

HONG KONG BAPTIST UNIVERSITY
ESTATES OFFICE
CONFINED SPACES WORK PROGRAM

1. PURPOSE

To establish procedures for the safe work in confined spaces at Hong Kong Baptist University and comply with the requirements in the Code of Practice for Safety and Health at Work in Confined Spaces ("The Code").

2. DEFINITIONS

2.1 Confined Space

"Confined Space" means any place in which, by virtue of its enclosed nature, there arises a reasonably foreseeable **specified risk**, and without limiting the generality of the foregoing, includes any chamber, tank, vat, pit, well, sewer, tunnel, pipe, flue, boiler, pressure receiver, hatch, caisson, shaft or silo in which such risk arises.

2.2 Specified Risk

"Specified Risk" means a risk of -

- a. Serious injury to any person at work arising from a fire or explosion;
- b. The loss of consciousness of any person at work arising from an increase in body temperature;
- c. The loss of consciousness or asphyxiation of any person at work arising from gas, fume, vapour or the lack of oxygen;
- d. The drowning of any person at work arising from an increase in the level of liquid;
or
- e. The asphyxiation of any person at work arising from a free flowing solid or the inability to reach a respirable environment due to entrapment by a free flowing solid.

2.3 Certified Worker

"Certified Worker" means a person -

- a. Who has attained the age of 18 years; and
- b. Who holds a certificate issued by a person whom the Commissioner for Labour has authorized to certify workers as being competent to work in a confined space.

2.4 Competent Person

"Competent Person" means a person -

- a. Who has attained the age of 18 years;
- b. Who is either -
 - i. A safety officer registered under the Factories and Industrial Undertakings (Safety Officers and Safety Supervisors) Regulations; or
 - ii. A person who holds a certificate issued by a person whom the Commissioner for Labour has authorized to certify persons as being competent to prepare risk assessment reports; and
- c. Who has at least one year's relevant experience, after obtaining the registration or certification referred to in paragraph (b) (i) or (ii), in assessing risk to the safety and health of workers working in confined spaces.

2.5 Standby Person

"Standby person" means when a certified worker works in the confined space, another person, namely the "standby person", shall be assigned in accordance with section 8(b) of the Confined Spaces Regulation to be stationed outside the confined space to maintain communication with the worker inside the confined space and be responsible for contacting the emergency rescue team when necessary.

2.6 Risk Assessment Report

"Risk assessment report" refers to a written report with the assessment and recommendations prepared by a competent person in accordance with section 5 of the Confined Spaces Regulation. The Code provides a template of the "Risk Assessment Form for Confined Spaces" in Appendix I that competent persons should make reference to in order to ensure that the risk assessment report complies with all the elements stipulated in the Regulation.

2.7 Permit-to-work Certificate

“Permit-to-work Certificate” refers to a certificate for entering a confined space issued by the proprietor or contractor responsible for the confined space work before a worker enters the confined space for the first time after receiving a risk assessment report completed by a competent person and verifying that the risk assessment report covers all the matters specified in section 5(2) of the Confined Spaces Regulation and all necessary safety precautions have been taken. The Code provides a template of “Permit-to-work Certificate” in Appendix II that the responsible proprietor or contractor should make reference to in order to ensure that the “Permit-to-work Certificate” complies with all the elements stipulated in the Regulation.

3. GENERAL REQUIREMENTS

3.1 All confined spaces shall be identified and labelled.

3.2 Entry into confined space is not allowed unless risk assessment is carried out by a competent person and adequate safety and health measures have been implemented.

3.3 Isolation

3.3.1 Before entering a confined space, make sure that all energy hazards (contact with mechanical equipment, electrical equipment, pneumatic equipment, hydraulic equipment, steam or other sources of heat), chemical hazards and any hazards identified in the risk assessment have been controlled or eliminated (Lockout / Tagout process) and properly labelled.

3.3.2 Confined space and location in the immediate vicinity of the confined space requires to remain fully be secured to ensure that the dangerous materials will not go into the confined space whilst the workers are working inside.

3.4 Purging and Air Testing

3.4.1 The confined space shall be adequately purged by a suitable method, such as steam cleaning, inert gas purging, forced ventilation, etc. to remove all the hazardous substances contained in the confined space.

- 3.4.2 Atmospheric testing of a confined space shall be carried out before and during the entry by using properly calibrated and approved equipment.
- 3.5 Ventilation
 - 3.5.1 Adequate supply of respirable air and effective forced ventilation shall be provided inside the confined space including the use of mechanical ventilation.
- 3.6 Sufficient illumination shall be provided.
- 3.7 Fire extinguisher, first aid kit and necessary rescue equipment shall be readily available at the site.
- 3.8 The competent person (or designated personnel) shall sign the Permit-to-work Certificate and retain a copy of the permit for reference.
- 3.9 The authorized Permit-to-work Certificate should be posted at the site to confirm that all preparedness have been completed.
- 3.10 Only certified workers are permitted to enter a confined space.
- 3.11 When work is being carried out in a confined space, another worker (standby person) should remain outside the confined space to monitor the entrant activities and conditions, and maintain communication with the workers inside.
- 3.12 Contractors shall comply all HKBU requirements of Confined Spaces Work Program.
- 3.13 The program should be reviewed periodically and if necessary. All identified confined spaces should be re-evaluated when the atmosphere, or the usage or configuration change, which may increase the hazard to entrants.

4. RISK ASSESSMENT REPORT

- 4.1 Competent person should be appointed to conduct a risk assessment (reference template in attachment 8.2) before allowing workers to enter a confined space. The assessment shall identify the hazards likely to be present in the confined space and recommend necessary precautions to be taken to ensure the safety and health of certified workers.
- 4.2 Risk assessment report should cover the following aspects,
- (a) the work method to be used and the plant and materials to be used in work activities;
 - (b) whether or not there is any hazardous gas, vapour, dust or fume present;
 - (c) whether or not there is any deficiency of oxygen in air;
 - (d) the possibility of ingress of hazardous gas, vapour, dust or fume;
 - (e) the possibility of sludge or other deposits being present that are liable to give off hazardous gas, vapour, dust or fume;
 - (f) the possibility of in-rush of free flowing solid or liquid;
 - (g) the possibility of fire or explosion in the confined space; and
 - (h) the possibility of loss of consciousness of a worker arising from an increase in body temperature.
 - (i) the recommendations on the measures required, including whether or not the use of approved breathing apparatus is necessary, having regard to the nature and duration of the work to be performed therein;
 - (j) the period during which workers may remain safely in the confined space.

5. PERMIT-TO-WORK CERTIFICATE

- 5.1 Worker's entry into a confined space for work shall be permitted only after the issue of a valid certificate ("Permit-to-work Certificate") (reference template in attachment 8.3) by the proprietor or contractor of the industrial undertaking within which the confined space work is carried out.
- 5.2 Permit-to-work certificate should cover the following aspects,
- (a) all necessary safety precautions in relation to the hazards identified in the risk assessment report have been taken;

(b) the period during which workers may remain safely in the confined space.

6. CONFINED SPACE WORKING PROCEDURES

- 6.1 Prepare the Permit-to-work Certificate.
- 6.2 Barricade the site with appropriate warning sign (maintain traffic control if the entry of the space is located on the road).
- 6.3 Initiate the appropriate lockout and tagout process if necessary.
- 6.4 Open the confined space and perform pre-entry atmospheric testing.
- 6.5 Set up hoisting equipment and non-entry rescue preparedness.
- 6.6 Ventilate and purge the space (if necessary).
- 6.7 Wear appropriate Personal Protective Equipment prior to entry.
- 6.8 Monitor the air quality inside the space throughout the entry.
- 6.9 Exercise sufficient supervision over confined space work, including recording videos (e.g. CCTV) at the entrance and exit of the confined space throughout the entire work period.
- 6.10 When worked for a specified timeframe or completed the work, ensure that all individuals who enter and stay or work inside a confined space have exited.
- 6.11 Close the confined space and clear the site.
- 6.12 Remove all barricade, resume all power, cancel lockout and tagout.
- 6.13 Cancel the permit-to-work certificate.

7. NON-ENTRY RESCUE

- 7.1 Never enter a confined space to perform rescue.
- 7.2 Ask for help or contact security to alert employees in case of emergency.
- 7.3 Verify that retrieving the employee will not cause additional injury to the person being rescued.
- 7.4 Have sufficient physical strength to be capable of pulling workers out of the confined space.
- 7.5 Retrieve injured employee using the rescue equipment (tripod and winch, etc.) when pulling the worker out of the confined space.
- 7.6 Provide First Aid / CPR if necessary.
- 7.7 Terminate the confined space work until the situation is identified safe.

8. Attachments

- 8.1 Hazards of Confined Spaces
- 8.2 Risk Assessment Form for Confined Spaces
- 8.3 Permit-to-work Certificate for Entry into Confined Space

Attachment 8.1: Hazards of Confined Spaces

8.1.1 Oxygen Hazards

High oxygen content in the air increases the potential for normally nonflammable materials (such as grease, oil or clothing) to catch fire at normal temperatures or when exposed to sparks or flames. Atmosphere containing too little oxygen results in adverse physical effects to workers.

Normal oxygen level in air is around 21%. According to the Code, oxygen content in air greater than 22% is classified as high oxygen level while below 19.5% is classified as low oxygen level.

The following are some physical effects of oxygen deficiency:

% Oxygen	Effects of Oxygen Deficiency
12 to 16 %	Deep breathing, accelerated heartbeat, impaired attention, impaired thinking, impaired coordination
10 to 14 %	Very faulty judgement, very poor coordination, rapid fatigue from exertion that may cause permanent heart damage, intermittent breathing
≥ 10 %	Nausea, vomiting, inability to perform vigorous movement or loss of all movement, unconsciousness followed by death
> 6 %	Spasmodic breathing, convulsive movement, death in minutes

8.1.2 Flammable Hazards

A flammable or explosive atmosphere contains gases, vapors or dusts in concentrations high enough to ignite or explode. Common flammable atmospheres include methane gas, solvent vapors from tank residues or combustible dusts such as grain dusts, flour or metallic paint pigments.

8.1.3 Toxic Hazards

Toxic atmospheres include gases, vapors or fumes that have poisonous effects. Some toxic atmospheres are immediately fatal (Immediately Dangerous to Life and Health). Other materials are less severe, causing dizziness or nausea. Common toxic hazards include hydrogen sulfide, sulfur dioxide, carbon monoxide and methane.

8.1.4 Engulfment

Engulfment is defined as a liquid or solid substance that traps the entrant. Death can occur due to inhaling the substance or by surrounding the entrant, thus causing strangulation, constriction or crushing.

8.1.5 Configuration

Configuration is the internal shape or size of the space. An entrant can be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross section.

8.1.6 Energy Hazards

Energy hazards are hazards that involve contact with electrical equipment, steam and other sources of heat inside the space. This type of equipment can include shafts, augers, mixers or impellers.

8.1.7 Other Hazards

Other hazards can include falls due to loose rungs on fixed ladders in manholes, slippery surfaces due to liquids in tanks or sloping floors, noise exposure due to sound reflected off of walls within the space, personal protective equipment that is used improperly or the specific type of work being performed.

Attachment 8.2: Risk Assessment Form for Confined Spaces

Risk Assessment Form for Confined Spaces 密閉空間危險評估表格

Location of work

工作場地：

Description of work

工作內容：

Main Contractor / Proprietor

總承建商/東主：

Subcontractor (if applicable)

分判商（如適用）：

Name of Competent Person

合資格人士姓名：

Certificate No

持有證件編號：

Validity Period

證件有效期限：

(Year)

年

(Month)

月

(Day)

日

Add a ✓ to appropriate boxes

請在適當的 □ 內加上 ✓

1.	Contents of Risk Assessment 危險評估內容
1.1	☐ This work falls under the provisions of section 3 of the Factories and Industrial Undertakings (Confined Spaces) Regulation, as it involves work performed within a confined space or in close proximity to a confined space, and is related to work conducted within a confined space. 本工作屬於《工廠及工業經營(密閉空間)規例》第3條所述的在密閉空間內或在緊接密閉空間的附近地方進行，並與在密閉空間內進行的工作有關連工作。 Work methods to be adopted in the confined space works¹ 本密閉空間工作中採用的工作方法¹： Plant to be used in the confined space works¹ 本密閉空間工作中採用的工業裝置¹： Materials to be used in the confined space works¹ 本密閉空間工作中採用的物料¹： (If the work does not involve any worker entering the confined space¹, the following measures shall be taken to ensure that no workers enter the confined space 若工作不涉及工人進入密閉空間內工作¹，須採取以下措施以確保工人不會進入密閉空間內： _____)

	Assessment Items 評估事項	Result(s) 評估結果	Safety Precautions Required 所需採取的安全預防措施
1.2	Is the confined space works an underground pipework as described in section 9(b) of the Factories and Industrial Undertakings (Confined Spaces) Regulation? 本密閉空間工作是否屬於《工廠及工業經營(密閉空間)規例》第 9(b) 條所述的 地底喉管 工作？	☐ Yes 是	☐ Ensure that any person entering or remaining in that particular confined space is properly (i) wearing a suitable approved breathing apparatus; and (ii) wearing a suitable safety harness connected to a lifeline. 須確保任何進入該密閉空間或在其內逗留的人已妥當地 (i) 配戴適當的認可呼吸器具；及 (ii) 配戴適當並與救生繩連接的安全吊帶。 ☐ Monitor the air in the confined space continuously until everyone has left the confined space. 須對密閉空間內的空氣作連續性的監測，直到所有人離開該密閉空間為止。
		☐ No 否 (Reasons provided as follows 須詳述原因如下： _____ _____ _____)	_____ _____ _____
1.3	Is there any hazardous gas, vapour, dust or fume, or deficiency of oxygen present in the confined space? 本密閉空間內是否有具 危害性 的氣體、蒸氣、塵埃或煙氣存在或有 貧氧 情況？	☐ Yes 是	☐ Ensure that any person entering or remaining in that particular confined space is properly (i) wearing a suitable approved breathing apparatus; and (ii) wearing a suitable safety harness connected to a lifeline. 須確保任何進入該密閉空間或在其內逗留的人已妥當地 (i) 配戴適當的認可呼吸器具；及 (ii) 配戴適當並與救生繩連接的安全吊帶。 ☐ Monitor the air in the confined space continuously until everyone has left the confined space. 須對密閉空間內的空氣作連續性的監測，直到所有人離開該密閉空間為止。
		☐ No 否 (Reasons provided as follows 須詳述原因如下： _____ _____ _____)	_____ _____ _____

	Assessment Items 評估事項	Consequence ² 後果嚴重性 ²	Likelihood ² 事故發生可能性 ²	Risk ² 危險評級 ²	Safety Precautions Required 所需採取的安全預防措施
1.4	Ingress of hazardous gas, vapour, dust or fume to the confined space 密閉空間內具危害性的氣體、蒸氣、塵埃或煙氣的進入	☐ Very Serious 非常嚴重 (3) ☐ Serious 嚴重 (2)	☐ Very likely 非常可能 (3) ☐ Possible 可能 (2) ☐ Unlikely 不太可能 (1)	☐ High risk 高危險性 (>=6) ☐ Moderate risk 中危險性 (3-4) ☐ Low risk 低危險性 (<=2)	
1.5	Are there any sludge or other deposits being present that are liable to give off hazardous gas, vapour, dust or fume in the confined space? 密閉空間內是否有可散發具危害性的氣體、蒸氣、塵埃或煙氣的淤泥或其他沉積物存在？			☐ High risk 高危險性 (>=6)	☐ Ensure that any person entering or remaining in that particular confined space is properly (i) wearing a suitable approved breathing apparatus; and (ii) wearing a suitable safety harness connected to a lifeline. 須確保任何進入該密閉空間或在其內逗留的人已妥當地 (i) 配戴適當的認可呼吸器具；及 (ii) 配戴適當並與救生繩連接的安全吊帶。 ☐ Monitor the air in the confined space continuously until everyone has left the confined space. 須對密閉空間內的空氣作連續性的監測，直到所有人離開該密閉空間為止。
	☐ Yes, sludge or other deposits are present in the confined space. 是，密閉空間內有淤泥或其他沉積物存在。 <i>Unless the sludge and other deposits are completely removed and purged, otherwise if there are sludge or other deposits present, it is generally very likely for the trapped or dissolved gases such as hydrogen sulphide to be released in confined space work, in particular drainage works.</i> 除非已確定在密閉空間內的淤泥及其他沉積物已完全被清除及清洗，否則密閉空間內若有淤泥或其他沉積物存在，一般是很可能在密閉空間工作，特別渠務工程過程中把積藏或已溶解的硫化氫等氣體釋放出來。	☐ Very Serious 非常嚴重 (3) ☐ Serious 嚴重 (2)	☐ Very likely 非常可能 (3) ☐ Possible 可能 (2) ☐ Unlikely 不太可能 (1)	☐ Moderate risk 中危險性 (3-4)	
	☐ No, sludge or other deposits are not present in the confined space. 否，密閉空間內並不存在淤泥或其他沉積物。	(Reasons provided as follows 須詳述原因如下：)			☐ Low risk 低危險性 (<=2)

	Assessment Items 評估事項	Consequence ² 後果嚴重性 ²	Likelihood ² 事故發生可能性 ²	Risk ² 危險評級 ²	Safety Precautions Required 所需採取的安全預防措施
1.6	<u>In-rush</u> into the confined space of free flowing solid or liquid 密閉空間內有自由流動的固體或液體的湧入	☐ Very Serious 非常嚴重 (3) ☐ Serious 嚴重 (2) ☐ Mild 輕微 (1)	☐ Very likely 非常可能 (3) ☐ Possible 可能 (2) ☐ Unlikely 不太可能 (1)	☐ High risk 高危險性 (>=6) ☐ Moderate risk 中危險性 (3-4) ☐ Low risk 低危險性 (<=2)	
1.7	<u>A fire or explosion</u> in the confined space 密閉空間內發生火警或爆炸	☐ Very Serious 非常嚴重 (3) ☐ Serious 嚴重 (2) ☐ Mild 輕微 (1)	☐ Very likely 非常可能 (3) ☐ Possible 可能 (2) ☐ Unlikely 不太可能 (1)	☐ High risk 高危險性 (>=6) ☐ Moderate risk 中危險性 (3-4) ☐ Low risk 低危險性 (<=2)	
1.8	The <u>ambient temperature</u> in the confined space that may lead to loss of consciousness of a certified worker arising from an increase in body temperature 密閉空間內存在可引致核准工人因體溫上升而喪失知覺的環境溫度	☐ Very Serious 非常嚴重 (3) ☐ Serious 嚴重 (2) ☐ Mild 輕微 (1)	☐ Very likely 非常可能 (3) ☐ Possible 可能 (2) ☐ Unlikely 不太可能 (1)	☐ High risk 高危險性 (>=6) ☐ Moderate risk 中危險性 (3-4) ☐ Low risk 低危險性 (<=2)	
1.9	<u>Change in the environment</u> leading to an increased risk of the above hazards during the course of the work in the confined space 在密閉空間內進行工作的過程中，出現環境改變增加上述危害的危險性	☐ Very Serious 非常嚴重 (3) ☐ Serious 嚴重 (2) ☐ Mild 輕微 (1)	☐ Very likely 非常可能 (3) ☐ Possible 可能 (2) ☐ Unlikely 不太可能 (1)	☐ High risk 高危險性 (>=6) ☐ Moderate risk 中危險性 (3-4) ☐ Low risk 低危險性 (<=2)	
1.10	<u>Risk of worker falling from height</u> during the course of the work in the confined space or its proximity 在密閉空間內或其附近進行工作的過程中，發生工人從 <u>高處墮下</u> 的危險性	☐ Very Serious 非常嚴重 (3) ☐ Serious 嚴重 (2) ☐ Mild 輕微 (1)	☐ Very likely 非常可能 (3) ☐ Possible 可能 (2) ☐ Unlikely 不太可能 (1)	☐ High risk 高危險性 (>=6) ☐ Moderate risk 中危險性 (3-4) ☐ Low risk 低危險性 (<=2)	

	Assessment Items 評估事項	Consequence ² 後果嚴重性 ²	Likelihood ² 事故發生可能性 ²	Risk ² 危險評級 ²	Safety Precautions Required 所需採取的安全預防措施
1.11	Others 其他 (please specify 請詳細列出： _____ _____))	☐ Very Serious 非常嚴重 (3) ☐ Serious 嚴重 (2) ☐ Mild 輕微 (1)	☐ Very likely 非常可能 (3) ☐ Possible 可能 (2) ☐ Unlikely 不太可能 (1)	☐ High risk 高危險性 (>=6) ☐ Moderate risk 中危險性 (3-4) ☐ Low risk 低危險性 (<=2)	
1.12	Others 其他 (please specify 請詳細列出： _____ _____))	☐ Very Serious 非常嚴重 (3) ☐ Serious 嚴重 (2) ☐ Mild 輕微 (1)	☐ Very likely 非常可能 (3) ☐ Possible 可能 (2) ☐ Unlikely 不太可能 (1)	☐ High risk 高危險性 (>=6) ☐ Moderate risk 中危險性 (3-4) ☐ Low risk 低危險性 (<=2)	
1.13	Period during which certified workers may remain safely in the confined space: _____ hour(s) 核准工人可在本密閉空間內安全地逗留的時限 _____ 小時				

¹ The Competent Person should obtain information of work methods, plant and materials to be used for the particular confined space works from the Main Contractor / Subcontractor / Proprietor in order to complete the risk assessment. The Main Contractor / Subcontractor / Proprietor shall ensure the risk assessment report is displayed in a conspicuous place at the entrance of the confined space.

合資格人士須向總承建商 / 分判商 / 東主索取在密閉空間工作中會採用的工作方法、工業裝置及物料的資料，以協助完成危險評估。總承建商 / 分判商 / 東主須確保危險評估報告展示在該密閉空間的入口的顯眼地方。

² Regarding the definitions of 'severity of consequences', 'likelihood of occurrence' and 'risk rating' please refer to the Risk Assessment Table in the final section of this assessment form.

有關「後果嚴重性」、「事故發生可能性」及「危險評級」等定義，可參考本評估表最後部分的危險評級表。

2.	Safety precautions must be taken when entering and working into the confined space 進入密閉空間內工作必須採取以下所有的安全預防措施 — Apart from the aforementioned safety precautions required with respect to the risk assessment, the proprietor or contractor must ensure that all the following safety precautions are taken before allowing certified workers to work in confined spaces: 除上述因應危險評估而須要採取的安全預防措施外，東主或承建商必須確保採取以下所有的安全預防措施才可以容許核准工人進入密閉空間內工作：
	☐ Every piece of mechanical equipment in the confined space, which is liable to cause danger, has been disconnected from its power source, with warning notice displayed and its power source locked out; 須確保在密閉空間內可造成危險的每項機械設備已被截斷電源，而其電源電掣亦已掛上警告告示及被鎖好；
	☐ Every pipe or supply line whose contents are liable to create a hazard has been properly blanked off; 須確保在密閉空間內有可造成具危害性的事物的內含物的每一喉管或供應管已妥為封閉；
	☐ The confined space has been tested to ensure the absence of any hazardous gas and no deficiency of oxygen; 須確保已對該密閉空間進行空氣測試以確保沒有任何具危害性的氣體存在以及並無空氣貧氧情況；
	☐ The confined space has been adequately purged and sufficiently cooled and ventilated, having regard to the circumstances of the particular confined space, to ensure that it is a safe workplace; 須確保在經顧及該密閉空間的情況後，該密閉空間已得到足夠的清洗以及充分的散熱和通風，是一個安全的工作場所；
	☐ An adequate supply of respirable air and an effective forced ventilation have been provided inside the confined space; 須確保已在該密閉空間內提供足夠的可供呼吸的空氣及有效的強制通風；
	☐ Effective steps have been taken to prevent - (i) an ingress to the confined space of hazardous gas, vapour, dust or fume; and (ii) an in-rush into the confined space of free flowing solid or liquid; 須確保已採取有效的步驟以防止 — (i) 具危害性的氣體、蒸氣、塵埃或煙氣進入該密閉空間；及 (ii) 自由流動的固體或液體湧入該密閉空間；
	☐ Before entering and working in the confined space, the following air testing of the confined space has been conducted with appropriate air monitoring equipment of explosion-proof design: 須在進入密閉空間內工作前，使用合適的空氣監測設備(防爆式設計)，對密閉空間內的空氣進行以下測試： ☐ Oxygen 氧氣 ☐ LEL 爆炸下限 ☐ Hydrogen sulphide 硫化氫 ☐ Carbon monoxide 一氧化碳 ☐ Others 其他：_____； ☐ Continuous air monitoring has to be conducted until everyone has left the confined space 並進行連續性的空氣監測，直到所有人離開該密閉空間為止；
	☐ Formulated appropriate emergency procedures to deal with any serious and imminent danger to workers inside the confined space, including the provision of a sufficient supply of the following items in a satisfactory condition (and keeping them readily available) 須已制訂適當的緊急程序，以處理密閉空間內可危及工人的任何嚴重和逼切的危險，及必須提供足夠而狀況令人滿意的以下器具（並須保持該等器具隨時可供取用）： (a) approved breathing apparatus; 認可呼吸器具； (b) suitable apparatus for reviving an unconscious worker; 使失去知覺的工人復甦的適當器具； (c) vessels containing oxygen or air; 貯存氧氣或空氣的容器； (d) safety harnesses and ropes; and 安全吊帶及繩索；及 (e) an audio and visual alarm by which the workers inside the confined space can alert those outside; 使密閉空間內的工人能向身在密閉空間外的人示警的聽覺與視覺警報器；

	☐ The emergency rescue team is composed of a sufficient number of trained personnel who are ready to carry out emergency procedures in case of accident. All members of the emergency rescue team have been properly and adequately trained in the related emergency rescue procedures, including the details of the emergency rescue plan and full knowledge on how to properly use all the rescue equipment; 須確保有充足數目並已受訓練的人員組成之緊急救援隊，應隨時準備就緒在意外發生時負責實施緊急程序。所有緊急救援隊員應已接受正確而合適之有關緊急救援程序的訓練，其訓練包括緊急救援計劃的詳細資料及如何正確操作該些救援裝備的所有知識； ☐ Instructions, training and advice are provided to all workers within a confined space or assisting with such work from immediately outside the confined space to ensure the safety and health of all workers, including posting up or displaying a clearly visible warning sign in a conspicuous place at the entrance to the confined space, indicating the specified hazards and safety precautions taken in the confined space; 須向所有在密閉空間內工作或在緊接密閉空間的外面協助進行該工作的工人，提供為確保在密閉空間內工作的所有工人的安全及健康而需要的指導、訓練及意見，包括在密閉空間入口當眼處張貼或展示清晰可見的警告告示，指出在密閉空間內存在的指明危險及所須採取的安全預防措施； ☐ All necessary equipment is provided to ensure the safety and health of workers in the confined space, including the provision of suitable air monitoring equipment of explosion-proof design for continuous air monitoring if necessary; 須提供一切所需設備以確保密閉空間內的工人的安全及健康，包括在有需要時提供合適的空氣監測設備(防爆式設計)作連續性的空氣監測； ☐ Only certified workers are allowed to enter or work in the confined space; 須確保只有核准工人才可進入密閉空間或在其內工作； ☐ At least one “Standby Person” is stationed outside the confined space to maintain communication with the workers inside the confined space; 須確保委派最少一名「候命人員」駐於該密閉空間外，以便可與密閉空間內的工人保持聯絡； ☐ The risk assessment report and the Permit-to-work Certificate shall be displayed in a conspicuous place at the entrance of the confined space; and 須在該密閉空間的入口的顯眼地方展示危險評估報告及許可工作證明書；及 ☐ The safety precautions listed above are effective continuously while the workers remain in the confined space. 當有工人仍逗留在密閉空間內，須確保上述的安全預防措施持續有效。 ☐ Other safety precautions 其他安全預防措施： _____
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I confirmed that I have at least one year of relevant experience, after obtaining registration as Safety Officer or the certificate as Competent Person, in assessing risk to the safety and health of workers working in confined spaces, and have been appointed by the above-mentioned Main Contractor / Subcontractor / Proprietor to be the competent person to carry out an assessment in the aforesaid confined space works in accordance with section 5(1) of the Factories and Industrial Undertakings (Confined Spaces) Regulation.

本人確認在取得安全主任註冊或合資格人士證書後，就對工人於密閉空間工作時的安全及健康作出危險評估方面有至少一年的相關經驗，並被上述 總承建商 / 分判商 / 東主根據《工廠及工業經營（密閉空間）規例》第 5(1) 條委任為合資格人士，對上述密閉空間工作進行危險評估。

I confirmed that, the true to the best of my knowledge and belief, the risk of the working condition in the confined space was assessed according to the requirements of section 5(6) of the Factories and Industrial Undertakings (Confined Spaces) Regulation, and recommendations of control measures were made under the section with respect to the safety and health of workers working in the confined space.

此外，本人確認上述評估報告內容是根據《工廠及工業經營（密閉空間）規例》第 5(6) 條的規定對上述密閉空間的工作環境進行評估，並根據該條規定就工人在該密閉空間內工作時的安全及健康方面的措施作出建議，是本人所知事實的全部。

Signature of the Competent Person conducted the above risk assessment

進行上述評估的合資格人士簽署：

Name

姓名：

Date and time

日期及時間：

Receipt of the risk assessment report

簽收危險評估報告

Recipient signature

簽收危險評估報告人士簽署：

Name

姓名：

Post

職位：

Date and time

日期及時間：

Risk Assessment Table
危險評級表

Likelihood 事故發生可能性 Consequence 後果嚴重性	Unlikely 不太可能 (1) (Rather remote, though conceivable 雖可想像到，但可能性極微)	Possible 可能 (2) (Event to be expected 預計有機會發生的事故)	Very likely 非常可能 (3) (Occurs repeatedly 重複發生的事故)
Very serious 非常嚴重 (3) Accident causing immediate danger to life or serious bodily injury (Example: gas poisoning, hypoxia, drowning) 意外引致即時生命危險或嚴重身體受傷害 (例如：氣體中毒、缺氧、遇溺)	(4) Moderate Risk 中危險性	(6) High Risk 高危險性	(6) High Risk 高危險性
Serious 嚴重 (2) Accident causing moderate bodily injury (Example: fracture, skin ulcer, etc.) 意外可導致身體受中等程度傷害 (例如：骨折、皮膚潰瘍等)	(1) Low Risk 低危險性	(4) Moderate Risk 中危險性	(6) High Risk 高危險性
Mild 輕微 (1) Accident resulting in mild bodily injury (Example: eye irritation from dust, cough) 意外引致身體輕微傷害 (例如：塵埃引致眼睛刺痛、咳嗽等)	(1) Low Risk 低危險性	(1) Low Risk 低危險性	(4) Moderate Risk 中危險性

	High Risk	高危險性
	Moderate Risk	中危險性
	Low Risk	低危險性

Attachment 8.3: Permit-to-work Certificate for Entry into Confined Space

“Permit-to-work Certificate” for Entry into Confined Space 進入密閉空間「許可工作證明書」

Location of work

工作場地：

Description of work

工作內容：

Main Contractor / Proprietor

總承建商 / 東主：

Name of the Competent Person appointed

被委任合資格人士姓名：

Date and time of risk assessment

危險評估報告日期及時間：

Date & time for entry to the confined space

可進入密閉空間的日期及時間：

_____ (Year) 年 _____ (Month) 月 _____ (Day) 日

(A.M. 上午 / P.M. 下午)* _____ (hh : mm / 時 : 分)

This permit-to-work certificate is valid until

此「許可工作證明書」有效期限至：

_____ (Year) 年 _____ (Month) 月 _____ (Day) 日

(A.M. 上午 / P.M. 下午)* _____ (hh : mm / 時 : 分)

* Please delete if not applicable

請將不適用刪去

Workers 工作人員				
Certified Worker 核准工人				
	Maximum duration that certified workers are allowed to stay in the confined space: _____ (Hours) 核准工人進入密閉空間內最長可逗留時間：_____小時			
	Name 姓名	Reference No. of Certificate 持有證件編號	Validity Period 證件有效期限	Signature 工人簽署

Standby Person 候命人員				
	Name 姓名	Date of training 接受訓練日期	Responsibility 責任	Signature 工人簽署
			✓ Maintain communication with the workers inside the confined space, and call for support in case of emergency 與密閉空間內的工人保持聯絡，及在緊急情況下召喚協助；	
			✓ Brief the rescue personnel of the relevant circumstances of the incident upon their arrival in case of emergency 發生緊急事故時，須向到達的救援人員匯報該次事故的有關詳情；	
			✓ Even in case of emergency, the standby person should not enter the confined space 儘管發生緊急事故，候命人員亦不應進入該密閉空間。	
Onsite Rescue Personnel 在場的救援人員				
	Name 姓名	Date received training for rescue in emergency 接受緊急救援訓練日期	Responsibility 責任	Signature 工人簽署
			✓ Familiar with the details of the emergency rescue plan 已熟知緊急救援計劃的詳細資料；	
			✓ Know how to properly operate all rescue equipment provided 已熟知如何正確操作所有提供的救援裝備。	

Underground Pipework 地底喉管工作	
☐ This confined space work is underground pipework as described in section 9(b) of the Factories and Industrial Undertakings (Confined Spaces) Regulation, and therefore contractor / proprietor has to 本密閉空間工作是屬於《工廠及工業經營(密閉空間)規例》第9(b)條所述的 地底喉管工作 ，因此承建商 / 東主必須	☐ Ensure that any person entering or remaining in that particular confined space is properly 確保任何進入該密閉空間或在其內逗留的人已妥當地： (i) wearing a suitable approved breathing apparatus; and 配戴適當的認可呼吸器具；及 (ii) wearing a suitable safety harness connected to a lifeline. 配戴適當並與救生繩連接的安全吊帶； ☐ Use appropriate air monitoring equipment of explosion-proof design to monitor the air in the confined space continuously until everyone has left the confined space; and 使用合適的空氣監測設備(須為防爆式設計)，對密閉空間內的空氣作連續性的監測，直到所有人離開該密閉空間為止；及
☐ This confined space work is NOT underground pipework as described in section 9(b) of the Factories and Industrial Undertakings (Confined Spaces) Regulation with the reason(s) stated as follows: 本密閉空間工作 並非 屬於《工廠及工業經營(密閉空間)規例》第9(b)條所述的 地底喉管工作 ，原因如下：	
Remarks : Must choose one out of the two options above 註：上述選擇必須二選一	

Isolation Measures 隔離措施		
	Signature 簽署	Date & time 日期及時間
☐ Normal services in the confined space have been suspended 在密閉空間內日常運作已經停止		
☐ All unnecessary sources of power have been isolated 已隔離所有非必要的動力來源 (Electrical 電力 / Mechanical 機械 / Pneumatic 氣動 / Hydraulic 液壓 / Others 其他: _____)		
☐ All pipelines connected to the confined space have been completely shut off or blanked off 已完全地關閉或妥為封閉所有連接密閉空間的喉管		
☐ The ends of all service pipes connected to hazardous gas sources have been sealed 已密封所有連接著危害性氣體來源的供應喉管末端		
☐ Non-essential heat sources have been isolated 已隔離非必要的熱源		
☐ Other sources of danger have been isolated 已隔離其他有危險性的來源 (please specify 請列出 _____)		
☐ All isolated or closed connections have been locked off and properly labelled to prevent from being opened without authorisation or accidentally 已將隔離 / 封閉位置鎖上及加上標籤，以防止未經許可的或意外的開啟		

Purging and Ventilation Control Measures 清洗及通風控制措施		
	Signature 簽署	Date & time 日期及時間
☐ The confined space has been purged/cleaned adequately 已就密閉空間進行足夠的清洗 (Method 方法: _____)		
☐ All hazardous substances stored inside the confined space have been removed. 已清除所有存於密閉空間內的危害性物質		
☐ Adequate respirable air and effective forced ventilation have been provided. 已提供足夠的可供呼吸的空氣及有效的強制通風		

Air Testing Results 空氣測試	
Testing Date 測試日期：	_____ YYYY 年 _____ MM 月 _____ DD 日
Model of air monitoring equipment 空氣監測設備型號：	_____
Serial number of air monitoring equipment 空氣監測設備序列號：	_____
Calibration Expiry Date 空氣監測設備校準有效期至：	_____ YYYY 年 _____ MM 月 _____ DD 日
Testing Location 測試位置：	_____
Testing Time 測試時間：	(A.M. 上午 / P.M. 下午)* _____ (hh : mm / 時 : 分)
Testing Result 測試結果：	☐ O ₂ 氧氣：_____ % ☐ LEL (Percentage) 爆炸下限 (百分比)：_____ % ☐ H ₂ S 硫化氫：_____ ppm ☐ CO 一氧化碳：_____ ppm ☐ _____
Testing Location 測試位置：	_____
Testing Time 測試時間：	(A.M. 上午 / P.M. 下午)* _____ (hh : mm / 時 : 分)
Testing Result 測試結果：	☐ O ₂ 氧氣：_____ % ☐ LEL (Percentage) 爆炸下限 (百分比)：_____ % ☐ H ₂ S 硫化氫：_____ ppm ☐ CO 一氧化碳：_____ ppm ☐ _____
Testing Location 測試位置：	_____
Testing Time 測試時間：	(A.M. 上午 / P.M. 下午)* _____ (hh : mm / 時 : 分)
Testing Result 測試結果：	☐ O ₂ 氧氣：_____ % ☐ LEL (Percentage) 爆炸下限 (百分比)：_____ % ☐ H ₂ S 硫化氫：_____ ppm ☐ CO 一氧化碳：_____ ppm ☐ _____
☐ After the air testing, I confirm that there is no hazardous gas and no oxygen-deficient situation in this confined space 經上述空氣測試，本人確定本密閉空間沒有任何具危害性的氣體存在以及並無空氣貧氧情況。	
Name of responsible person for conducting the air testing 空氣測試負責人姓名：_____	
Signature of responsible person 負責人簽署：_____	

Safety Precautions for Entry into the Confined Space 進入密閉空間所需的安全預防措施

- ☐ Every piece of mechanical equipment in the confined space, which is liable to cause danger, has been disconnected from its power source, with warning notice displayed and its power source locked out;
在該密閉空間內可造成危險的每項機械設備已被截斷電源，而其電源電掣亦已掛上警告告示及被鎖好
- ☐ Every pipe or supply line whose contents are liable to create a hazard has been properly blanked off
在該密閉空間內有可造成具危害性的事物的內含物的每一喉管或供應管已妥為封閉；
- ☐ The confined space has been tested to ensure the absence of any hazardous gas and no deficiency of oxygen;
已對該密閉空間進行空氣測試以確保沒有任何具危害性的氣體存在以及並無空氣貧氧情況；
- ☐ The confined space has been adequately purged and sufficiently cooled and ventilated, having regard to the circumstances of the particular confined space, to ensure that it is a safe workplace;
經顧及該密閉空間的情況後，該密閉空間已得到足夠的清洗以及充分的散熱和通風，以確保該密閉空間是一個安全的工作場所；
- ☐ An adequate supply of respirable air and an effective forced ventilation have been provided inside the confined space;
已在該密閉空間內提供足夠的可供呼吸的空氣及有效的強制通風；
- ☐ Effective steps have been taken to prevent - (i) an ingress to the confined space of hazardous gas, vapour, dust or fume; and (ii) an in-rush into the confined space of free flowing solid or liquid;
已採取有效的步驟以防止 — (i) 具危害性的氣體、蒸氣、塵埃或煙氣進入該密閉空間；及 (ii) 自由流動的固體或液體湧入該密閉空間；
- ☐ Formulated appropriate emergency procedures to deal with any serious and imminent danger to workers inside the confined space, including the provision of a sufficient supply of the following items in a satisfactory condition (and keeping them readily available):
已制訂適當的緊急程序，以處理密閉空間內可危及工人的任何嚴重和逼切的危險，包括提供足夠而狀況令人滿意的以下器具(並須保持該等器具隨時可供取用)：
 - (a) approved breathing apparatus;
認可呼吸器具；
 - (b) suitable apparatus for reviving an unconscious worker;
使失去知覺的工人復甦的適當器具；
 - (c) vessels containing oxygen or air;
貯存氧氣或空氣的容器；
 - (d) safety harnesses and ropes; and
安全吊帶及繩索；及
 - (e) an audio and visual alarm by which the workers inside the confined space can alert those outside;
使密閉空間內的工人能向身在密閉空間外的人示警的聽覺與視覺警報器；
- ☐ The emergency rescue team is composed of a sufficient number of trained personnel who are ready to carry out emergency procedures in case of accident. All members of the emergency rescue team have been properly and adequately trained in the related emergency rescue procedures, including the details of the emergency rescue plan and full knowledge on how to properly use all the rescue equipment;
已確保有充足數目並已受訓練的人員組成之緊急救援隊，並隨時準備就緒在意外發生時負責實施緊急程序。所有緊急救援隊員亦已接受正確而合適之有關緊急救援程序的訓練，其訓練包括緊急救援計劃的詳細資料及如何正確操作該些救援裝備的所有知識；
- ☐ Instructions, training and advice are provided to all workers within a confined space or assisting with such work from immediately outside the confined space to ensure the safety and health of all workers, including posting up or displaying a clearly visible warning sign in a conspicuous place at the entrance to the confined space, indicating the specified hazards and safety precautions taken in the confined space;
已向所有在密閉空間內工作或在緊接密閉空間的外面協助進行該工作的工人，提供為確保在密閉空間內工作的所有工人的安全及健康而需要的指導、訓練及意見，包括在密閉空間入口的當眼處張貼或展示清晰可見的警告告示，指出在密閉空間內存在的指明危險及所須採取的安全預防措施；
- ☐ All necessary equipment is provided to ensure the safety and health of workers in the confined space, including the provision of suitable air monitoring equipment of explosion proof design for continuous air monitoring if necessary;
已提供一切所需設備以確保密閉空間內的工人的安全及健康，包括在有需要時提供合適的空氣監測設備 (須為防爆式設計) 作連續性的空氣監測；

- ☐ Only certified worker is allowed to enter or work in the confined space;
已確保只有核准工人才可進入密閉空間或在其內工作；
- ☐ At least one “Standby Person” is stationed outside the confined space to maintain communication with the workers inside the confined space;
已委派最少一名「候命人員」駐於該密閉空間外，以便可與密閉空間內的工人保持聯絡；
- ☐ The risk assessment report and this permit-to-work certificate should be displayed in a conspicuous place at the entrance of the confined space;
已在該密閉空間的入口的顯眼地方展示危險評估報告及此許可工作證明書；
- ☐ The safety precautions listed above are effective continuously while the workers remain in the confined space;
當有工人仍逗留在密閉空間內，須確保上述的安全預防措施持續有效；
- ☐ Video recording at the entrance and exit of the confined space throughout the entire work period is arranged to monitor that relevant personnel have complied with the safety precautions.
已安排在整段工作期間於密閉空間的出入口拍攝視頻，以監督相關人員已遵從安全預防措施。

Emergency Rescue Equipment Provided 已提供的緊急救援器具

- ☐ Approved breathing apparatus 認可呼吸器具：_____ set 套
- ☐ Apparatus for reviving an unconscious worker 使失去知覺的工人復甦的適當器具：_____ set 套
- ☐ Vessels containing oxygen or air 貯存氧氣或空氣的容器：_____ set 套
- ☐ Safety harnesses and ropes 安全吊帶及繩索：_____ set 套
- ☐ Audio and visual alarm by which the workers inside the confined space can alert those outside
使密閉空間內的工人能向身在密閉空間外的人示警的聽覺與視覺警報器：_____ set 套
- ☐ Other relevant emergency rescue equipment, including 其他相關緊急救援設備，包括：
 - ☐ Tripods and winches 三腳架及絞車；
 - ☐ _____
- ☐ I confirm that the above emergency rescue equipment is sufficient with satisfactory condition and are readily available
已確認上述緊急救援器具數目足夠而狀況令人滿意，並且隨時可供取用。

List of Protective Equipment Provided 已提供的防護設備清單

General 一般設備

- ☐ Forced ventilation device 強制通風設備：_____ set 套
- ☐ Continuous air monitoring equipment 連續性的空氣監測設備：_____ set 套
- ☐ Walkie-talkie (explosion-proof design) 對講機 (防爆式設計)：_____ set 套
- ☐ Shield 防護屏障：_____ set 套
- ☐ Lighting device 照明設備：_____ set 套
- ☐ Others (Please specify) 其他 (請列出)：_____

Personal Protective Equipment 個人防護設備

- ☐ Approved breathing apparatus 認可呼吸器具：_____ set 套 (excluding for emergency use 不包括供緊急用途)
- ☐ Audio and visual alarm 聽覺與視覺警報器：_____ set 套
- ☐ Protective clothing 防護衣物：_____ piece 件
- ☐ Head, Hand & Foot Protection 頭、手、腳部防護：_____ piece 件
- ☐ Life Lines & Harness 救生繩及吊帶：_____ set 套
- ☐ Eye Protection 眼睛保護：_____ set 套
- ☐ Ear Protection 聽覺保護：_____ set 套
- ☐ Others (Please specify) 其他 (請列出)：_____

Declaration by the Proprietor/Contractor or Authorised Representative 東主 / 承建商或其授權代表聲明

Permit-to-work Certificate 許可工作證明書

I am the proprietor / contractor / authorised representative* of the confined space work mentioned above. I confirm that the risk assessment report by the competent person mentioned above covers all matters stated in section 5(2) of the Factories and Industrial Undertakings (Confined Spaces) Regulation, and I certify that all necessary safety precautions in accordance with the risk assessment report have been taken, and I hereby, issue this Permit-to-work Certificate. 本人是上述密閉空間工程的東主／承建商／其授權代表*，確認已核實上述資格人士的危險評估報告涵蓋《工廠及工業經營(密閉空間)規例》第5(2)條所提述的所有事項；並採取所有需要的安全預防措施，並就此發出本許可工作證明書。

This permit-to-work certificate is valid until (Date & Time) 此許可工作證明書的有效日期和時間至：

(Date 日期) _____ (Year) 年 _____ (Month) 月 _____ (Day) 日

(Time 時間) (A.M. 上午 / P.M. 下午)* _____ (hh : mm / 時 : 分)

Signature 簽署：_____

Name 姓名：_____

Post 職位：_____

Date & time 日期及時間：_____

*Please delete if not applicable 請將不適用刪去

Receipt of Permit-to-work Certificate 簽收許可工作證明書

(To be filled by the supervisor or person in-charge of the work 由監工或該工作之負責人填寫)

I have read and understood the content of the Permit-to work Certificate, and shall undertake to work in accordance with all the conditions laid down in this certificate. 本人已閱讀及明白此工作證內容並須根據許可工作證內指示工作。

Signature 簽署：_____

Name 姓名：_____

Post 職位：_____

Date & time 日期及時間：_____

Proof of Completion 完工證明書

(To be filled by the supervisor or person in-charge of the work 由監工或該工作之負責人填寫)

I confirm that the confined space work mentioned above has been completed and that all assigned persons, materials and equipment have been withdrawn from the site, the personnel have been warned that the confined space is no longer safe for entry and I hereby sign to confirm. 本人確認上述密閉空間工作已經完成，所有被指派人士、物料和設備已搬離現場，並已警告所有人士該密閉空間已不可以安全進入，就此簽署確認。

Signature 簽署：_____

Name 姓名：_____

Post 職位：_____

Date & time 日期及時間：_____

Cancellation of Permit-to-work Certificate 註銷許可工作證明書

(To be filled by the supervisor or person in-charge of the work 由監工或該工作之負責人填寫)

I am the proprietor / contractor / authorised representative* of the confined space work mentioned above. I hereby sign to confirm the cancellation of this Permit-to-work Certificate. I understand that a new permit-to-work certificate will be required if work is to be continued. 本人是上述密閉空間工程的東主／承建商／其授權代表*，現簽署確認註銷是次許可工作證明書。本人明白如要繼續工作，須重新簽發許可工作證明書。

Signature 簽署：_____

Name 姓名：_____

Post 職位：_____

Date & time 日期及時間：_____