

**Requirements on
Safe Working Practices for
Works Contractors
Undertaking Construction and
Renovation Activities
on the University of Macau Campus**

(January 2011 version)

B.2. 附件

**承建商在澳門大學校園範圍施工
之安全作業方式**

(2011 年 1 月版)

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承建商在澳門大學校園範圍施工之安全作業方式

1. Introduction & Responsibilities

Construction work, including renovation work, in the University of Macau (hereafter abbreviated UM) can create risks for workers engaged in the work and for the users of the UM campus including staff, students and visitors. The purpose of this document is to set forth the safe working practices required of contractors in safeguarding the above personnel from potential hazards associated with their work.

The contractor must also comply with all applicable safety legislation and take all reasonably practicable steps to prevent hazards or ill health effects caused by other aspects of the work not covered by this document.

The contractor or his/her site representatives must act promptly on all health and safety instructions issued by the supervising officers of UM (i.e. responsible persons with appropriate sections of the Campus Management Office including Security Centre, and the Office of Health, Safety and Environmental Affairs).

The contents of this set of safe working practices cannot contain every safety, health and environmental aspect which may arise out of the contractors' operations. The contractor must refer to the current health, safety and environmental legislation and other requirements stipulated in the Conditions of Contract, Specifications etc. that he has entered into with UM.

Compliance with this set of safe working practices also will not relieve the contractor of responsibilities to his employees and other third parties who may be affected by the acts or omissions of himself or his workers/subcontractors.

The contractor should note that the requirements stipulated hereunder are only the minimum and does not preclude UM from requiring him to take any additional health, safety and environmental measures deemed necessary from time to time.

引言及責任

澳門大學(簡稱澳大)校園內的建築工程及建設工作，會對其施工人員及澳大職員、學生或訪客等使用校園之人仕構成一定的風險。本章則的目的是透過保障受影響之上述人仕，從而規管承建商的施工作業安全。

承建商必須遵守所有合適的安全法規，並採取一切合理而又可行的方法，預防本規章中未曾提及過的危害或會造成不良健康後果之其他情況。

承建商或其駐場代表，應確實執行由澳大之監管人員所制定之健康及安全指引。(如校園管理部內相應的負責人，包括保安中心，和安健及環境事務辦公室人員)。

本章則不能包含所有針對承建商工程中的安全，健康及環保要求。承建商必須參考現行安全，健康及環保法規及合約條款。

符合本章則之要求並不代表承建商可免去因其本身或其工人或分包商的行為或疏忽而帶來對其員工，分包商員工或第三者之責任。

承建商須注意本章則之要求為最低限度的要求。有需要時，澳大隨時有權對承建商作額外之要求加強安全，健康及環保措施。

2. Contractor's Organization for Safety

2.1 Liaison on site

- The contractor must appoint a senior member of his site staff to act as a liaison officer. He / she should maintain day to day communications in respect of the work with the supervising officers of UM.
- The contractor's liaison officer is also responsible for contact and coordination with their subcontractors. The liaison officer should ensure that their subcontractors are fully aware of the safety requirements. The liaison officer is responsible for ensuring that the subcontractor's work meets these requirements.
- The contractor's liaison officer or supervisor should notify appropriate supervising officers of UM before any of their employees begin new work or restart work in parts of the buildings or grounds outside the perimeter fence of the works, and of any work inside the perimeter fence which may affect the premises occupants.

2.2 Site supervision

The contractor must provide full and adequate site supervision during the work periods and have a competent and authorized agent or general foreman available at all times. Such authorized agent should be able to receive and act promptly, on behalf of the contractor, on all health and safety instructions issued by the supervising officers of UM or any other authorized officers, such as officers from the Labour Affairs Bureau.

2.3 Site Safety Supervisor

Where the number of direct and subcontractor workers at any time exceed 100 in number, the contractor is required to provide a safety supervisor holding a valid Safety Supervisor Certificate issued by DSAL (Labour Affairs Bureau). The contractor shall submit a copy of the valid certificate for the approval of the UM Office of Health, Safety and Environmental Affairs before commencement of work. Safety Supervisors are required to carry out daily inspections and prepare monthly safety reports for submission to the UM Office of Health, Safety and Environmental Affairs. The contractor shall bear the liabilities with his responsibilities with respect to

承建商的安全組織

駐場之聯絡人

- 承建商須安排一位有經驗的駐場人員作為其聯絡人。他/她應保持與澳大之監管人員的日常聯繫工作。
- 承建商所委派的聯絡人，需負責聯繫並協調其核下之分包商，使他們能充分的意識到安全要求，並確保其工程表現能達到這些要求。
- 當工人於某建築物內展開新的工程作業或重新啟動任何在校園範圍內/外對樓宇用戶帶來影響的工程時，承建商所委派之聯絡人或主管，應立即向澳大相應之監管人員報告。

駐場監督

在施工時，承建商必須實行全面及足夠的實地監督。同時要安排具資格並獲授權之代理人或工頭在場。而獲授權之代理人，應代表其承建商迅速採取所有由澳大之監管人員或其他獲授權人員(如勞工局之監督員)所發出的健康及安全指引。

駐工地安全督導員

於澳大工地僱用超過 100 人之承建商須提交一名持有勞工局發出之安全督導員證書副本，經澳大安健及環境事務辦公室核實，成功獲得工程之承建商須聘用合上述資格之安全督導員長駐工地。該安全督導員須每日巡查工地，確保安全，健康及環保措施仍然有效，及每月向澳大安健及環境事務辦公室提交安全報告。承包商必須對法規，合約條文及規格內之安全，健康，環保項目付最終責任。

health, safety and environmental protection as specified in statutory requirements, Conditions of Contract or Specifications.

The contractor shall rectify any non-conformance as recommended by the supervising officers of UM or any other authorized officers, such as officers from the Labour Affairs Bureau. If any immediate danger is brought about by the operation or condition of the site activity, stop work may be required until safety measures have been introduced within a reasonable period of time. In case of blatant ignorance of safety advices or repeated non-compliance with safety procedures, warning letters will be issued and the contract possibly terminated without compensation. Notwithstanding this, the contractor shall bear the loss suffered by UM including delay of works if it is due to the Contractor's negligence in observing health, safety and environmental protection requirements resulting in work stoppage, termination of contract or execution of safety compliance works by others.

2.4 Workers

The contractor workers and subcontractors shall observe strict disciplinary measures, including no smoking, no foul language, be properly dressed, taking care in protecting UM property.

3 Health and Safety Training

3.1 The contractor shall provide proper health and safety training to the workmen by their safety supervisor before commencement of work and keep them informed of the health, safety and environmental protection practices at work at regular interval such as tool box talk. The UM supervising officers are empowered to order the removal of any offending workman from the campus area and the contractor cannot claim any reimbursement for damages as a result of such removal.

3.2 Workers carrying out specific tasks or engaged in particularly hazardous operations are required to receive training specific to their tasks and operations, i.e. work in confined spaces, welding, scaffolding works, lifting operations, electrical works, use of cartridge-operated fixing tools, etc.

承建商必須更正任何由澳大之監管人員或其他獲授權人員(如勞工局之監督員)所發出的健康，安全及環保違規通知。倘若工序或情況引致即時危險，該等監管人員或其他獲授權人員有權於一段合理時段內停止該工序，直至情況獲得改善為止。若承建商仍妄顧安全，不作改善安全情況或屢犯安全規章之情序，澳大有權立刻終止與承建商之合約，由其他承建商或澳大員工代為實施該等安全措施。而承建商須為疏忽安全，健康或環保要求而因停工，終至合約或須由他人實施該等安全措施而導致工程延誤及引致澳大的其他損失負責。

工人

承建商之工人必須遵守校園一般紀律，包括不可吸煙，不得粗言穢語，衣著整齊及小心不可損毀澳大財物。

健康及安全培訓

開工前，承建商之安全督導員必須為其工人提供健康及安全培訓，及定期於工具箱講座向工人繼續灌輸健康，安全及環保作業知識。工人若在工地被發現違反健康，安全或環保守則，澳大之監管人員有權將該工人逐離校園，承建商不得因此向澳大要求任何形式的補償或賠償。

進行例如密閉空間工作，燒焊，棚架工作，吊運工作，帶電工作，使用石屎槍等特別或危險工序之工人，必須先接受相關之培訓。

4. Procedures in Handling, including Notification of, Fire, Accident or Other Emergencies

4.1 The contractor shall immediately report any fire accident or other emergencies to the UM supervising department.

4.2 The contractor shall provide suitable precautionary measures to protect his workers and the affected public in adverse weather conditions including typhoon and heavy rainstorm by:

4.2.1 informing his workers to stop normal work when typhoon signal or heavy rainstorm warning has been or is about to be hoisted

4.2.2 securing and fastening the works, scaffolding and any other loose items

4.2.3 inspecting the worksite and reporting to the UM supervising department damages after the typhoon signal / heavy rainstorm warning has been lowered.

5. Risk Assessment and Safety Plan

Depending on the nature and complexity of the works, the contractor is required to perform an appropriate risk assessment for their works and submit a Safety Plan to the Office of Health, Safety and Environmental Affairs of UM, which includes a description of the plant, machinery and dangerous substances to be used, the work processes, the associated risks involved and the corresponding precautionary measures that will be taken.

6. Segregation of Work Areas

6.1 For work in areas wholly handed over to contractors

- Parts of the premises not occupied or required for public access should be adequately fenced off to prevent access by unauthorized persons.
- Details of the fencing and protection should be agreed by UM beforehand. Unless otherwise agreed, the fencing must be erected before the works begin. Necessary safety measures must be in place when the fencing is being erected, including safeguards for occupants and pedestrians

處理及呈報火警，意外或其他緊急狀況

承建商須立即向澳大監管部門人員呈報火警，意外或其他緊急狀況。

承建商需於包括颱風訊號及暴雨警告等惡劣天氣環境時採取以下適當防護措施，以保障其工人及受影響之公眾人士：

- 於颱風訊號或暴雨警告懸掛前或懸掛時通知其工人停工。
- 將棚架及其他鬆散之物料綁緊。
- 於颱風或暴雨後檢視工地，向澳大監管部門報告任何損毀狀況。

風險評估及安全計劃

根據工程的不同性質及複雜性，承建商需要為其工程進行適當的風險評估，並向澳大之安健及環境事務辦公室提交其安全計劃書，當中包括工程將會使用之機械，危險物料，作業工序與其相關的危害及將會採取之相應預防措施。

與工地分隔

由承建商全面接管的工地

- 應適當圍起那些空置或部分供公眾使用的地方，以防止未經授權的人士進出。
- 安裝圍板及保護物的詳情，應事先得澳大的許可。除特別協議外，應在工程啟動前先將圍板建造好。而在建造的過程中應備有所需的安全措施，如行人及用戶的保護措施也應包括在內。

- The contractor must provide lockable entrance gates and ensure that they are securely locked after working hours or when the site is unattended. Appropriate arrangements should be made with the UM Security Control Centre for after-hours access to the site in the event of an emergency.
- Appropriate warning signs and notices on specific hazards of the works should be posted at the entrances and other appropriate locations.
- 承建商必須提供能上鎖的大門，並確保那些大門在下班後或無人駐守時，能夠牢固地鎖上。另外事前應與保安中心制定，在辦公時間以外發生事故時，進入該上鎖處所的方法。
- 應在出入口或其他適當的位置上張貼合適之作業危險警告標誌或通告。

6.2 For work in and around occupied areas

- Wherever it is reasonably practicable to do so, work areas should be physically separated from areas used by premises occupants. Details of the separation should be established before work commences with the approval by the supervising officers of UM.
- If the work areas cannot practicably be segregated by boarding, other effective means should be used (e.g. movable steel fences, barrier tapes, etc.). The means of segregation must be able to prevent premises occupants from inadvertently getting into the work areas or areas affected by the work.
- 在已被使用之範圍或其附近進行工程
- 在合理並可行的情況下，工地應與使用中的樓宇範圍分隔。而分隔的詳情，應獲得澳大之監督人員許可下並在工程施工前制定出來。
- 如工地並不能用圍板進行分隔時，便應嘗試使其他有效之工具。(如：活動金屬圍欄、封鎖線等)。而那些分隔工具，應能防止樓宇用戶進入工地或受其影響之地方。

6.3. Safeguarding of Public Access

6.3.1 Those parts of the site that have to remain open to the occupants and the public must be provided with protected walkways such as hoardings.

6.3.2 The contractor must not block any public access during the progress of the works. Where the necessity to block the traffic or close the pavement is unavoidable, alternative arrangements must be made in consultation with the responsible supervising officers of UM, such as use of appropriate guardrails, temporary traffic lights or deployment of a competent signaller for the purposes.

All equipment and materials delivered on site must be properly stored at locations that would cause the least inconvenience to the premises occupants. Details of the storage arrangement should be discussed with and agreed by the responsible supervising officers of UM. No undue danger to the

保障公共通道之安全

- 在工地內必須為那些仍對用戶或公眾開放的地方，建造附有安全保障的行人道，例如使用圍板。
- 承建商不應在工程進行期間封閉任何的公共通道。若無法避免需要臨時封閉道路或行人道，必須與該項目之澳大監督人員協商後另作安排，例如於封路期間使用合適之圍欄，臨時交通燈號或安排交通指揮人員。

所有運往工地的物料或設備，必須正常儲存在合適的地方。以對樓宇用戶所帶來之影響減到最低。運送及於運輸用之交通工具上落機器或貨物時不可對澳大校內道路使用者及行

pedestrians and UM campus road users must arise as a result of the transportation, loading and unloading of equipment and materials.

- 6.4 The contractor workers and subcontractors shall be restricted from entering into unrelated private areas unless authorized.

7. Provision of Warning Notices

The contractor must provide adequate and proper warning signs and notices to warn campus users of possible hazards created by the works. All warning signs must be written in both English and Chinese.

8. Protection against Falling Objects for Occupants and the Public

8.1 Protection at scaffolding

- All working platforms in use on scaffolding must be adequately supported and fully boarded. This includes the provision of guardrails and toe-boards. Where there is a risk of materials being displaced, or debris falling through the barrier fencing, the fencing must be of solid construction (i.e. boarded or sheeted).
- Where doors/entrances/public access ways are present beneath scaffolds or any other high level work, protective fans must be provided which are of adequate strength and capable of catching any materials falling down. Scaffold tubes must not protrude into access ways and impede the full opening of doors. If natural or artificial lighting is significantly obstructed by the scaffolds, additional lighting should be provided.

8.2 Working on or above glazed roof lights or panels

- Before any work is undertaken above or in the vicinity of glazed roof lights or panels, these areas must be suitably protected from damage by falling objects. Areas below the glazed roof lights or panels where work is being carried out must be sufficiently fenced off.
- The instructions of supervising officers of UM must be strictly followed before any works can be carried out on glazed roof lights or panels.

人構成危險。

未獲授權，承建商及其分包商工人不得擅自進入非工程施工之私人範圍。

提供警告提示

承建商必須提供合適並正確之提示或警告，以警告澳大校園使用者由工程所產生之危害。所有警告提示必須使用中英雙語。

防止高空墜物以保護用戶及公眾

在棚架上的保護

- 所有在棚架上的工作平臺，必須有足夠的支撐及徹底的封閉，其中包括提供護欄和腳踏板。因誤放施工物料或碎片掉落，會產生一定的風險。所以圍板必須要堅固。(要圍起或蓋上)。
- 在棚架或高空工程下之所有出入口，必須備有堅固並合適之斜擋棚，以接住所有下墜物。棚枝不應伸展至出入通道或擋住全開放式之門口。如棚架結構將光源遮擋住，應另外安裝照明設備，以提供足夠的照明。

玻璃天幕或玻璃幕牆上工作

- 在任何玻璃天幕、玻璃幕牆或其附近之工程，必須具有適當的安全措施，以防止高空墜物的損害。而在其下之工程，心須設有充足的圍欄作分隔。
- 在任何玻璃天幕或玻璃幕牆之工程開始前，須嚴格執行由澳大監督人員所發出之指引。

9. Precautions during lifting operations

- Appropriate measures must be taken to ensure safety during lifting operations. Proper type of lifting appliances and lifting gears must be used. Premises occupants and the public should be kept away with appropriate means from areas affected by the lifting operations.
- Appropriate warning notices must be posted by the contractors at conspicuous locations giving adequate warning to occupants and the public about the danger of the work being carried out.
- The lifting appliances and lifting gears must be examined by a competent examiner before use. The safe working load should be clearly marked and no overloading is permitted.

10. General Requirements for Scaffolds and Other Access Equipment

- The contractor is fully responsible for all aspects of scaffolding, including the employment of competent persons for the erection, maintenance and inspection of the scaffolds. The scaffolds must be capable of supporting the loads for which they are intended, including such allowance as is necessary for wind loading, scaffold fans, etc. The scaffold must be examined and certified safe by a competent person before it is used.
- All scaffolds are required to be rigidly connected to the building or other structure unless the scaffold is so designed and constructed as to ensure stability without such connections.
- All scaffolds, towers, cradles etc. must be maintained in a safe condition.
- Satisfactory storage arrangements for scaffold tubes and fittings should be agreed with the responsible supervising officer of UM prior to the arrival of the tubes and fittings on site.
- When works are being carried out on a scaffold, an adequate barrier (or a clear demarcation using warning tape, or similar method depending on the circumstances) must be provided and maintained at least 2 metres clear of the scaffold. Where the 2-metre distance from the scaffold cannot be maintained due to space restriction, other means of protection such as installation of

起重作業時的注意事項

- 必須採取適當措施，以確保在起重作業時的安全。使用型號正確的起重機械及裝置，利用適當的方法，使樓宇用戶及公眾遠離受起重作業影響的區域。
- 承建商應在當眼處張貼合適的施工警告通知，以提供適當的警告給住戶及公眾。
- 承建商所使用之吊重機械及索具必須檢驗安全方可使用，須標明安全負重額，且不可超重吊運。

棚架及其他出入設備之一般要求

- 承建商應對棚架之所有事務負上全部責任，其中包括雇用合適的工人來搭建、維修及檢查棚架。而棚架應有足夠的荷載力去支撐所預計之重量，其中包括預留給風荷載及斜擋棚等。棚架必須由合資格人員定期檢驗，並以證書證明其安全方可使用。
- 所有棚架都必須嚴格地與建築物或其他建築結構緊接著起來，除非穩定棚架之設計和搭建方法，是不須要如此緊接的。
- 所有棚架，塔樓，支架等，都必須保持在一個安全的狀態
- 棚枝或配件的儲存位置，應在貨物到達前，得到所負責之澳大監管人員之許可。
- 當要在棚架上進行工程時，必須要擺放合適的圍欄，並保持與棚架最少 2 米之距離。(或用警界線作明確的劃分，或按現場情況使用類似的方法) 如因空間的限制並不能維持 2 米時，就應提供其他的保護設施，如安裝高架斜擋棚。否則要將棚架附近之出入口完全圍起來。

overhead fans must be provided. Otherwise access close to the scaffold must be completely fenced off.

- Metal ladders must not be used around electrical installations where the risk of electrocution exists.
- Ladders must not be left unattended. Ladders must not be located near doorways or main passageways unless they are properly guarded by a person at the base.
- Scaffolds, ladders and other access equipment must be dismantled or removed as soon as they are no longer needed.
- Scaffolds must only be erected or dismantled when the surrounding areas are clear of premises occupants. The areas which may be affected by the operation must be adequately fenced off.

11. Precautions to Prevent Danger from Vehicles

- The contractor must take all necessary precautions to safeguard premises occupants from the movement of his vehicles. This should include, where practicable, make arrangement for separate access to the site for contractor's personnel and equipment for the work. If vehicle movement is required in areas where there are premises occupants, the contractor must ensure that there is sufficient warning for the movements of vehicles and that a trained commander is employed. Details should be agreed with the responsible supervising officers of UM.
- Warning signs and notices must be displayed in conspicuous positions at all entrances being used by contractor's vehicles.
- The contractor must observe all traffic regulations and signs (e.g. speed limit) in the campus areas.
- Vehicles used by the contractor inside the campus areas must be properly licensed and insured.

12. Interference with Existing Services

- No diversion or disconnection of any of the existing services, other than those as shown on the drawings and included in the contract,

- 不應在具有觸電可能的電力裝置旁使用鐵梯。
- 使用之梯子不應沒有人看守。除非現場有適當的看守人員看守，否則不應在出入通道或門旁使用。
- 棚架，梯子 或其他出入設備等，在不再需要時，應盡快拆除或遷走。
- 如要搭建或清拆棚架時，要先確認樓宇周圍並沒有用戶。應適當地圍起受工程影響之地區。

預防措施以預防由車輛所產生的危害

- 承建商應為採取任何必要的預防措施，以規管其所擁有之進出車輛，並保障樓宇用戶之安全。在可行的情況下，承包商應分開工作人員及器材運送之通道。如施工車輛必須通過有樓宇用戶的地方時，承建商必須保證現場備有足夠的警告提示，並僱用已經受訓之指揮人員。而措施之詳情應要得到澳大之監管人員許可。
- 承建商必須在其車輛進出口之當眼處張貼出警告符號及告示。
- 承建商必須遵守所有在校園範圍內的交通規則及標誌。
- 在校園範圍內，由承建商所擁有之所有車輛，必須經過適當的授權並已投保。

干擾現有的設施

- 除已在圖則或合約上註明的事項外，工程不得改道或中斷任何現有的設施下，除非事先得到由澳大之

should be carried out without the prior written approval of the responsible supervising officers of UM.

- The contractor must ensure that proper isolation has been carried out before any work is conducted on the existing services.
- The contractor must maintain unobstructed access to all fire hydrant points, hose-reels, fire extinguishers, switch-rooms, etc.

13. Fire Precautions

- The contractor must ensure that all fire exits are kept clear at all times and that combustible materials are not allowed to accumulate.
- The contractor must provide suitable and adequately maintained fire extinguishers for use in relation to his work activities.
- The contractor must comply with the Hot Work Procedures of UM for any hot work operations. A Hot Work Permit must be obtained from the responsible supervising office of UM before any hot work can be carried out on all UM premises.
- The contractor must arrange proper storage for all flammable substances to be used on site. If the flammable substances exceed the exempted quantities as stipulated in the Dangerous Goods Ordinance, they must be stored in appropriate dangerous goods stores. Details of the arrangement should be discussed and agreed with the responsible supervising officer of UM.
- LPG cylinders not in use must be stored in the open air in a well ventilated area at ground level on a firm, even surface at least 3 metres away from any basements, drains, excavations or other hollows where vapour may collect, and in a position where the store will not jeopardize existing means of escape.
- Cylinders of LPG used at bitumen boilers or cauldrons must be placed at least 3 metres from the burner. The boiler and cylinders must be located where they are not likely to be struck by vehicular traffic. A boiler or cauldron must not be left unattended or moved with the burner alight.
- The contractor must ensure that his employees and subcontractors are aware of UM's fire evacuation procedures.

監管人所發出的書面許可。

- 承建商應確保若需要在現有設施上施工，該設施已被適當地隔離。
- 承建商必須確保不會阻塞所有消防栓，消防喉轆，滅火器，掣房等設施。

防火

- 承建商必須確保所有的走火通道暢通無阻，並不得累積易燃物品。
- 承建商必須為其所承包之工程，提供合適並有保養之滅火器。
- 承建商之任何高溫作業，必須符合澳大所規定之高溫作業程序。所有在澳大校園內所執行的高溫作業，事前必須獲得由澳大之監管人員所發出的許可證明。
- 承建商應為其工程所用到之易燃物品按排一個恰當之存放位置。如易燃物品的數量超過危險物品條例所豁免之數量時，必須將其存放在適當的危險品倉庫。而措施之詳情應與澳大所負責之監管人員相議並同意。
- 不被使用之石油氣罐應儲存在一個空曠並且空氣流通之平地上，而地面應與任何地下室，排水渠，挖掘工程或其他可能有蒸汽聚集之坑穴，保持最少三米距離，並在一個不影響現有逃生通道的位置上。
- 如石油氣罐是用於鋪地瀝青煮器或大鍋時，應與爐頭保持最少三米之距離。鍋爐及氣瓶必須擺放在一個不易被車輛碰撞到的位置上。而鍋爐及大鍋不應沒有人看守或在爐頭還在燃燒時移動它們。
- 承建商必須確保其僱員和分包商都明確知道澳大之火警災疏散程序。

14. Dangerous, Noxious or Offensive Substances

- The contractor must provide the supervising officers of UM with relevant information on any dangerous, noxious or offensive substances or processes to be handled or used on site which might present a risk to the health and safety of the campus users. Examples are acids used for cleaning buildings, solvents, strong smelling paints/adhesives, timber preservatives, etc.
- The information required above should include details of the substances or processes to be handled or used, and the precautions the contractor intends to take for the protection of the campus users. Precautions to be considered include proper storage, restrictions on the use of buildings and open access areas by the premises occupants, restrictions on working hours by the contractor, physical protection and liaison with responsible supervising officers of UM.
- Appropriate Material Safety Data Sheets (MSDS) of hazardous materials must be available to responsible supervising officers of UM upon request. There may be cases where contractors are required to submit MSDS at the bidding stage.

15. Nuisance and Interference

- All work should be carried out so as to cause the minimum nuisance and interference to the users, as well as to the public.
- The contractor must take all practicable measures to minimize the effect of construction noise by using the most effective noise reduction measures available. Equipment likely to cause disturbance to the campus users should only be used within the periods previously agreed by the supervising officers of UM. This equipment must comply with EPD regulations on noise muffling requirements.
- The contractor must undertake all practicable precautions to minimize the generation of dust from their work activities.
- Notwithstanding the precautions mentioned above, the contractor must give sufficient warning of the possible nuisance or interference to the supervising officers of UM

危險，有害或厭惡性物質

- 承建商必須向澳大之監管人員提供所有危險、有害或厭惡性物質之資料，對其之處理程序，或在工程中可能對使用校園之人仕構成健康或安全危害等的資料。例如用於大廈清洗的酸劑，溶劑，有強烈氣味之油漆/膠黏劑，木材防腐劑等。
- 在上述所需之資料中，應包括物質的詳細資料、處理程序或使用方法，及承建商對使用校園之人仕所制定之安全預防措施。而預防措施應考慮包括以下幾點，合適的儲存地方，對樓宇用戶所使用之建築物及出入通道作出限制，承建商施工時之時間限制，人身保護及與負責的澳大監管人員聯絡。
- 適當的有害物物料安全資料表，應能隨時讓澳大之監管人員查閱。在某些情況下，承建商在投標時有需要提交物料安全資料表。

滋擾及干擾

- 所有工程在施工時，應盡量減少對使用校園之人仕以及公眾所帶來的滋擾及干擾。
- 承建商必須採取一切可行措施，如選用最有效的隔音措施。盡量減低由工程所產生之噪音影響。而對使用校園之人仕造成滋擾之建築物設備，應在工程前與澳大之監管人員相議，並在許可之時間內進行。該設備必須符合環保局所規定之噪音抑制要求。
- 承建商必須採取一切可行的預防措施，以盡量減少因工程進行所產生之塵埃。
- 儘管有上述的預防措施，承建商應為其工程所產生之潛在滋擾或干擾，對澳大之監管員給予足夠

so that appropriate arrangements can be made by the University.

16. Working in the Proximity of Fresh Air Intake Locations

- No work is allowed to be carried at the proximity of fresh air intake locations without the written approval of Campus Management Office.
- Vehicles parking close to a fresh air intake location must have their engines turned off.
- Smoking near fresh air intake locations is strictly forbidden.

17. Skips and Site Clearance

- Waste, dust, dirt and other debris caused by the contractor's operations must be cleared regularly by the contractor and placed in skips. These should be sited to cause the minimum inconvenience to the premises users and the public.
- If the skips are not within the general perimeter or barrier fence, they must be adequately fenced off from the surrounding areas still in common use. The contractor should ensure that there is no throwing or tipping of materials from upper stories into skips unless an enclosed chute is used.

18. Other Specific Hazards

18.1 Electrical safety

- All electrical equipment used on site must be of a safe design and in safe conditions. All live parts must be protected against accidental personal contact.
- Power cables must not be allowed to trail across public passageways. If this is unavoidable, suitable crossover device and adequate warning must be provided.
- Portable electrical equipment must not be left unattended in common areas.
- Electrical equipment being used in common areas must be adequately fenced off with appropriate warning signs.
- Connections to the power supply must be made by properly constructed plugs and sockets meeting appropriate safety standards. Tapping

的警告。如此大學方面便可以採取適當的安排。

在鮮風口附近範圍工作

- 如未獲校園管理部之書面許可下，禁止在鮮風口附近範圍工作。
- 車輛如停泊在鮮風口附近，應熄掉引擎。
- 嚴禁在鮮風口附近範圍抽煙。

垃圾斗及工地清理

- 廢物，灰塵，污垢和其他由工程所產生之碎片，承建商應定時清理並放置垃圾斗內。而垃圾斗的擺放位置應對樓宇用戶及公眾之影響減至最低。
- 如垃圾斗並不是一般的尺寸時或沒有設置圍欄時，必須在其周圍之地方設置合適之圍板。除非已經安裝了輸送槽，承建商應確保施工期間，建築廢料並不會從高處拋擲到垃圾斗內。

其他特別之危害

用電安全

- 所有在工地上使用之電器，必須具有安全設計及在一個安全的狀況下使用。而帶電的部件必須保護起來，以防止人員意外地觸碰。
- 在公共通道上，不應容許有任何電線橫過。如不可避免，必須提供合適的跨越裝置及足夠之警告。
- 便攜式之電氣設備，不應在無人看管之情況下擺放在公共地方。
- 如要在公共地方上使用電氣設備，必須具有充足的隔離及適當的警告標誌。
- 連接電源時，必須使用符合安全標準之插頭連接插座。禁止從保險絲

in fuse boxes is not permitted.

18.2 Excavations/manholes in open access areas

- All excavations in open access areas must be properly covered or fenced off while they are not in immediate use. Proper warning lights must be provided to warn pedestrians or night traffic if the excavations are accessible by the public.
- Appropriate checks must be made to locate and avoid underground services before excavations are carried out.
- Proper manhole barriers must be erected to warn campus users and vehicular traffic when work is performed in manholes. Manholes must be properly covered when they are not being accessed.

18.3 Electric arc welding, gas welding and flame cutting

- Proper shielding and drip tray must be provided to protect the premises occupants from being affected by the strong ultra-violet light and sparks produced by electric arc welding, gas welding and flame cutting operations.
- Ensure good general ventilation of the work area and provide exhaust ventilation where necessary.

18.4 General Environmental Requirements

- The contractor shall observe all environmental protection requirements on air, water, waste disposal, noise control, ozone layer protection and energy saving. The contractor shall not emit dark smoke, engage in open burning of construction materials or waste, use prohibited refrigerants, emit excessive noise or create noise nuisance to the campus tenants or disturb normal teaching, illegally dump construction waste inside or around the campus, and liquid waste (such as spent chemicals including diesel) into the stormwater drain or sewer, illegally dispose hazardous chemical waste such as demolished asbestos waste, and cooperate with the UM supervising department in environmental sustainability measures, including energy conservation.

盒內分接電源。

在公共地方之坑洞或沙井挖掘

- 所有在公共地方上之坑洞，如不是立即使用，應適當的遮蓋上或圍起來。如附近有車輛來往，應在坑洞周圍擺放合適的警示燈以提醒途人及晚間來往之車輛。
- 在挖掘工程進行前，必須適當地檢查，以確定在其附近之地下設施位置，避免工程觸及該等設施。
- 當在沙井進行工程時，在井旁應擺放適當的圍欄，以提醒使用校園人仕及來往之車輛。當工程停止時，應適當地將井口遮蓋起來。

電弧焊接及切割

- 必須提供適當的屏蔽及承載火花之托盤，以保護使用校園人仕免受由電弧，氣體焊接及切割工程所產生的強烈紫外線及火花之影響。
- 工地必須有良好通風，有需要時提供局部抽風。

一般環保措施

- 承建商需遵守所有針對控制空氣污染，水質污染，棄置廢物，噪音；保護臭氧層及節約能源之環保措施。承建商不得排放黑煙，進行露天焚燒建築廢料，使用破壞臭氧層之雪種，發出過量噪音對住戶或教學造成滋擾，非法傾倒建築廢料於校園範圍內或校園附近，傾倒包括油渣等液體廢料於雨水渠或污水渠內，非法棄置例如含石棉材料等之化學廢料等。此外，承建商亦需與澳大監管部門於節約能源方面通力合作。

18.5 Others

It is impossible to cover all situations. For other hazards not mentioned, such as confined space operations, refer to the requirements of DSAL Decree Law No. 44/91/M attached for detailed guidance.

其他

- 諸如密閉空間工作等之其他危害不能盡錄，詳情可參看第 44/91/M 號法令內容。