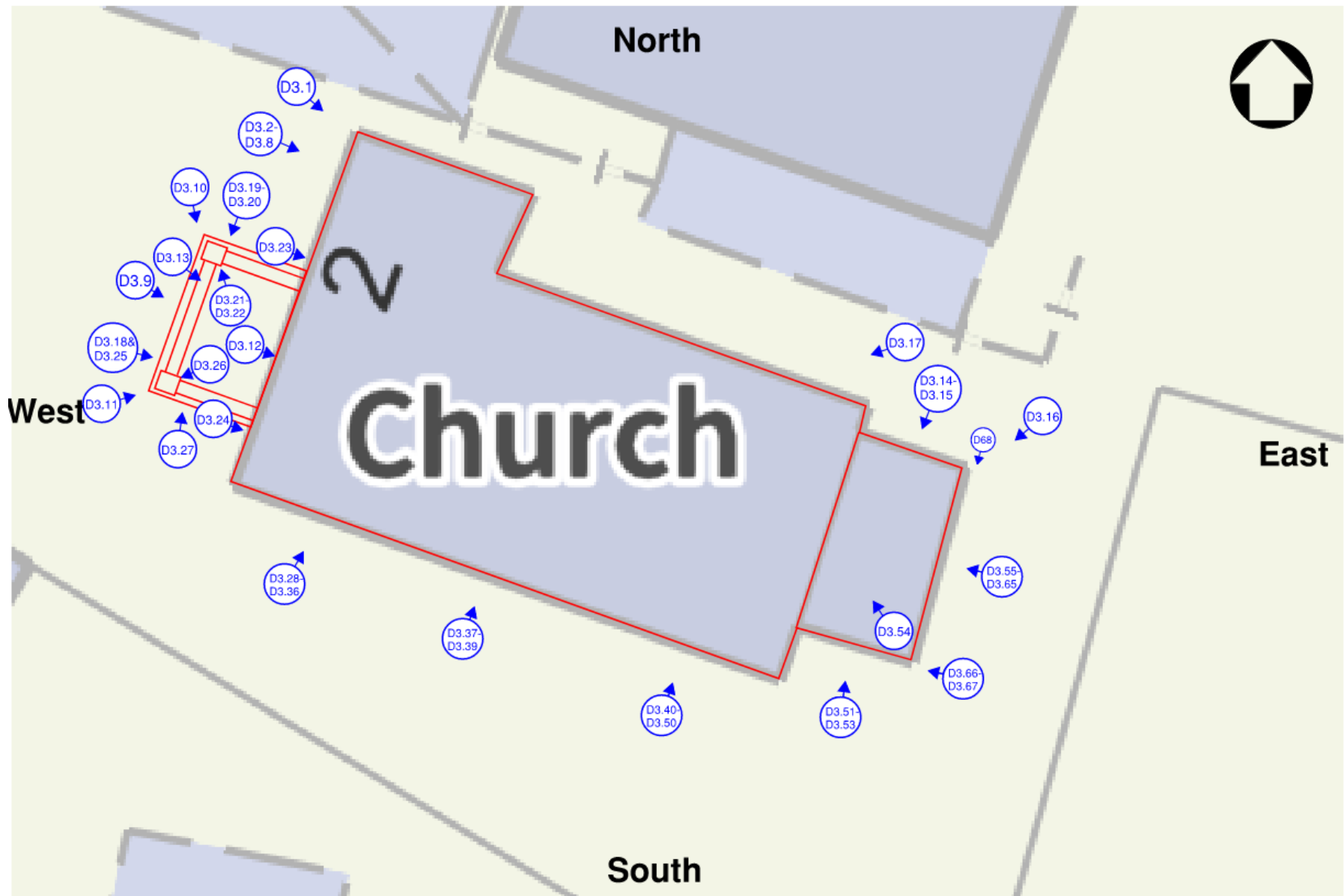


B.3 Marked plan for St. John's Chapel at Cheung Po (Grade 2)

B.3.1 Marked plan in general view



B.3.2 Marked plan in defects location view



Appendix C

Detailed List for General view and Defects

C.1. Terminology of Defects

C.1.1. The terms used in describing defects shall be defined as follows:

Items	Terms	Definition
1.	Hairline Crack	Crack below 1mm wide, and not being structural unless otherwise stated.
2.	Minor Crack	Crack equal to or wider than 1mm but below 2mm wide, and not being structural unless otherwise stated.
3.	Severe Crack	Crack equal to or wider than 2mm, and not being structural unless otherwise stated.
4.	Crazing / Map crack	Interconnected or interlaced crack below 1mm wide from fine to barely visible, forming a series of small polygons, and not being structural unless otherwise stated.
5.	Minor spalled concrete	Spalling up to 0.1m ² and sporadic. No reinforcement bar exposed unless otherwise stated.
6.	Major spalled concrete	Spalling greater than 0.1m ² and extensive. No reinforcement bar exposed unless otherwise stated.

C.2. List of General Views

C.2.1. List of General Views for Lee Tat Bridge at Shui Tsan Tin (Grade 3)

C.2.1.1. General views of all External Areas are listed in the following table which should be read in conjunction with photo records with Appendices D1 respectively.

Photo.	Location
G1.1	Bridge Deck
G1.2	N Parapet
G1.3	S Parapet (1)
G1.4	S Parapet (2)
G1.5	S Parapet (3)
G1.6	W Abutment (1)
G1.7	W Abutment (2)
G1.8	Pier and Steel Support (1)
G1.9	Pier and Steel Support (2)
G1.10	E Abutment

C.2.2. List of General Views for Lan Fong Study Hall at Chuk Hang (Grade 3)

C.2.2.1. General views of all External Areas are listed in the following table which should be read in conjunction with photo records with Appendices D2 respectively.

Photo.	Location
G2.1	W Elevation – General View of Study Hall (Front door, Windows 1, Windows 2, Windows 3 and Windows 4)
G2.2	W-S Elevation - General View of Study Hall (Side door, Windows 5 and Windows 6 on the south wall)
G2.3	S-E Elevation - General View of Study Hall
G2.4	E Elevation (1) - General View of Study Hall (Windows 8 and Windows 9 on the east wall)
G2.5	E Elevation (2) - General View of Study Hall
G2.6	N Elevation - General View of storeroom
G2.7	E-N Elevation - General View (Storeroom)

C.2.3. List of General Views for St. John's Chapel at Cheung Po (Grade 2)

C.2.3.1. General views of all External Areas are listed in the following table which should be read in conjunction with photo records with Appendices D3 respectively.

Photo.	Location
G3.1	N-W Elevation – General View (Chapel, Storeroom1 and Windows1)
G3.2	W Elevation - General View (Chapel)
G3.3	W-S Elevation - General View (Chapel)
G3.4	S Elevation (1) - General View (Chapel)
G3.5	S Elevation (2) - General View (Chapel and Storeroom2)
G3.6	S-E Elevation - General View (Chapel and Storeroom2)
G3.7	E-N Elevation - General View (Chapel and Storeroom2)
G3.8	N Elevation - General View (Chapel and Storeroom2)
G3.9	Eaves of front door
G3.10	Eaves of front door (Under the Eaves)
G3.11	Front door
G3.12	Eaves of front door (Right side of the Eaves)
G3.13	S Elevation of the Chapel (Windows 2 & 3)
G3.14	S Elevation of the Chapel (Window 4)
G3.15	S Elevation of the Chapel (Side door and door eaves)
G3.16	S Elevation of the Storeroom2 (Windows 5)
G3.17	Roof of the Chapel and Storeroom2
G3.18	E Elevation of the storeroom2
G3.19	S-E Elevation for Foundation of the storeroom2
G3.20	E Elevation for Foundation of the storeroom2

C.3. List of defects and other observations

C.3.1. List of defects and other observations for Lee Tat Bridge at Shui Tsan Tin (Grade 3)

C.3.1.1. Defects noted at all External Areas are listed in the following table which should be read in conjunction with photo records enclosed with Appendices D1 respectively.

Photo.		Location	Findings Type							Remarks
			Hairline Crack	Minor Crack	Severe Crack	Crazing / Map crack	Minor spalled concrete	Major spalled concrete	Other	
General View	Defects		Lee Tat Bridge							
G1.1	D1.1- D1.6	Bridge Deck	-	-	-	-	-	-	Y	Damage to tarmac covering was found
	D1.7- D1.8	Connection road to the Bridge	-	-	-	Y	-	-	-	Crazing was found on the connection road to the bridge
G1.2	-	North Parapet	-	-	-	-	-	-	-	-
G1.3	D1.9- D1.10	South Parapet (1)	-	-	-	-	-	-	Y	Rust stains were found on the parapet; Unstable weld connection was observed
G1.4	D1.11- D1.12	South Parapet (2)	-	-	-	-	-	-	Y	Rust stains were found on the parapet; Unstable weld connection was observed
G1.5	-	South Parapet (3)	-	-	-	-	-	-	-	-
G1.6	D1.13	West Abutment (1)	-	-	Y	-	-	-	-	Severe crack was found on the abutment
	D1.14- D1.15		Y	Y	-	-	-	-	-	Different cracks were found on the grouting near the abutment

Photo.		Location	Findings Type							Remarks
			Hairline Crack	Minor Crack	Severe Crack	Crazing / Map crack	Minor spalled concrete	Major spalled concrete	Other	
General View	Defects	Lee Tat Bridge								
G1.7	D1.16-D1.17	West Abutment (2)	Y	Y	-	-	-	-	-	Different cracks were found on the grouting near the abutment
G1.8	D1.18	Pier and Steel Support (1)	Y	Y	Y	-	-	-	-	Hairline Crack and Minor Crack were found on the grouting; Severe Crack was found on the pier
	D1.19		-	-	-	-	-	-	Y	Debris and waste were found stuck on the steel support
	D1.20-D1.21		-	-	-	-	-	-	Y	Rust stains were observed on the steel support
G1.9	D1.22	Pier and Steel Support (2)	-	-	-	-	-	-	Y	Debris and waste were found stuck on the pier
	D1.23		-	Y	-	-	-	-	-	Minor crack was found on the pier
	D1.24		-	-	Y	-	-	-	-	Severe crack was found on the R.C. foundation of the pier
G1.10	D1.25-D1.27	East Abutment	Y	Y	-	-	-	-	Different cracks were found on the abutment and the R.C. foundation	

C.3.2. List of defects and other observations for Lan Fong Study Hall at Chuk Hang (Grade 3)

C.3.2.1. Defects noted at all External Areas are listed in the following table which should be read in conjunction with photo records enclosed with Appendices D2 respectively.

Photo.		Location	Findings Type						Remarks	
			Hairline Crack	Minor Crack	Severe Crack	Crazing / Map crack	Minor spalled concrete	Major spalled concrete		Other
General View	Defects	Lan Fong Study Hall (External)								
G2.1	D2.1-D2.3	W Elevation – General View of Study Hall (Front door, Windows 1, Windows 2, Windows 3 and Windows 4)	-	-	Y	-	-	-	-	-
	D2.4		-	-	-	-	-	-	Y	The glass of windows 1 was broken.
	D2.5-D2.8		-	Y	-	-	-	-	-	-
	D2.9		-	-	-	-	-	-	Y	The glass of windows 2 was broken.
	D2.10-D2.13		-	Y	Y	-	Y	-	-	-
	D2.14, D2.15		-	-	-	-	-	-	Y	Some vegetations growing under the west wall.
	D2.16		-	-	-	-	Y	-	-	-
	D2.17		-	-	-	-	-	-	Y	The mural was damaged
	D2.18		Y	-	-	-	-	-	-	-

Photo.		Location	Findings Type							Remarks
			Hairline Crack	Minor Crack	Severe Crack	Crazing / Map crack	Minor spalled concrete	Major spalled concrete	Other	
General View	Defects		Lan Fong Study Hall (External)							
G2.1	D2.19, D2.20	W Elevation – General View of Study Hall (Front door, Windows 1, Windows 2, Windows 3 and Windows 4)	-	-	-	-	-	-	-	Some blocks were missing and weathered.
	D2.21		Y	-	-	-	-	-	-	-
	D2.22		-	-	-	-	Y	-	-	-
	D2.23		-	-	-	-	-	-	Y	The eaves of study hall was deformed.
	D2.24		-	-	-	-	-	-	Y	The beams was deformed.
	D2.25		-	-	-	-	-	-	-	The block was broken
	D2.26		-	Y	-	-	-	-	-	-
	D2.27, D2.28		-	-	-	-	-	-	-	The mural was damaged.
	D2.29		-	-	-	-	-	-	Y	The glass of on windows 3 was broken.
	D2.30		-	-	Y	-	-	-	-	-
	D2.31		-	Y	Y	-	Y	-	-	-
	D2.32		-	-	Y	-	-	-	-	-

Photo.		Location	Findings Type							Remarks
			Hairline Crack	Minor Crack	Severe Crack	Crazing / Map crack	Minor spalled concrete	Major spalled concrete	Other	
General View	Defects		Lan Fong Study Hall (External)							
G2.1	D2.33	W Elevation – General View of Study Hall (Front door, Windows 1, Windows 2, Windows 3, and Windows 4)	-	-	-	-	Y	-	-	Some blocks were broken and weathered.
	D2.34		-	-	-	-	-	-	Y	Large of vegetation growing on the roof of the study hall.
G2.2	D2.35	W-S Elevation - General View of Study Hall (Side door, Windows 5 and Windows 6 on the south wall)	-	-	-	-	-	-	Y	Large of vegetation growing on the roof on the storeroom.
	D2.36		-	-	Y	-	-	-	-	-
	D2.37		-	Y	-	-	-	-	-	-
	D2.38		-	-	Y	-	-	-	-	-
	D2.39		-	-	Y	-	-	-	-	A Block was missing
	D2.40		-	-	-	-	-	-	Y	The glass of window was broken at the storeroom.
	D2.41		-	-	Y	-	-	-	-	-
	D2.42		-	-	-	-	-	-	-	Some blocks were weathered, Cement mortar was missing.
	D2.43		-	Y	-	-	Y	-	-	Cement mortar was missing
	D2.44	-	-	Y	-	-	-	-	-	

Photo.		Location	Findings Type							Remarks
			Hairline Crack	Minor Crack	Severe Crack	Crazing / Map crack	Minor spalled concrete	Major spalled concrete	Other	
General View	Defects		Lan Fong Study Hall (External)							
G2.2	D2.45	W-S Elevation - General View of Study Hall (Side door, Windows 5, Windows 6 on the south wall)	-	-	-	-	-	-	Y	Large of vegetation growing on the north wall of storeroom.
G2.3	D2.46- D2.48	S-E Elevation - General View of Study Hall	-	-	Y	-	-	-	-	-
	D2.49		Y	-	-	-	-	-	-	-
	D2.50- D2.55		-	-	-	-	-	Y	-	Some reinforcements were exposed in photo D54.
	D2.56		-	-	-	-	-	-	Y	Vegetation growing on the south wall of the study hall.
	D2.57		-	-	-	-	-	-	-	Some tiles were missing.
	D2.58		-	Y	Y	-	-	-	-	-
	D2.59		-	-	-	-	-	-	Y	The glass of window 5 was broken on the south wall of study hall.
	D2.60		-	Y	-	-	-	-	-	-
	D2.61		-	-	-	-	-	Y	-	-

Photo.		Location	Findings Type							Remarks
			Hairline Crack	Minor Crack	Severe Crack	Crazing / Map crack	Minor spalled concrete	Major spalled concrete	Other	
General View	Defects		Lan Fong Study Hall (External)							
G2.3	D2.62	S-E Elevation - General View of Study Hall	-	-	-	-	-	-	Y	The glass of window 6 was broken on the south wall of study hall.
	D2.63		Y	-	-	-	-	-	-	-
	D2.64		-	-	Y	-	-	-	-	-
	D2.65		-	-	-	-	-	-	Y	The glass of window 7 was missing. The steel frame was broken.
	D2.66		-	-	Y	-	-	-	-	-
	D2.67		-	-	-	-	Y	-	Y	A gap was found, concrete spalling was found
G2.4	-	E Elevation (1) - General View of Study Hall (Windows 8 and Windows 9 on the east wall)	-	-	-	-	-	-	-	-
G2.5	D2.68	E Elevation (2) - General View of Study Hall	Y	-	-	-	-	-	Y	The glass of window 8 was missing
	D2.69		Y	-	-	-	-	-	-	-
	D2.70		-	-	-	-	-	-	Y	Some vegetations were growing under the east wall.

Photo.		Location	Findings Type							Remarks
			Hairline Crack	Minor Crack	Severe Crack	Crazing / Map crack	Minor spalled concrete	Major spalled concrete	Other	
General View	Defects		Lan Fong Study Hall (External)							
G2.6	-	N Elevation - General View of storeroom	-	-	-	-	-	-	-	-
G2.7	-	E-N Elevation - General View (Storeroom)	-	-	-	-	-	-	-	-

C.3.3. List of defects and other observations for St. John's Chapel at Cheung Po (Grade 2)

C.3.3.2. Defects noted at all External Areas are listed in the following table which should be read in conjunction with photo records enclosed with Appendices D3 respectively.

D.1 Photo.		Location	Findings Type						Remarks	
			Hairline Crack	Minor Crack	Severe Crack	Crazing / Map crack	Minor spalled concrete	Major spalled concrete		Other
General View	Defects		St. John's Chapel (External)							
G3.1	D3.1	N-W Elevation – General View (Chapel, Storeroom1 and Windows1)	-	-	-	-	-	-	Cement mortar is missing.	
	D3.2		Y	-	Y	-	-	-	-	
	D3.3		-	Y	-	-	-	-	-	
	D3.4		Y	-	-	-	-	-	-	
	D3.5		Y	-	-	-	-	-	-	
	D3.6		-	Y	-	-	-	-	-	
	D3.7		Y	-	-	-	-	-	-	
	D3.8		Y	Y	-	-	-	-	-	
G3.2	D3.9	W Elevation - General View (Chapel)	Y	-	-	-	-	-	Y	Timber window frame is broken.
	D3.10, D3.11		-	-	-	-	-	-	Y	Some blocks were broken and weathered.
	D3.12		-	-	Y	-	-	-	-	-

Photo.		Location	Findings Type							Remarks
			Hairline Crack	Minor Crack	Severe Crack	Crazing / Map crack	Minor spalled concrete	Major spalled concrete	Other	
General View	Defects		St. John's Chapel (External)							
G3.2	D3.13	W Elevation - General View (Chapel)	-	-	-	-	-	-	Y	Large vegetation growing on the balcony.
G3.3	-	W-S Elevation - General View (Chapel)	-	-	-	-	-	-	-	-
G3.4	-	S Elevation (1) - General View (Chapel)	-	-	-	-	-	-	-	-
G3.5	-	S Elevation (2) - General View (Chapel and Storeroom2)	-	-	-	-	-	-	-	-
G3.6	-	S-E Elevation - General View (Chapel and Storeroom2)	-	-	-	-	-	-	-	-
G3.7	D3.14, D3.15	E-N Elevation - General View (Chapel and Storeroom2)	-	Y	-	-	-	-	-	-
	D3.16		-	-	-	-	-	-	Y	Tree branches on the roof of the storeroom2.
G3.8	D3.17	N Elevation - General View (Chapel and Storeroom2)	Y	-	-	-	-	-	Y	The roof tiles were missing on the north wall eaves of the Chapel.
G3.9	D3.18,	Eaves of front door	-	-	Y	-	-	-	-	-
	D3.19		-	-	Y	-	-	-	-	-
	D3.20		-	Y	-	-	-	-	-	-

Photo.		Location	Findings Type							Remarks
			Hairline Crack	Minor Crack	Severe Crack	Crazing / Map crack	Minor spalled concrete	Major spalled concrete	Other	
General View	Defects		St. John's Chapel (External)							
G3.10	D3.21	Eaves of front door (Under the Eaves)	Y	-	-	-	-	Y	-	The reinforcement was exposed at the roof slab soffit
	D3.22		Y	-	-	-	Y	-	-	
G3.11	D3.23	Front door	Y	-	Y	-	-	-	-	-
	D3.24		-	-	Y	-	-	-	-	-
G3.12	D3.25	Eaves of front door (Right side of the Eaves)	-	-	-	-	-	Y	-	-
	D3.26		-	-	-	-	Y	-	-	-
	D3.27		-	-	Y	-	-	-	-	-
G3.13	D3.28	S Elevation of the Chapel (Windows 2 & 3)	-	-	-	-	-	-	Y	Window3 was broken at the south wall of the Chapel.
	D3.29, D3.30		-	-	Y	-	-	-	-	-
	D3.31, D3.32		-	-	Y	-	-	-	-	-
	D3.33- D3.36		-	-	Y	-	-	-	-	-
G3.14	D3.37, D3.38	S Elevation of the Chapel (Window 4)	-	Y	-	-	-	-	-	-
	D3.39		-	-	-	-	-	-	Y	Window4 was broken at south wall of Chapel.

Photo.		Location	Findings Type							Remarks
			Hairline Crack	Minor Crack	Severe Crack	Crazing / Map crack	Minor spalled concrete	Major spalled concrete	Other	
General View	Defects		St. John's Chapel (External)							
G3.15	D3.40	S Elevation of the Chapel (Side door and door eaves)	-	-	-	-	-	-	Y	Tree branches were fallen on the roof at the south wall of the Chapel.
	D3.41		-	-	-	-	-	-	Y	The side door was broken at the south wall of the Chapel.
	D3.42		-	Y	-	-	-	-	-	-
	D3.43		-	-	Y	-	-	-	Y	Some vegetations growth at the side door
	D3.44, D3.45		Y	-	-	-	-	-	-	-
	D3.46		Y	Y	-	-	-	-	-	-
	D3.47		Y	-	-	-	-	-	-	-
	D3.48		Y	-	-	-	-	-	-	-
	D3.49		Y	-	-	-	-	-	-	-
	D3.50		Y	-	-	-	-	Y	-	-
G3.16	D3.51	S Elevation of the Storeroom2 (Windows 5)	-	-	-	-	-	-	Y	Vegetation was found on the south wall of the storeroom2.
	D3.52, D3.53		-	-	Y	-	Y	-	-	-

Photo.		Location	Findings Type							Remarks
			Hairline Crack	Minor Crack	Severe Crack	Crazing / Map crack	Minor spalled concrete	Major spalled concrete	Other	
General View	Defects		St. John's Chapel (External)							
G3.17	D3.54	Roof of the Chapel and Storeroom2	-	Y	Y	-	-	-	-	-
G3.18	D3.55	E Elevation of the storeroom2	-	-	-	-	-	-	Y	The eaves was broken.
	D3.56		Y	-	-	-	-	-	-	-
	D3.57		Y	-	-	-	-	-	-	-
	D3.58		Y	-	-	-	-	-	-	-
	D3.59		Y	-	-	-	-	-	-	-
	D3.60, D3.61		Y	-	-	-	-	-	-	-
	D3.62		Y	Y	-	-	-	-	-	-
	D3.63		-	Y	-	-	-	-	-	-
	D3.64		Y	-	-	-	-	-	-	-
	D3.65		-	-	-	-	-	Y	-	-
G3.19	D3.66, D3.67	S-E Elevation for Foundation of the storeroom2	-	-	Y	-	-	-	-	-
G3.20	D3.68	E Elevation for Foundation of the storeroom2	-	-	-	-	-	-	Y	A gap between brickwork wall and surface channel was found at the east wall of the storeroom 2

Appendix D

Photo Record

Appendix D1

Photo Record of Lee Tat Bridge at Shui Tsan Tin

D1.1 General Views



G1.1

Bridge Deck



G1.2

N Parapet



G1.3

S Parapet (1)



G1.4

S Parapet (2)



G1.5

S Parapet (3)



G1.6

W Abutment (1)



G1.7

W Abutment (2)



G1.8

Pier and Steel Support (1)



G1.9

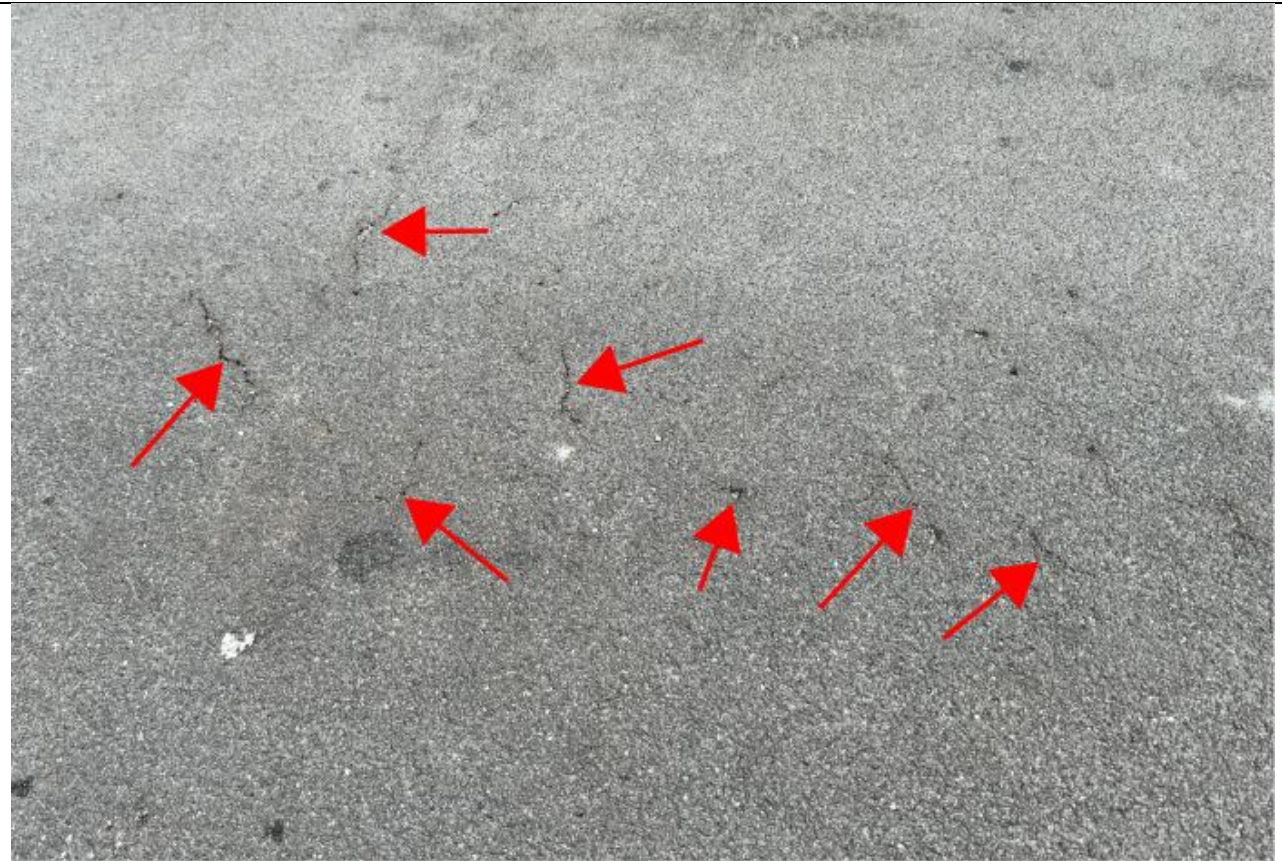
Pier and Steel Support (2)



G1.10

E Abutment

D1.2. Defects



D1.1

Damage to tarmac covering was found on the Bridge Deck



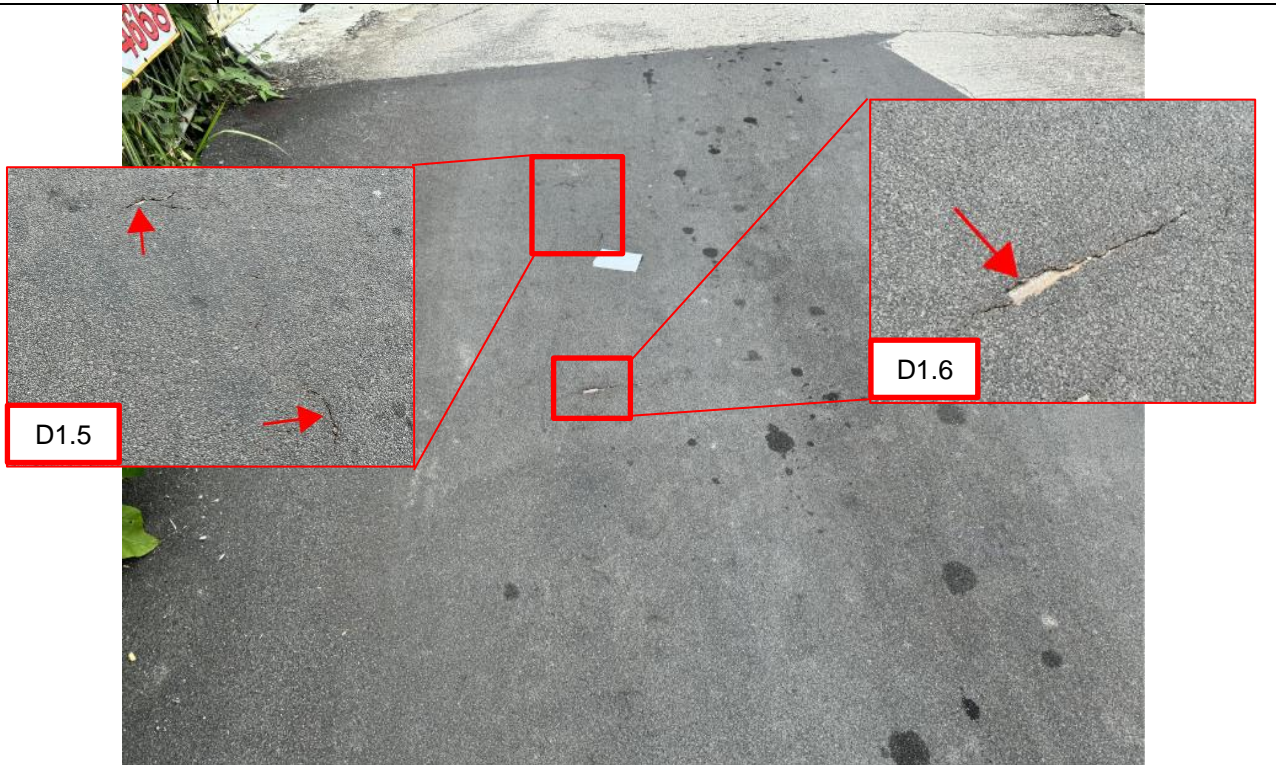
D1.2

Damage to tarmac covering was found on the Bridge Deck



D1.3

Damage to tarmac covering was found on the Bridge Deck



D1.5

D1.6

D1.4, D1.5, D1.6

Damage to tarmac covering was found on the Bridge Deck



D1.7

Crazing was found on the connection road to the Bridge



D1.8

Crazing was found on the connection road to the Bridge



D1.9

Rust stains were found on the S Parapet



D1.10

Unstable weld connection was observed on the S Parapet



D1.11

Rust stains were found, and unstable weld connection was observed on the S Parapet



D1.12

Unstable weld connection was observed on the S Parapet



D1.13

Severe Crack was found on the W Abutment



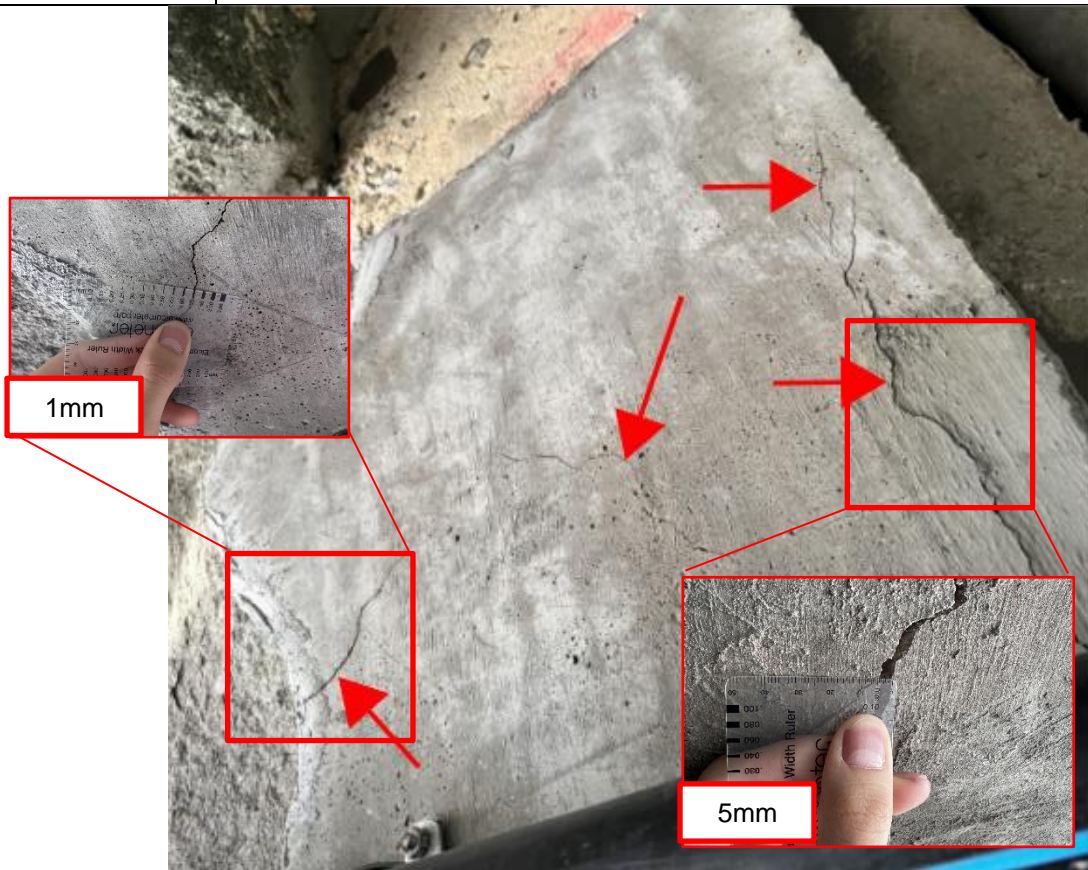
D1.14

Hairline Crack was found on the grouting near W Abutment



D1.15

Hairline and Minor Cracks were found on the grouting near W Abutment



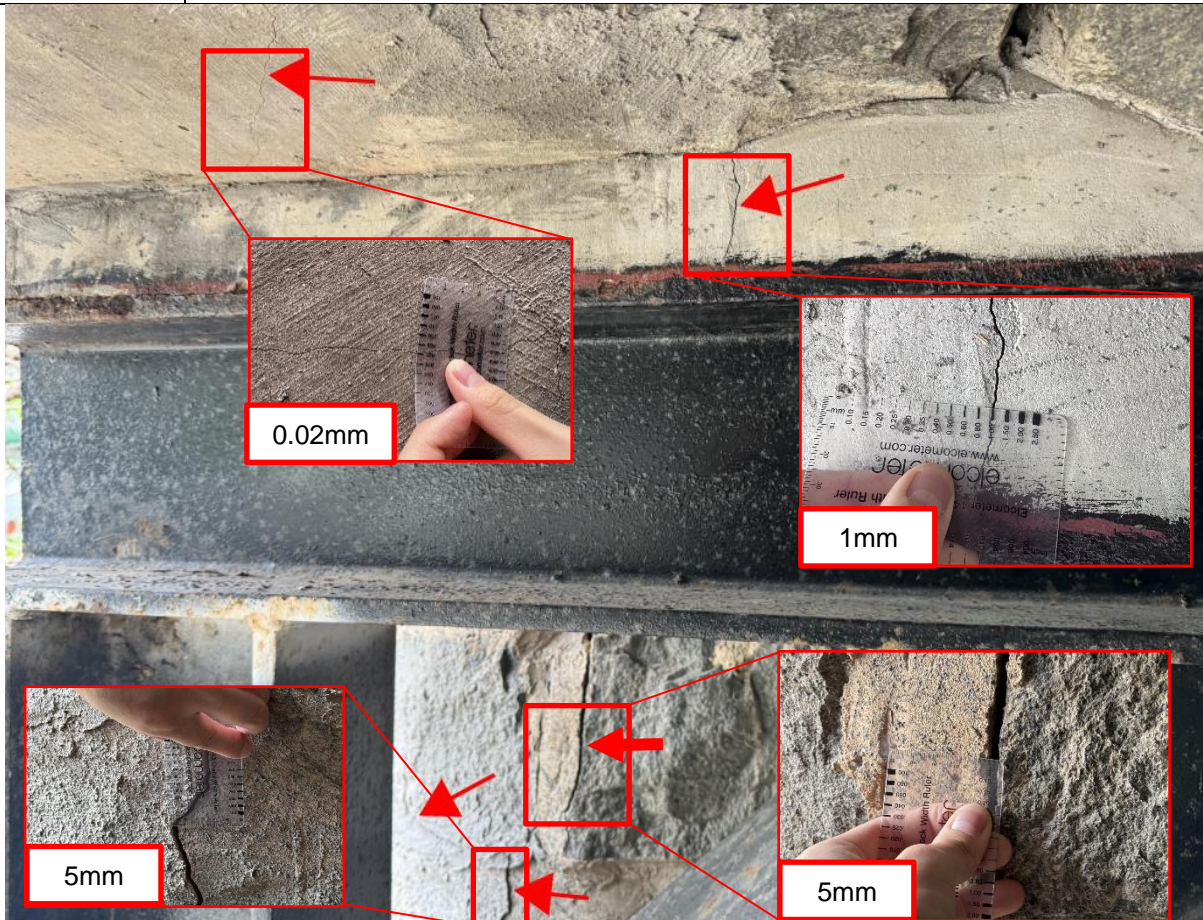
D1.16

Minor Crack and Severe Cracks were found on the grouting near W Abutment



D1.17

Hairline Crack and Minor Crack were found on the grouting near W Abutment



D1.18

Hairline Crack and Minor Crack were found on the grouting near W Abutment;
Severe Cracks were found on the Pier



D1.19

Debris and Waste were observed near Steel Support



D1.20

Rust stains were observed on the Steel Support



D1.21

Rust stains were observed on the Steel Support



D1.22

Debris and Waste were observed stuck at the Pier



D1.23

Minor Crack was found on the Pier



D1.24

Severe Crack was found on the R.C. Foundation of the Pier



D1.25

Hairline Crack and Minor Crack were found on the E Abutment and the R.C. Foundation



D1.26

Hairline Crack and Minor Crack were found on the E Abutment



D1.27

Hairline Crack was found on the R.C. Foundation of E Abutment

Appendix D2

Photo Record of Lan Fong Study Hall at Chuk Hang

D2.1 General View



G2.1 W Elevation – General View of Study Hall (Front door, Windows 1, Windows 2, Windows 3 and Windows 4)



G2.2

W-S Elevation - General View of Study Hall (Side door, Windows 5 and Windows 6 on the south wall)



G2.3

S-E Elevation - General View of Study Hall (Windows 7 , Windows 8 and Windows 9 on the south and east wall)



G2.4

E Elevation (1) - General View of Study Hall (Windows 8 and Windows 9 on the east wall)



G2.5

E Elevation (2) - General View of Study Hall (Windows 8 and Windows 9 on the east wall)



G2.6

N-W Elevation - General View of storeroom



G2.7

W Elevation - General View of Storeroom

D2.2 Defects

D.2

 <p>D2.1</p>	 <p>D2.2</p>
D2.1, D2.2	Severe cracks were found on the west wall of the study hall.



D2.3

Severe crack (wider than 2mm) was found on the west wall of the study hall.



D2.4

The glass of windows 1 was broken on the west wall of the study hall.



D2.5-D2.8

Minor cracks were found on windows 1.



D2.9

The glass of windows 2 was missing on the west wall of the study hall.



D2.10

Minor crack (below 1mm wide) was found on windows 2.



D2.11

Minor concrete spalling and severe crack (wider than 2mm) was found on windows 2.



D2.12

Minor crack (equal to 1mm) was found on windows 2.



D2.13

Severe crack (equal to 2mm) was found on windows 2.



D2.14



D2.15

D2.14, D2.15

Some vegetations growing under the west wall.



D2.16

Minor spalled concrete was found under the west wall.



D2.17	The mural was damaged.
D2.18	Hairline crack was found on the eaves on west wall.



D2.19, D2.20

Some blocks were missing and weathered.



D2.21

Hairline crack was found on the board



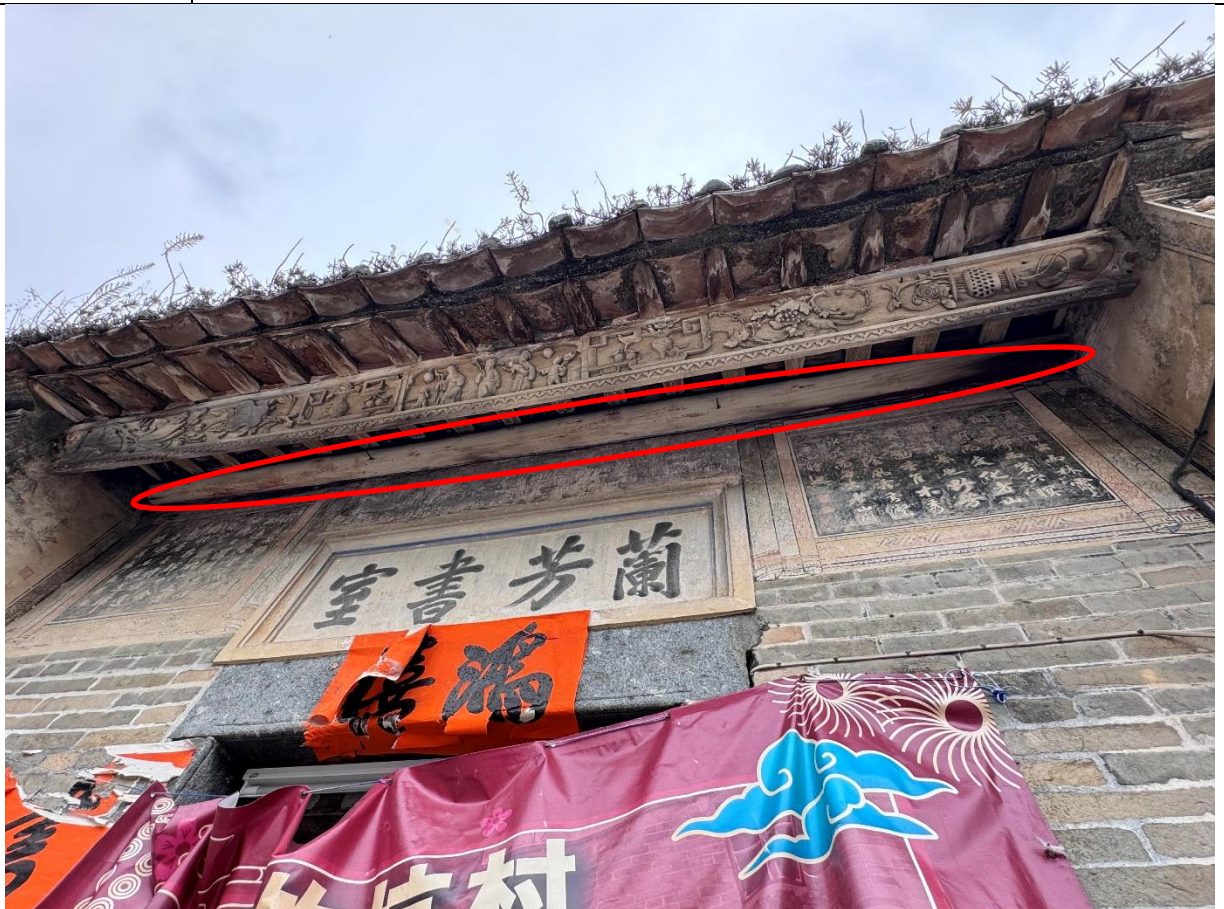
D2.22

Minor concrete spalling was found.



D2.23

The eaves of study hall was deformed.



D2.24

The beams was deformed.



D2.25

The block was broken.



D2.26

Minor crack was found on the eaves.



D2.27, D2.28

The mural was damaged.



D2.29

The glass of on windows 3 was broken.



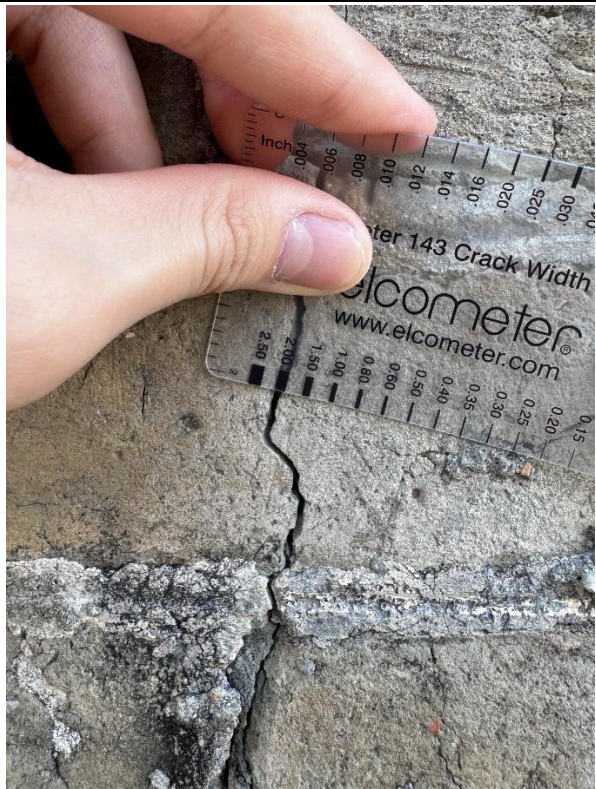
D2.30

Severe crack (equal to 2mm) was found between windows 3 and windows 4.



D2.31

Concrete spalling, minor crack and severe crack were appeared.



D2.32

Severe crack (equal to 2mm) was found under the windows 4.



D2.33

Some blocks were broken and weathered, and the minor concrete spalling was appached on the footing.



D2.34

Large of vegetation growing on the roof of the study hall.



D2.35

Large of vegetation growing on the roof on the storeroom.



D2.36

Severe crack (equal to 2mm) was found on the front door of the storeroom.



D2.37

Minor crack (wider than 2mm, but less than 1mm wide) was found on the front door of the storeroom.



D2.38

Severe cracks (wider than 2mm) were found.



D2.39

A Block was missing, and some severe cracks (wider than 2mm) were found on the blocks.



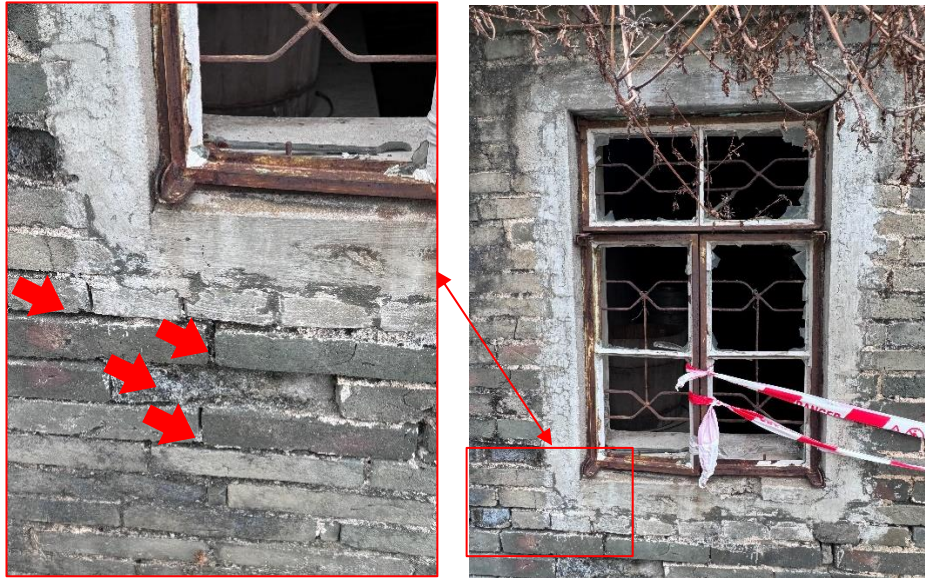
D2.40

The glass of window was broken at the storeroom.



D2.41

Severe cracks (wider than 2mm) were found on some blocks.



D2.42

Some blocks were weathered, and cement mortar was missing.



D2.43

Minor cracks (less than 2mm wide) were found, cement mortar was missing, and some blocks were broken.



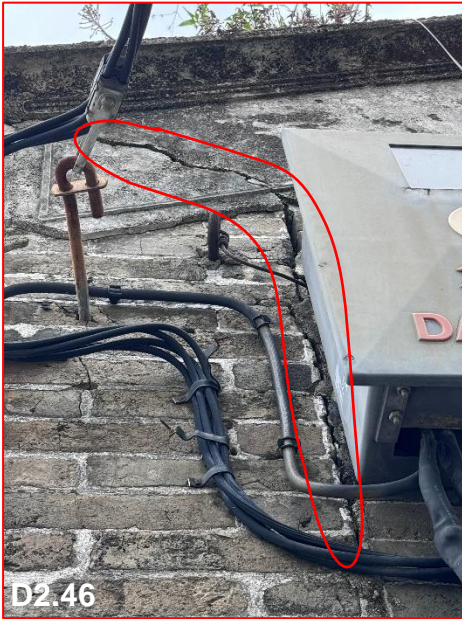
D2.44

Severe cracks were found on the north wall of storeroom.



D2.45

Large of vegetation growing on the north wall of storeroom.



D2.46

Severe crack was found on the south wall of study hall.



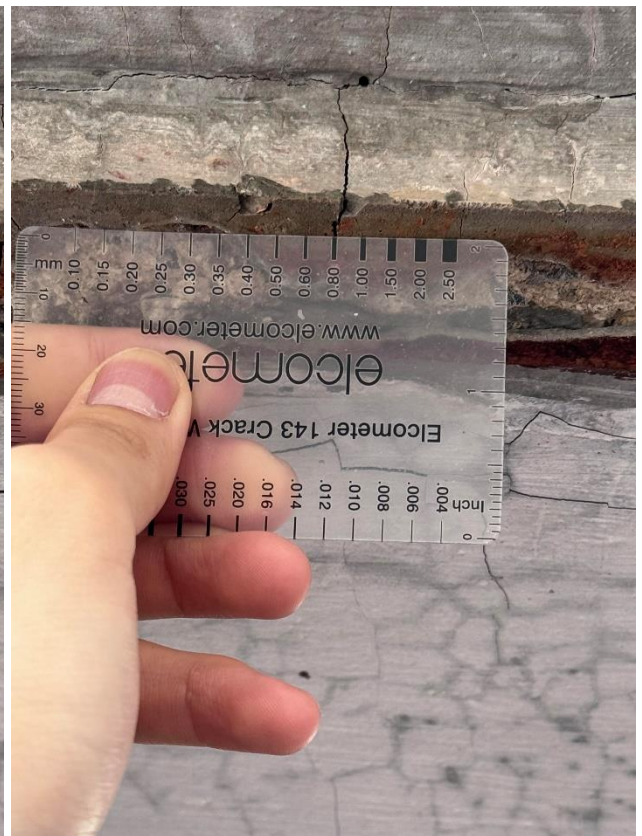
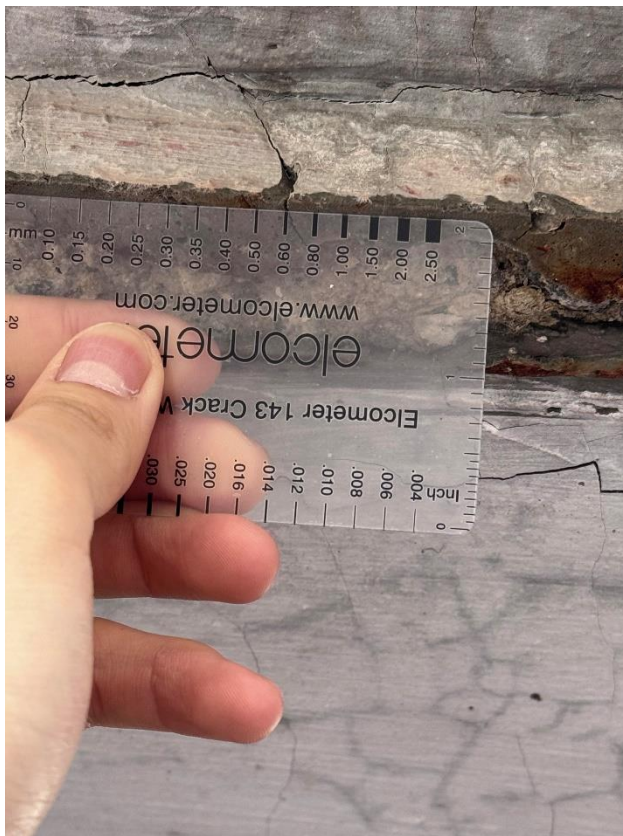
D2.47

Severe crack (wider than 2mm) was found on the south wall of study hall.



D2.48

Severe crack (wider than 2mm) was found on the south wall of study hall.



D2.49

Hairline cracks (less than 1mm wider) were found on the door frame.



D2.50-D2.52

Major concrete spalling was found on the side door frame.



D2.53-D2.55

Major concrete spalling was found on the side door frame, and reinforcements were exposed.



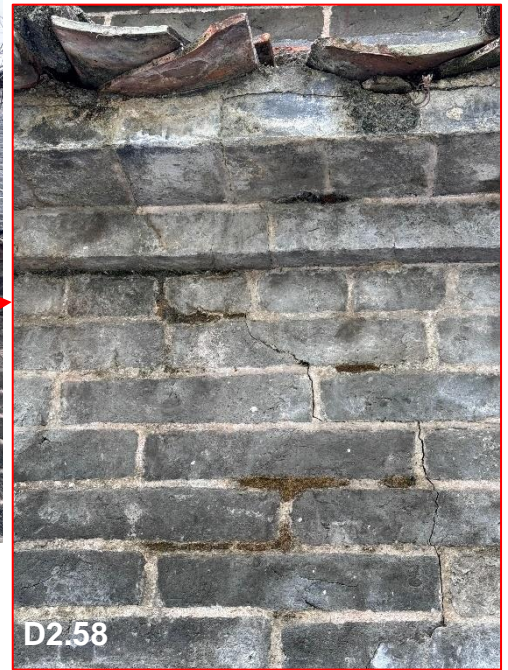
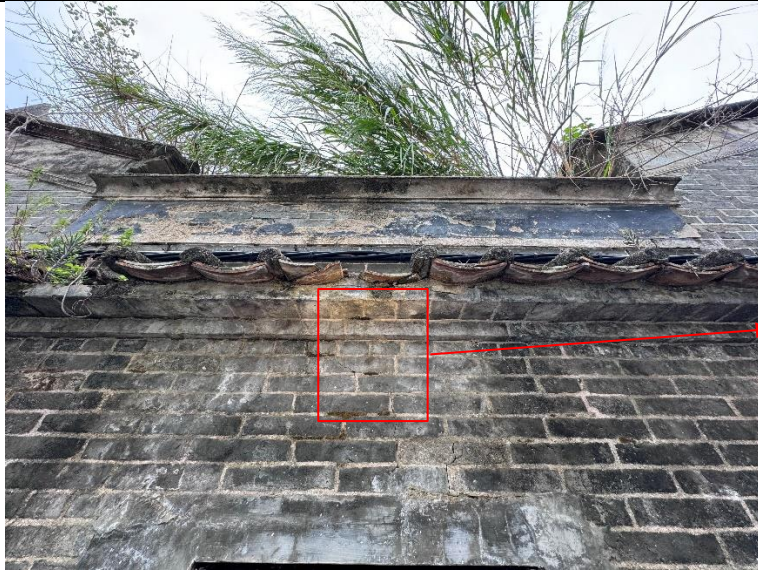
D2.56

Vegetation growing on the south wall of the study hall.



D2.57

Some tiles were missing.



D2.58

Severe crack (wider than 2mm) and minor crack (equal to 1mm) was found on the blocks.



D2.59

The glass of window 5 was broken on the south wall of study hall.



D2.60

Minor crack (equal to 1mm) was found.



D2.61

Minor concrete spalling was found.



D2.62

The glass of window 6 was broken on the south wall of study hall.



D2.63

Hairline cracks (less than 1mm) were found.



D2.64

Severe cracks (wider than 2mm) were found.



D2.65

The glass of window 7 was missing, and the steel frame was broken.



D2.66

Severe cracks (wider than 2mm) were found under the south wall of study Hall.



D2.67

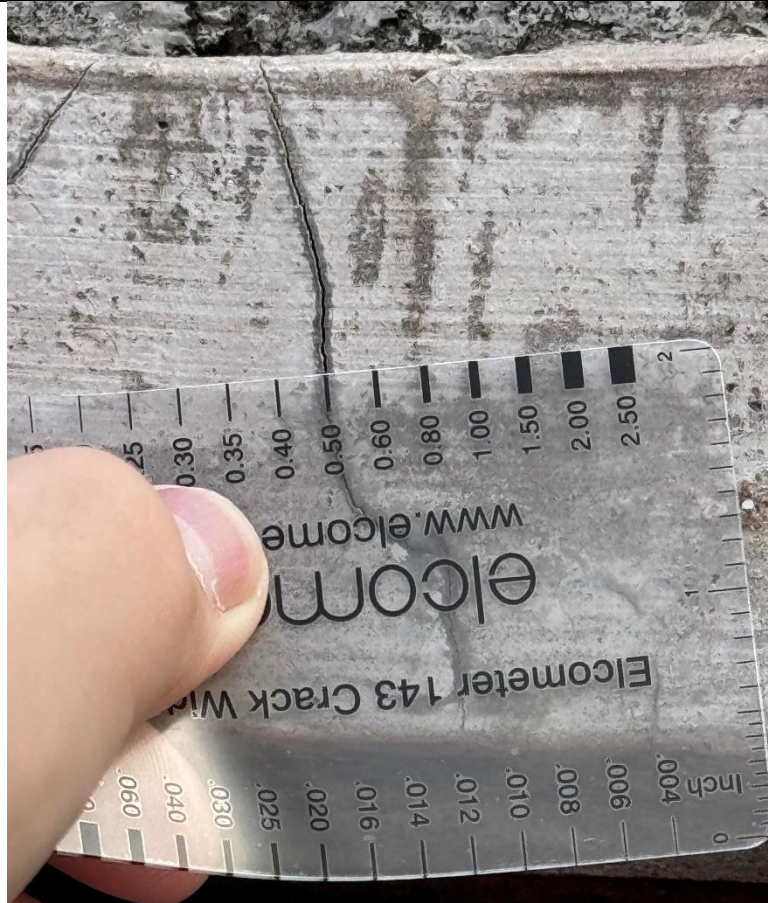
A gap was found, and some concrete spalling were found under the south wall of study Hall.



D2.68

The glass of window 8 was missing, and the hairline cracks (less than 1mm) were found on the frame of the window 8.





D2.69

Hairline cracks (less than 1mm) were found on the frame of window 9.



D2.70

Some vegetations were growing under the east wall.

Appendix D3

Photo Record of St. John's Chapel at Cheung Po

D3.1 General view



G3.1

N-W Elevation – General View (Chapel and Storeroom1)



G3.2

W Elevation - General View (Chapel)



G3.3

W-S Elevation - General View (Chapel)



G3.4

S Elevation (1) - General View (Chapel)



G3.5

S Elevation (2) - General View (Chapel and Storeroom2)



G3.6

S-E Elevation - General View (Chapel and Storeroom2)



G3.7

E-N Elevation - General View (Chapel and Storeroom2)



G3.8

N Elevation - General View (Chapel and Storeroom2)



G3.9

Eaves of front door



G3.10

Eaves of front door (Under the Eaves)



G3.11

Front door



G3.12

Eaves of front door (Right side of the Eaves)



G3.13

S Elevation of the Chapel (Windows 2 & 3)



G3.14

S Elevation of the Chapel (Window 4)



G3.15

S Elevation of the Chapel (Side door and door eaves)



G3.16

S Elevation of the Storeroom2 (Windows 5)



G3.17

Roof of the Chapel and Storeroom2



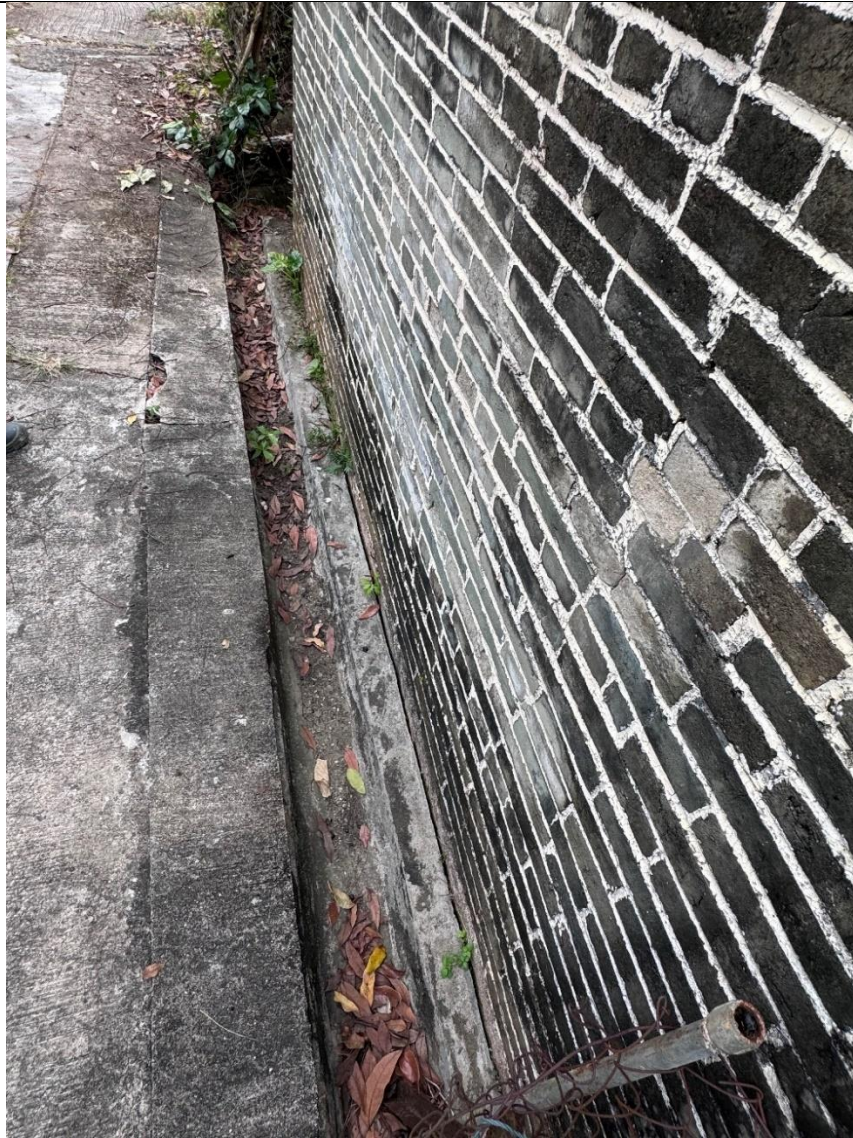
G3.18

E Elevation of the storeroom2



G3.19

S-E Elevation for Foundation of the storeroom2



G3.20

E Elevation for Foundation of the storeroom2

D3.2 Defects



D3.1

Cement mortar is missing between the brickwork blocks on the north Wall of the Chapel.



D3.2

Severe crack (wider than 2mm) and hairline cracks (less than 1mm) were appeared on the block.



D3.3

Minor cracks (wider than 1mm but less than 2mm) were appeared on the block.



D3.4

Hairline crack was found on the west wall eaves of the storeroom1.



D3.5

Hairline crack (less than 1mm) was found on the west wall eaves of the storeroom1.



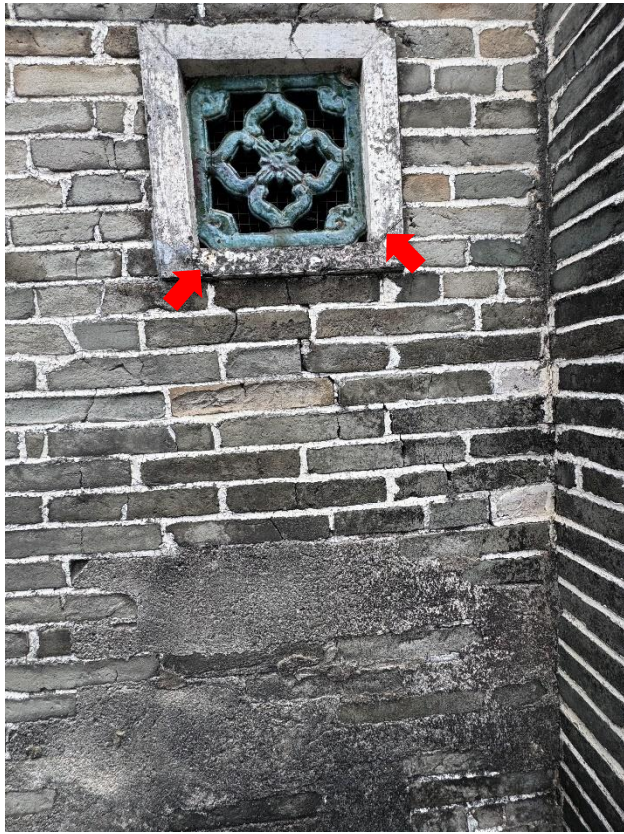
D3.6

Minor crack (equal to 1mm) was found on the west wall eaves of the streeroom2.



D3.7

Some hairline cracks (less than 1mm) were found on the window1.



D3.8

Hairline crack (less than 1mm) and minor cracks (equal to 1mm) were found on the window1.



D3.9

The timber window frame was broken, and some hairline cracks were found on the eaves.



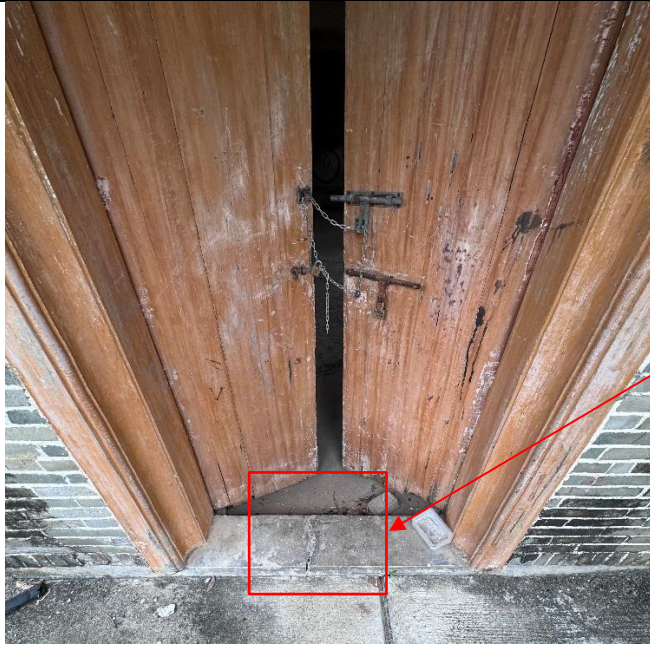
D3.10



D3.11

D3.10, D3.11

Some blocks were broken and weathered.



D3.12

Severe Crack (wider than 2mm) was found on doorstep.



D3.13

Large vegetation growing on the balcony.



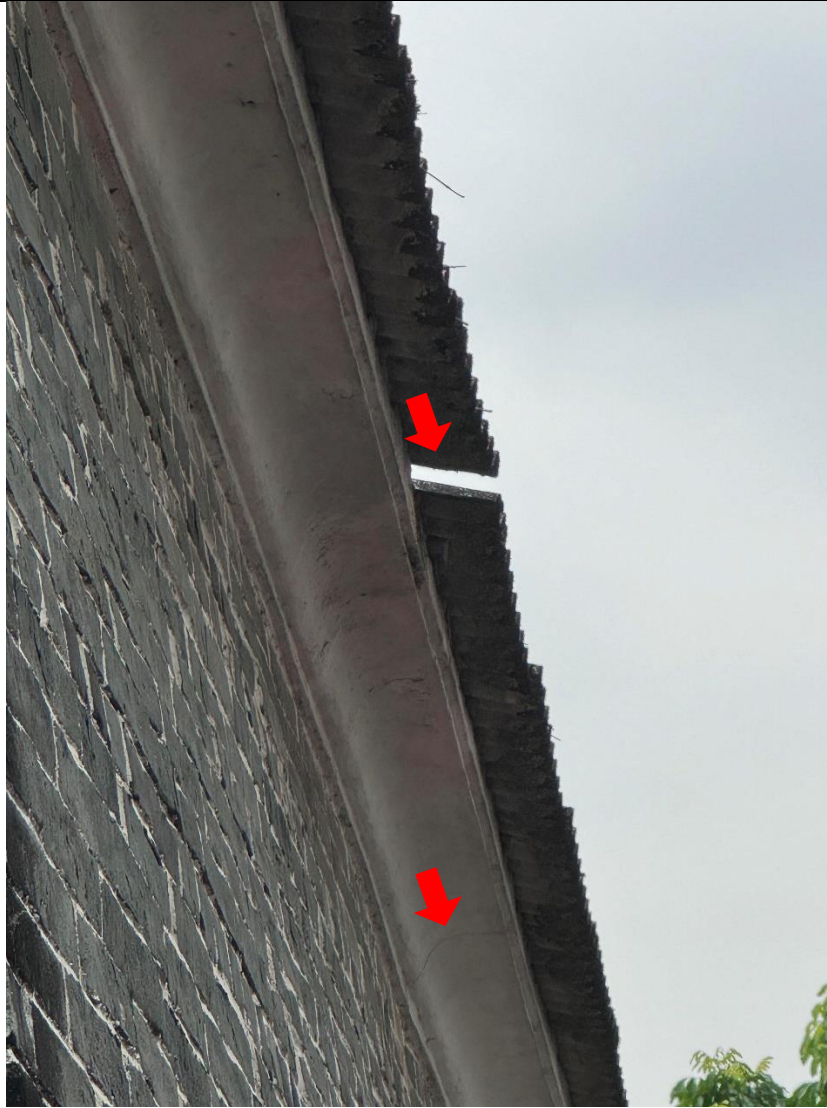
D3.14, D3.15

Minor Cracks were found under the eaves on the east-north wall and eaves of storeroom2.



D3.16

Tree branches on the roof of the storeroom2.



D3.17

Hairline cracks was found, and the roof tiles were missing on the north wall eaves of the Chapel.



D3.18

Severe crack (wider than 2mm) was found on the beam.



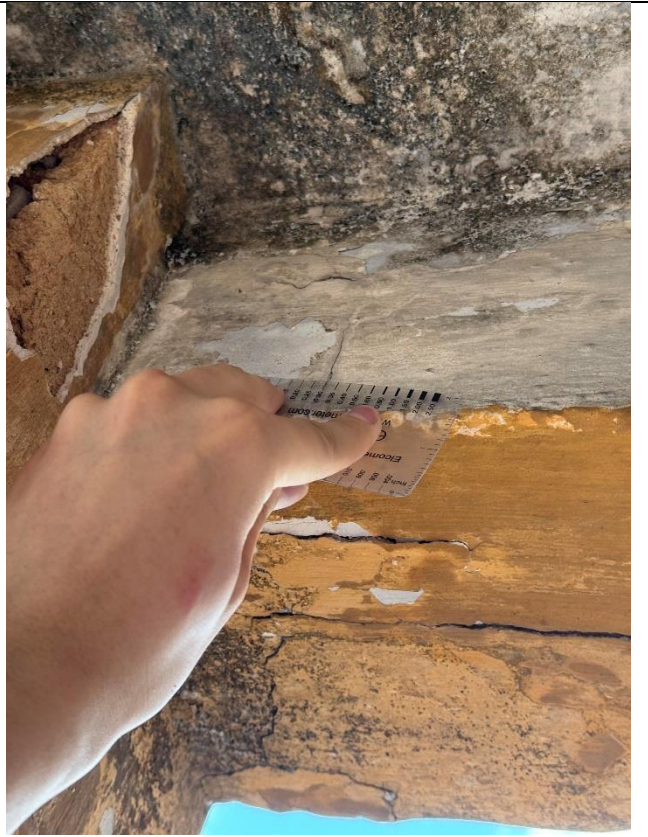
D3.19

Severe crack (wider than 2mm) was found on the beam.



D3.20

Minor crack (equal to 1mm) was found on the left-side column.



D3.21

Large area of concrete was spalled, and the reinforcement was exposed at the roof slab soffit. Also, hairline crack was found on the beam.



D3.22

The concrete at the bottom of left side column was spalled. Hairline cracks (less than 1mm) is appeared on the footing of left-side column.



D3.23	Severe cracks (wider than 2mm) and hairline crack (less than 1mm) were found on the blocks.
-------	---



D3.24

Severe cracks (wider than 2mm) were found on the blocks.



D3.25

Concrete spalling was found on the right-side column.



D3.26

Concrete spalling is appeared on the footing of right-side column.



D3.27

Severe crack was found on the beam.



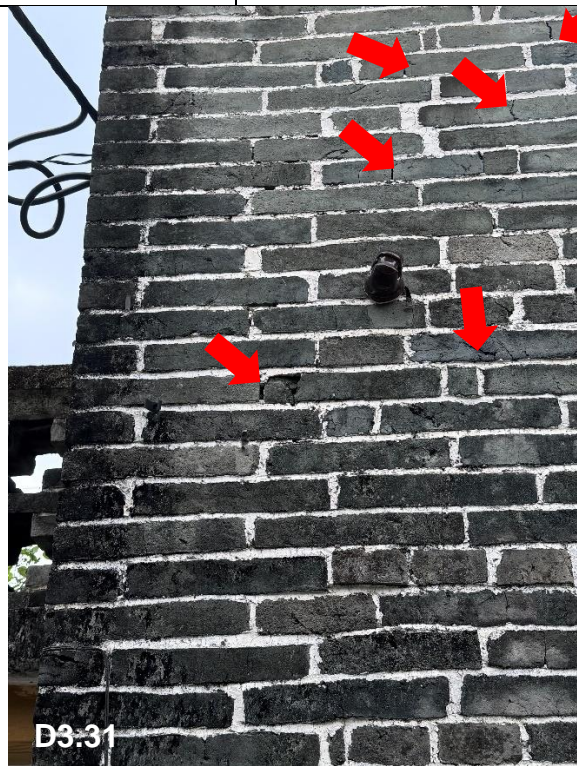
D3.28

Window3 was broken at the south wall of the Chapel.



D3.29, D3.30

Severe cracks were found on the south wall eaves of the Chapel.



D3.31, D3.32

Severe cracks were found on the blocks.



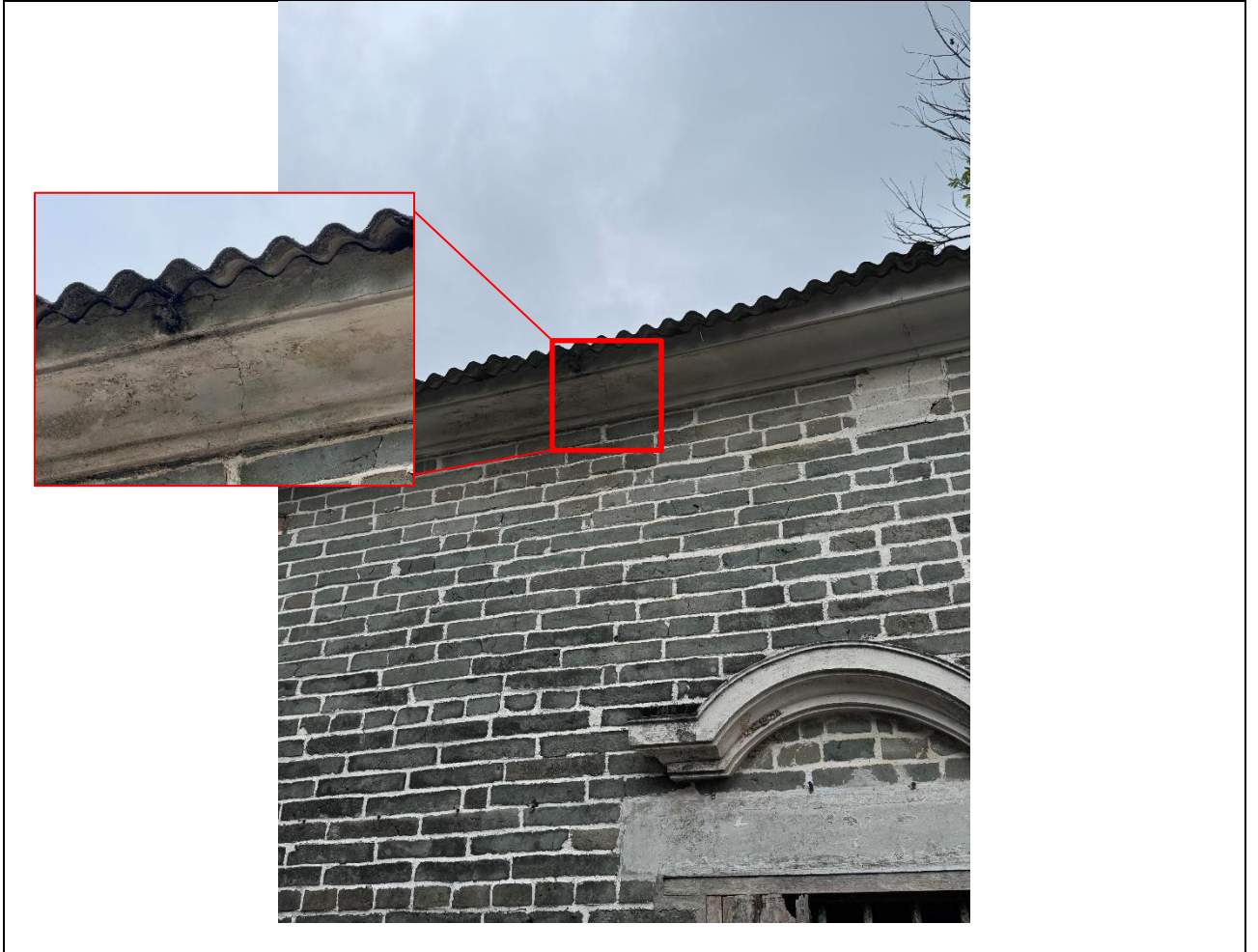
D3.33, D3.34

Severe cracks were found on the blocks and the windows eaves.



D3.35, D3.36

Severe cracks were found on the windows eaves.



D3.37

Minor crack was found on the south wall eaves of Chapel.



D3.38

Minor crack was found on the south wall eaves of Chapel.



D3.39

Window4 was broken at south wall of Chapel.



D3.40

Tree branches were fallen on the roof at the south wall of the Chapel.



D3.41

The side door was broken at the south wall of the Chapel.



D3.42

Minor crack was found on the south wall eaves of Chapel.



D3.43

Some vegetations growth at the side door and severe crack was found on the foundation.



D3.44



D3.45

D3.44, D3.45

Hairline cracks were found on the eaves on the south wall of the Chapel.



D3.46

Hairline crack (less than 1mm) and minor crack (wider the 1mm but less the 2mm) was found on the side door frame.



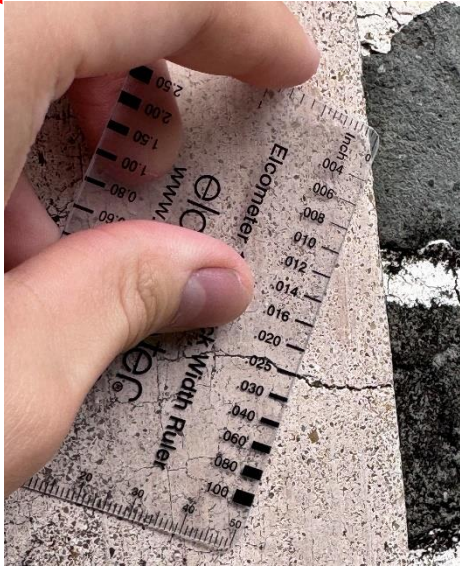
D3.47

Hairline crack (less than 1mm) was found on the side door frame.



D3.48

Hairline crack (less than 1mm) was found on the side door frame.



D3.49

Hairline crack (less than 1mm) was found on the side door frame.



D3.50

Hairline crack (less than 1mm) and minor spalled concrete was found on the side door frame.



D3.51

Vegetation was found on the south wall of the storeroom2.



D3.52, D3.53

Severe crack and minor concrete spalled were found on the foundation.



D3.54

Minor and severe cracks were found on the south wall of the Chapel.



D3.55

The eaves was broken at the east wall of the storeroom2.



D3.56

Hairline crack (less than 1mm) was found on the east wall eaves of the storeroom2.



D3.57

Hairline crack (less than 1mm) was found on the east wall eaves of the storeroom2.



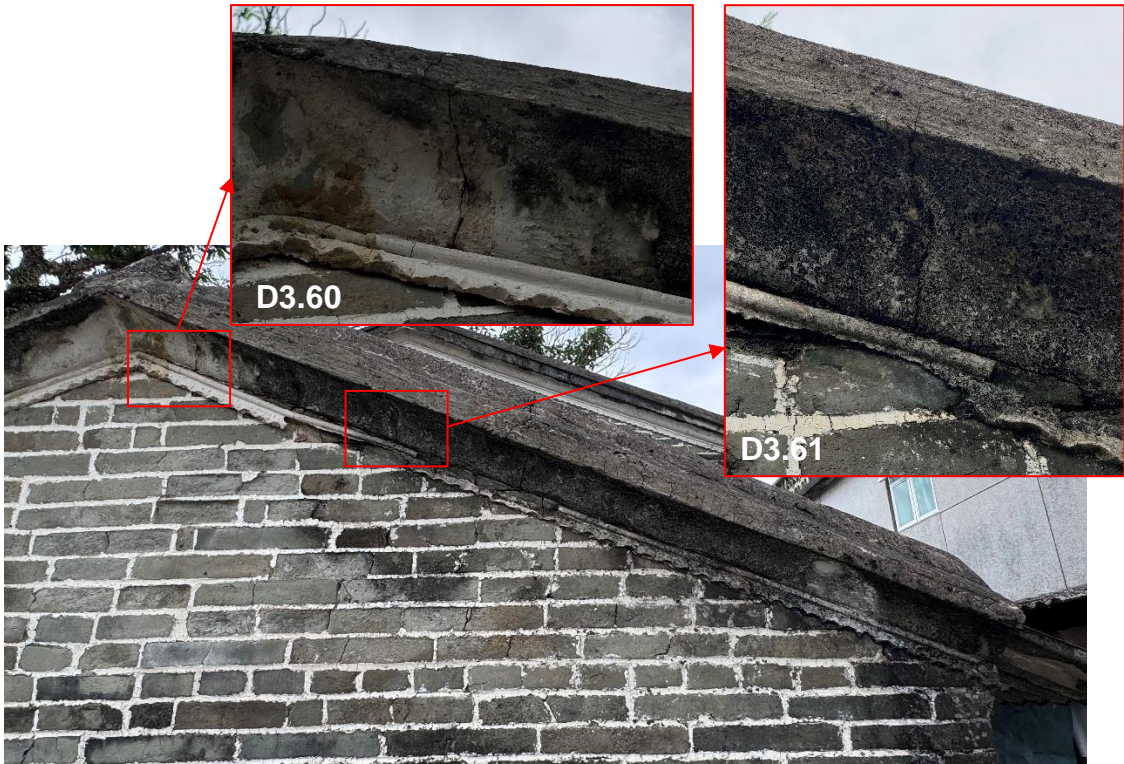
D3.58

Hairline cracks (less than 1mm) were found on the east wall eaves of the storeroom2.



D3.59

Hairline cracks were found on the east wall eaves of the storeroom2.



D3.60, D3.61

Hairline cracks were found on the east wall eaves of the storeroom2.



D3.62

Hairline cracks and minor cracks were found on the east wall eaves of the storeroom2.



D3.63

D3.63

Minor crack was (less than 2mm but wider than 1mm) found on the east wall eaves of the storeroom2.



D3.64

Hairline crack (less than 1mm) was found on the east wall eaves of the storeroom2.



D3.65

Minor concrete spalled was found on the eaves of the storeroom2 and the reinforcement was exposed.



D3.66, D3.67

Severe cracks were found on the foundation of the storeroom2.



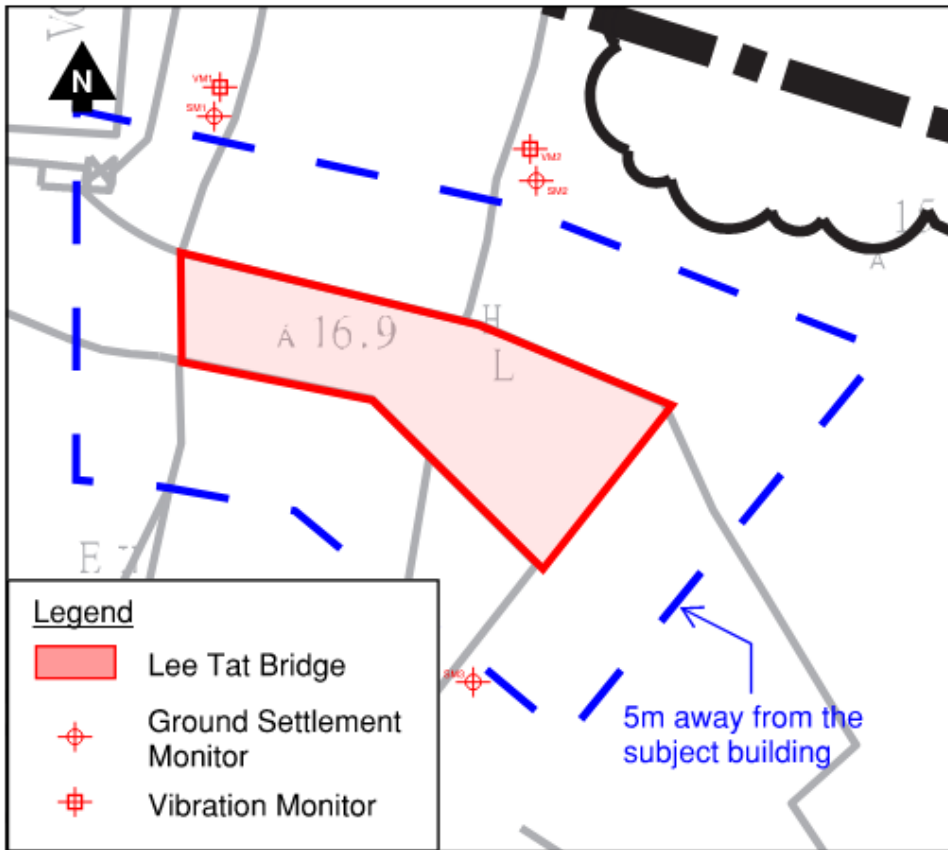
D3.68

A gap between brickwork wall and surface channel was found at the east wall of the storeroom 2

Appendix E

Proposed Monitoring Point

E1. Proposed Monitoring Point of Lee Tat Bridge at Shui Tsan Tin (Grade 3)

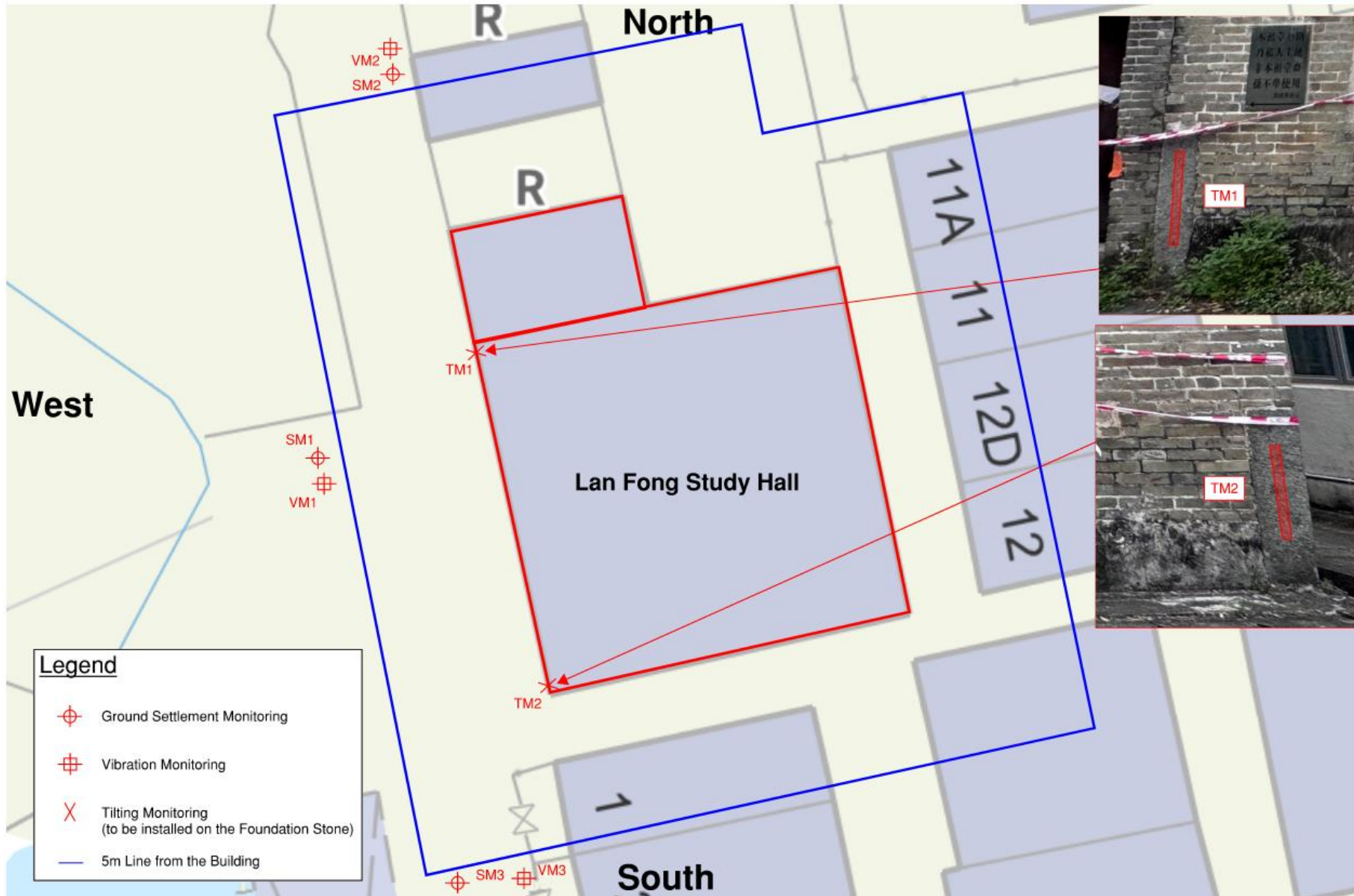


Monitoring Point (Ground Level)

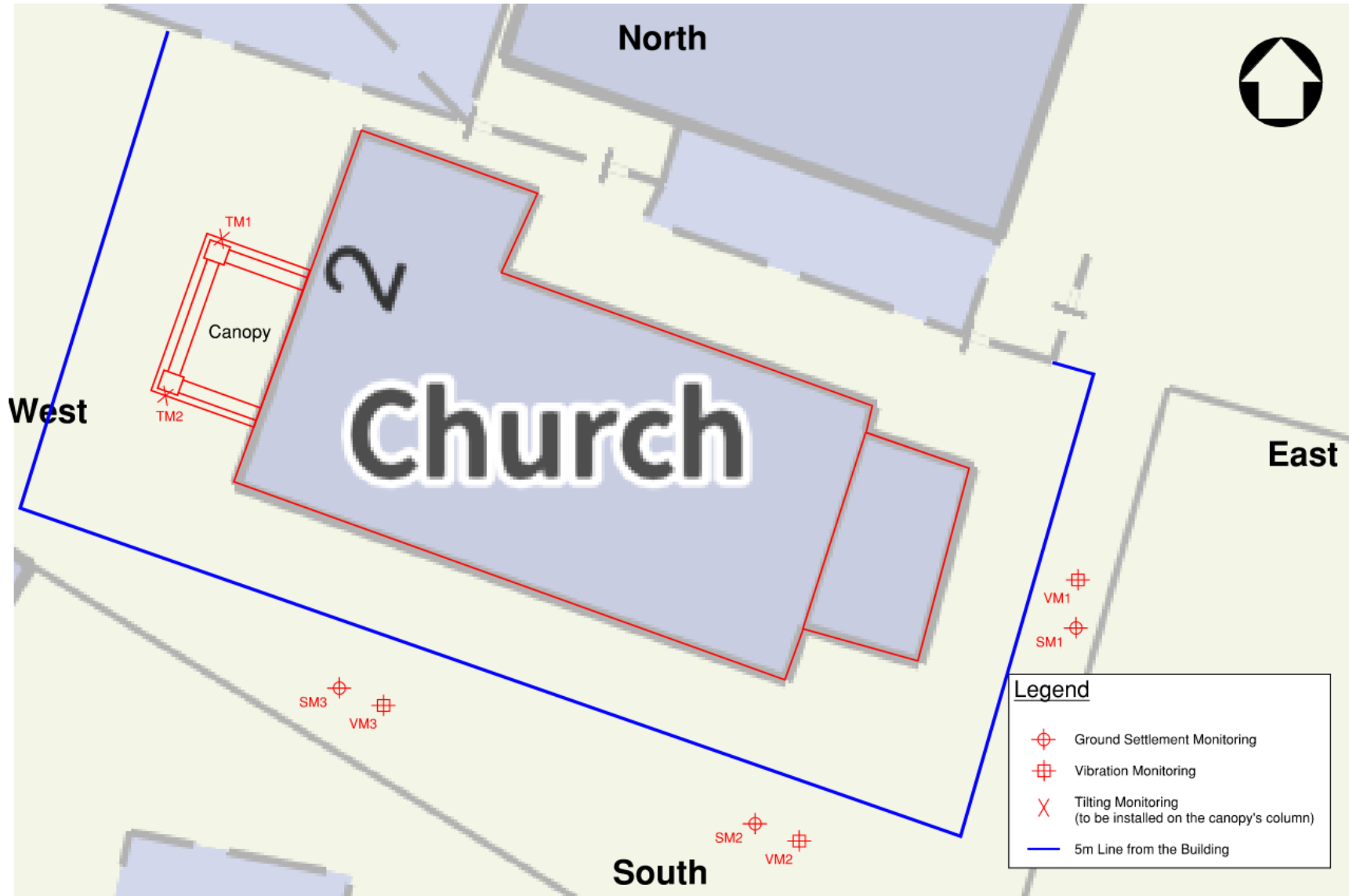


Monitoring Point (Below Bridge Deck)

E2. Proposed Monitoring Point of Lan Fong Study Hall at Chuk Hang (Grade 3)



E3. Proposed Monitoring Point of St. John's Chapel at Cheung Po (Grade 2)



Appendix F

Qualification of the qualified engineer



CHOW Nin Shing Christopher

Associate, Civil Structures

Christopher has 25 years of solid experience in the design and supervision of civil and building projects. His duty includes project management, preliminary scheming, supervision and quality control of site works, coordination of work with various parties and government departments, detailed design and construction supervision such as mini-piles, pre-bored rock socketed H-piles, large-diameter bored piles, pipe piles, raft foundation and superstructure work for both reinforced concrete (RC) and structural steel building.

Nationality

Chinese, Hong Kong

Qualifications

BEng (Hons), Civil & Structural Engineering (Part-time), The Hong Kong Polytechnic University, 11/2002

Higher Diploma, Civil Engineering, The Hong Kong Polytechnic University, 11/1997

Professional Memberships

Member, Institution of Structural Engineer, 12/2016

Chartered Engineer, 12/2016

Profession

Civil & Structural Engineer

Specialisation

Structural Design of Building Structures/Infrastructure Works, Project Management, and Site Supervision Work

Years of Experience

25 [with 6 years post qualification]

Project Experience

MTRCL | Contract A231-19C Design of Civil Engineering Provision for Additional Escalators at SKW Entrance A | Hong Kong | 02/2022 - 12/2023 (Anticipate) | Project Engineer

Structural & Civil Consultant for the structural design team from MTRC; and preparation of BD submission for the A&A works.

Christopher involved manage and review the civil & structural design issues for modification of existing structures for installation of additional escalators at MTR SKW station Entrance A. The design involves demolition of existing entrance roof and re-construction of new r.c. roof; and modification of certain width of existing staircase for additional escalator installation. Liaison with the client (MTR) for the site matters related to design issues.

MTRCL | Certification of the MTR Trackside Advertising Panels Inspection Works at YMT, MOK and PRE Stations | Hong Kong | 12/2022 - 01/2023 (Anticipate) | Competent T5 Engineer

Competent T5 Engineer for inspection the trackside advertising panels and provide recommendations for the defects & remedial works in the report.

Christopher involved the site inspection for the trackside advertising panels (TSAP) along the MTR operating lines to observe the existing condition of the steel supporting frame for the advertising panels; and preparing the certification report to identify the defects and advise the recommendation works if any.

Gammon | Proposed Temporary Staircases for MOE at Cinema Plaza, Subway at 46-56 Queen's Road East | Hong Kong | 11/2022 - 12/2024 (Anticipate) | Senior Design Engineer

Contractor's designer for provision the temporary steel staircase for BD submission.

Christopher involves manage and review the design three number of temporary steel staircases, which provide an alternative route of MOE for the Cinema Plaza during the construction of the modification works for the existing MOE subway. As the site constraints, the staircases are required to rest on the existing stepped retaining wall; and each step has an irregular shape in plan, so positioning for the column locations are very limited.

TFP Farrells Ltd. | C11081 Re-Provision of Ma Chai Hang Recreational Ground | Hong Kong | 05/2021 - 01/2022 | Senior Civil & Structural Engineer

As a coordinator to liaise between the lead consultant (TFP) and our in-house design teams including civil & structure, geotechnical, drainage and MEP in both scheme design and detailed design stage. Also, liaise with the client of this contract (MTRC) to address their comments on the design issues.

Alchmex-Paul Y Joint Venture | HY/2018/02 Central Kowloon Route (CKR) - Kai Tak East Design Consultant for Temporary Works Including DIA Design | Hong Kong | 2020 - 2022 | Senior Design Engineer (Temporary Works)

Christopher was responsible for temporary works including ELS works for the construction of pile cap of bridge piers and retaining walls, working platform rested on the Kai Tak Nullah base slab for providing access/considering the whole operation process for large diameter bored pile installation in the existing nullah; and steel portal frame for construction of approach roads, underpasses, elevated roads (a 4.7km-long, dual three-lane trunk road) and Kai Fuk Road footbridge construction.

Build King Civil Engineering Limited | NE/2017/08 - Cross Bay Link, Tseung Kwan O - Road D9 and Association Works | Hong Kong | 2020 - 2021 | Design Engineer (Temporary Works)

Christopher designed temporary ELS works for an elevated cycle track with a footpath ramp bridge 190m long, an elevated deck and U-trough structure connected to the at-grade road along with Road D9 240m long, and the construction of pile cap semi-enclosure noise barrier covering the Road D9 and main viaducts.

HyD MWPMO | CE 15/2017(HY) - Provision of Universal Accessibility at Footbridges, Elevated Walkways and Subways Package 4 - Investigation, Design and Construction | Hong Kong | 2020 - 2021 | Assistant Project Coordinator

Christopher conducted a design review of the lift tower/bridge deck structures design (including pile foundation and superstructure works), which were distributed at 30 locations in Kowloon and Hong Kong Island, and prepared deliverables to related government departments for comments. He was also responsible for project administration management with different government departments and district council members.

Hopewell Holdings Ltd. | Hopewell Centre II (Formerly Mega Tower Hotel) on I.L. 8715 Kennedy Road | Hong Kong | 2019 - 2020 | Senior Engineer

Christopher was responsible for coordinating and reviewing the foundation/ superstructure design, which was prepared by a structural consultant for the proposed hotel / commercial buildings with approximate 200m height, and associated works.

China State Construction Engineering (HK) Ltd. | 20170399 Foundation and Site Formation for Subsidized Sale Flats Development at Ma On Shan Road and Public Rental Housing Development at Hang Tai Road, Ma On Shan Area 86B Phase 1 | Hong Kong | 2018 - 2019 | ELS Design Engineer

Christopher was responsible for coordinating and reviewing the ELS design for pile caps construction for five building blocks (with a maximum excavation depth of about 7m), the pier/lift tower of the footbridge, commercial/recreation block, retail/welfare block and site formation works for construction of upper and lower haul roads which linking the site for foundation and superstructure works construction. He was also responsible for preparing the design submission to the Housing Department for approval.

CEC-CCC Joint Venture | KL/2014/01 Kai Tak Development - Stage 2 Infrastructure Works for Developments at the Southern Part of the Former Runway | Hong Kong | 2017 - 2018, Structural Design Engineer

Christopher was seconded to the Main Contractor to coordinate with the sub-consultants including architects, landscape architects, structural designers and MEP in conducting a review of the landscape deck structures design (including steel covered walkway and lift towers) and the associates RC staircase structure with foundation design.

Henryvicy Construction Company Ltd. | Proposed Temporary Light Rail Terminal (LRT) Platform, TSWTL23, Area 33 Tin Shui Wai, N.T. | Hong Kong | 2015 - 2016 | Structural Engineer

Design of temporary LRT platform and portal frame at Tin Shui Wai Light Rail Terminus. It is part of the Tin Wing Station located between Tin Yan Road and Tin Shin Road. Preparation of design drawings and calculation to Buildings Department for approval.

HyD MWPMO | CE 40/2013 - Provision of Barrier-free Access Facilities at Public Footbridges, Elevated Walkway and Subways Phase 3 (Package 6) - Design and Construction | Hong Kong | 2016 - 2019 | Project Engineer

Christopher conducted a design review of the lift tower/bridge deck structures design (including pile foundation and superstructure works), which was distributed at 16 locations in New Territories North, and prepared deliverables for circulation to related government departments for comments.

Chit Cheung Construction Co., Ltd. | KL/2011/01 Kai Tak Development | Hong Kong | 2013 - 2018 | Project Engineer

The project involved the reconstruction and upgrading of Kai Tak Nullah.

Christopher was responsible for conducting a design check of various kinds of temporary works for the construction of a multi-cell box culvert approximately 1.2km long (e.g., ELS, formwork and falsework, steel structure supporting underground utilities, etc.).

HyD | Contract No. 08/HY/2013 Highways Department Term Contract (Management and Maintenance of Roads in Kowloon East excluding High Speed Roads 2014-2018) | Hong Kong | 04/2014 – 11/2017 | Structural Inspection Engineer

As an Independent Inspection Consultant for Highways Department provided recommendations for defects and advised remedial works for existing highways structures during the inspection, and reviewed Term Contractor's submitted reports.

Christopher involved site inspection for all the existing highway structures by six-months interval (e.g. bridges, footbridges, noise barriers, nullah, covered walkway, Sign Gantries, etc); where the highways structures covered in Kowloon East. He also provided the recommendations/advised the remedial works to the Term Contractor.

Sun Fook Kong Construction Ltd. | GC18, Toy Story Land, 558 Toy Box Shop, Hong Kong Disneyland Theme Parks, Penny's Bay, Lantau Island, Chok Ko Wan | Hong Kong | 2012 - 2013 | Project Coordinator

Christopher was responsible for the design and site supervision for the spread footing and building structure works of the souvenir shop, and associates show sets footing around the open area near the shop. He was also responsible for coordinating with the designers for other disciplines (e.g. Civil drainage, MEP, etc.)

Kaden - VSL JV | HY/2009/05 Tseung Kwan O Further Development Design and Build of Infrastructure Works for Tseung Kwan O Stage 1 Landfill Site (Phase 1) (Design and Build) | Hong Kong | 2009 - 2012 | Design Engineer

Christopher was responsible for designing the approach ramps and middle span of the northern bridge with 10m width (4m for footpath and 6m for bicycle track) approximately 1km long, and carrying out site supervision for rebars fixing for bridge deck structure with contractors.

Chiu Hing Construction & Transportation Co., Ltd. | 11/HY/2007 Highways Department Term Contract | Hong Kong | 2009 - 2014 | Project Engineer

Christopher was responsible for the design of the inspection platform for the cable-stayed bridge tower and Cable Inspection Cradle of the Shenzhen Section of the Shenzhen Bay Bridge.

HyD | Contract No. 07/HY/2008 Highways Department Term Contract (Management and Maintenance of Roads in Kowloon East excluding High Speed Roads 2009-2014) | Hong Kong | 04/2009 – 03/2014 | Structural Inspection Engineer

As an Independent Inspection Consultant for Highways Department provided recommendations for defects and advised remedial works for existing highways structures during the inspection, and reviewed Term Contractor's submitted reports.

Christopher involved site inspection for all the existing highway structures by six-months interval (e.g. bridges, footbridges, noise barriers, nullah, covered walkway, Sign Gantries, etc); where the highways structures covered in Kowloon East. He also provided the recommendations/advised the remedial works to the Term Contractor.

MTR Corporation Ltd. | Stability Assessment Study of MTRC Slope for East Rail Line | Hong Kong | 2009 - 2010 | Design Engineer

Desk study the information and site inspection for the slope features; and prepare the assessment study report for MTRC submission.

Sun Fook Kong (Civil) Ltd. | Design of Footbridge Link Connecting Manhattan Hill, Mei Foo, Mei Foo Bus Terminus and Mei Foo Station | Hong Kong | 2009 | Project Engineer

Christopher was responsible for the design review of the structural, geotechnical and drainage design for the footbridge link. The overall length of the footbridge is about 360m, comprising eight individual structural steel trusses with spans varying from 30 to 50m. The design has to overcome constraints due to the proximity of MTRC tunnels, a 750mm diameter water main, underground utilities and traffic diversion.

Leader Civil Engineering Corporation Ltd. | HY/2007/08 Retrofitting of Noise Barriers on Tsing Tsuen Bridge at Tsing Yi and Tsuen Wan Approaches | Hong Kong | 2009 - 2010 | ICE Design Checker

Christopher was responsible for the design checking of the Bridge Bearing Replacement at the Existing Bridge for noise barrier construction.

Sun Fook Kong (Civil) Ltd. | HY/2007/07 Retrofitting of Noise Barriers on Tseung Kwan O Road | Hong Kong | 2009 - 2010 | Design Engineer

Christopher was responsible for the preparation of the cost-saving design for a noise barrier foundation by using mini-piles (pre-bored H-piles were adopted in the conforming design) for the total length of the noise barrier with 350m approximate.

Alga (Far East) Ltd. | HY/2008/01 Retrofitting of Noise Barriers at Kwun Tong Bypass | Hong Kong | 2009 - 2010 | ICE Design Checker

Christopher was responsible for the design checking of a bridge bearing replacement at the existing bridge for noise barrier construction.

HyD MWPMO | CE48/2007(HY) Retrofitting of Noise Barriers on Tai Po Tai Wo Road - Investigation, Design and Construction Assignment | Hong Kong | 2009 - 2012 | Project Engineer

Christopher was responsible for the design of the steel structure of the proposed noise barrier and its piling foundation design, and corresponding project administration works.

Platform-D Ltd | Proposed A&A Staircase at 26/F & Roof at Sunrise Court, No. 54 Tai Hang Road, | Hong Kong | 12/2008 - 10/2009 | Assistant Structural Engineer

Christopher responsible for design structural steel staircase between 26/F and R/F in the flat as well as the steel frame for supporting the tempered glass for staircase hood at R/F; and the site supervision for the A&A Works.

Link200 Joint Venture | Kowloon Southern Link, Contract KDB200 (Design & Build Project) | Hong Kong | 2007 - 2008 | Design Engineer

To liaise with the client (Main Contractor) and resolve the site difficulties in relating to the design issue. Responsible for designing the association works for the new station: a r.c. footbridge with a maximum span of 30m across the existing roads to connect between the existing footbridge and the station, and two subways connecting between the existing subway and the new station.

MTR Corporation Ltd. (formerly known as KCRC) | Improvement Works at KCRC Lo Wu Station (As a Lead Consultant & Structural Consultant) | Hong Kong | 2002 - 2004 | Design Engineer

To manage the site progress of works for the Main Contractor and assess the variation order (V.O.) from the Contractor. To coordinate with the parties in the consultant team (Architect, E&M, Q.S.) for the design issue, statutory requirement & submission, and report the status to the Client (KCRC).

Responsible for designing Link Deck and Concourse Extension with one storey height by using structural steel, a steel footbridge with covers connecting the proposed Concourse to the existing platform, steel platform extension and steel Awning at the existing platform.

Binnie Black and Veatch HK Ltd. | Improvement Works at KCRC Sheung Shui Station (for Lok Ma Chau Spur Line Association Works) | Hong Kong | 2005 - 2006 | Design Liaison Engineer

Responsible for the design of the r.c. structure for widening of the existing platform, Concourse extension with 2 stories (in-situ r.c. structures with precast elements) adjacent to the existing Concourse of station, Feeder station nearby the KCRC Fanling station, and civil drainage design for proposed bicycle park; and liaise with the designers for other disciplines (e.g. architectural, E&M, etc.)

Architectural Services Department | St. Paul Co-education at No.33 MacDonnell Road | Hong Kong | 2003 - 2005 | Design Engineer

Christopher was responsible for designing the structural frame for supporting the passenger lift, demolition of the existing RC staircase and designing a new steel staircase for fire escape purposes, checking the existing structural element (RC slab, beams and columns) and foundation.

Wu Sang House Management Office | A&A Works for Existing Commercial Building at No. 655 Nathan Road, Mongkok, Kowloon K.I.L. 1260sB | Hong Kong | 05/2000 – 08/2002 | Structural Design Engineer

Christopher responsible for design the steel frame to support the new passenger lift, demolish the existing r.c. staircase and then replace by new steel staircases for fire escapes propose, review/check the existing structural elements (r.c. slabs, beams and columns) and its foundation; and site supervision for the A&A works (including stone cladding works, structural steel works, etc)

Hutchison Whampoa Ltd | Proposed A&A Works for Retail Refit at Whampoa Garden Site 11 | Hong Kong | 09/1997 - 02/1999 | Assistant Structural Engineer

Christopher responsible for design structural steel works for covering the existing voids in the shopping arcade at B2/F, B1/F, G/F & 1/F; and structural steel frame for supporting the new glass canopies alongside the building boundary; as well as the site supervision for the A&A Works

Hutchison Whampoa Ltd | Proposed A&A Works for Whampoa Dockyard Redevelopment at Whampoa Garden Site 5 & 6, K.T.L. 10750 | Hong Kong | 01/1999 - 04/2000 | Assistant Structural Engineer

Christopher responsible for design structural steel works for covering the existing voids in the shopping arcade; and structural steel frame for supporting the new glass canopies alongside the building boundary; as well as the site supervision for the A&A Works.

Employment record

02/2022 - Present: Aurecon Hong Kong Limited - Associate, Civil Structures

03/2020 - 01/2022: WSP (Asia) Limited - Associate

06/2019 - 03/2020: HOPEC Engineering Design Limited - Senior Engineer

12/2008 - 06/2019: Manning's (Asia) Consultants Limited - Promoted to Engineer

08/2002 - 12/2008: Meinhardt (C&S) Limited - Promoted to Engineer II

05/2000 -08/2002: Paul Kong & Partners Limited - Structural Design Engineer

09/1997 - 04/2000: Ho & Lam Consulting Limited - Assistant Engineer

Languages

Cantonese mother tongue; fluent in English and intermediate in Mandarin.



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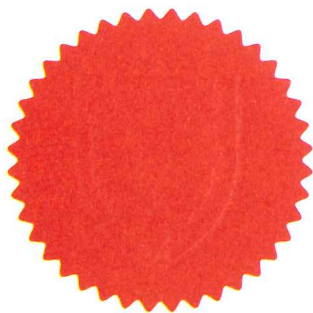
CHOW Nin Shing

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to use the style or title of*

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Registration No. 639676

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WAS ELECTED A

Member

OF THE INSTITUTION ON

1 December 2016

AND IS ENTITLED TO THE DESIGNATION

Chartered Structural Engineer

Alan Crossman

PRESIDENT

[Signature]

CHIEF EXECUTIVE



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The Institution of
StructuralEngineers

2023

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Mr N S Chow CEng MStructE
▶ Member
Member no: 021164319

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