

For Information

Legislative Council Panel on Transport

Recent Incidents of Water Leakage and Smoke Emission from the Pillar Box at the Basement of the Passenger Clearance Building of the Hong Kong-Zhuhai-Macao Bridge Hong Kong Port

Introduction

Highways Department (HyD) issued a press release on 3 July 2018 giving an account of the two incidents covered by the media concerning the water leakage and smoke emission from a pillar box at the basement of the Passenger Clearance Building (PCB) of Hong Kong-Zhuhai-Macao Bridge (HZMB) Hong Kong Port (HKP) in order to allay public concerns (see **Enclosure 1**). This paper aims at providing information of the concerned incidents and the corresponding follow-up actions taken by HyD.

The General Arrangement of the Electrical and Mechanical (E&M) Facilities at PCB

2. The PCB of the HZMB HKP provides customs, immigration and quarantine (CIQ) inspection and clearance services for the cross boundary passengers. Floors at the PCB which mainly serve cross boundary passengers are the arrival hall at the ground floor and the departure hall at the first floor. The arrival hall and departure hall have provisions for the counters of the law enforcement departments (i.e. Customs and Excise Department, Immigration Department, Department of Health, etc.), customs channels, shops, restaurants, public toilets, etc. Besides, the offices of the law enforcement departments and management agency are located at the two flanks of the PCB. Please see **Enclosure 2** for the general arrangement of the PCB.

3. The PCB of HKP is situated on the newly reclaimed artificial island, on which about 70 numbers of ancillary buildings, arrival and departure vehicle clearance plazas and road network are built. Due to the proximity of the Hong Kong International Airport, the buildings are subject to stringent airport height restriction. Therefore, it is necessary to house the electrical and mechanical (E&M) facilities of the PCB in the basement in order to release more space at above-ground levels for use by cross boundary passengers. Such arrangement is common in architectural designs and is also a reasonable design arrangement. For instance, the E&M facilities of railway stations are often housed underground in order to save space at above-ground levels.

4. Furthermore, the basement of the PCB houses the district cooling system for the HKP. The district cooling system is a mega air conditioning system which utilizes sea water to produce chilled water at the central plants and distributes the chilled water to the PCB and the ancillary buildings at the vehicle clearance plaza through the cooling mains network so as to achieve energy saving. As most of the cooling mains of the district cooling system have to be installed underground, housing the district cooling system at the basement is a reasonable arrangement as well.

5. The consulting engineer commissioned by HyD has given due consideration to waterproofing issues during the design process of E&M facilities at the basement. There are a number of flood prevention design features adopted for the basement of the PCB, which include the provision of split floors to house the main switch rooms at the higher level, the provision of drainage layer connecting to the sump pit of the basement for the floor slab of the switch rooms, the construction of base plinths for electrical equipment, so as to avoid any water seepage from affecting the operation of the electric equipment. The basement walls are provided with water-proofing membranes to guard against seepage of ground water into the PCB. Besides, the major E&M rooms in the PCB such as the switch rooms, central air conditioning plant room, rooms for air handling unit are equipped with water leakage

detection system, sump pits and water pumps; and such provisions would be activated automatically to pump away the water in the event of flooding. Currently, the E&M equipment of the PCB are undergoing a series of testing for ensuring its safe operation in future.

The Status of the Concerned Incidents

(A) The Water Leakage Incident on 15 April 2018

6. According to the records kept by the resident site staff (RSS) of the consultant commissioned by HyD, upon completion of structural and fitting-out works at the PCB, final installation of the E&M equipment as well as its testing and commissioning were underway. On 15 April 2018, rainwater entered into some unsealed underground cable ducts through the draw-pits due to the cable ducts being not sealed up in a timely manner after cables laying. This caused the rainwater to leak into a low voltage switchroom (the voltage of which is 380V and not 11kV as reported by the media) in the west wing of the basement through the draw-pits and cable ducts. The Contractor and the RSS tackled the issue promptly, after finding out the leakage problem, and have the concerned equipment thoroughly checked and the affected parts replaced. The concerned cable ducts have also been sealed up and the other E&M facilities of the PCB are unaffected.

(B) The Smoke Emission Incident from a Pillar Box of the Air Conditioning System at the Basement of PCB on 20 June 2018

7. Regarding the media report about the smoke emission from a pillar box of the air conditioning system at the basement of the PCB, the incident happened on 20 June 2018 with reference to the record of the RSS of the consultant commissioned by HyD. The RSS found that there was smoke emitted from one of the pillar boxes at the control centre of the district cooling system located at the east wing of the basement in PCB. After investigation, it was revealed that the harmonic filter of a chilled water pump inside the

pillar box of district cooling system was out of order leading to over-heating and smoke emission. The Contractor has completed the rectification works for the malfunctioned component and the pillar box is currently in normal operation.

8. HyD emphasized that the incident of smoke emission from the pillar box and the earlier water leakage incident at the basement are two independent incidents which are completely unrelated to each other. The locations of the low voltage switch room with water leakage incident and the control centre of district cooling system with smoke emission incident are shown in **Enclosure 3**.

Follow-up Actions by HyD

9. The Government has established mechanisms to monitor the implementation of works projects. At present, works department will employ professional engineering consultants including architects, engineers, quantity surveyors and other relevant disciplines of professionals to vigorously supervise the progress and quality of the work for large-scale infrastructure projects generally.

10. The RSS of the consultant commissioned by HyD are responsible for managing the day-to-day operations of the various works contracts, including overseeing the contractor's performance in works progress, material testing, resolving technical issues encountered, executing site safety system, enforcing environmental monitoring and audit, etc.

11. After the incident of water leakage, HyD had demanded the Contractor to seal up all unsealed underground cable ducts to avoid recurrence of similar incident. The Contractor has completely sealed up the cable ducts in the draw-pits surrounding the PCB. In the recent severe rainfall events, HyD no longer found any water leakage at cable ducts.

12. With regard to the smoke emission incident at the pillar box of air conditioning system at the basement of the PCB, HyD had demanded the Contractor to check all the pillar boxes of the air conditioning system and to conduct relevant testing, so as to enhance monitoring for ensuring smooth operation of the system. Currently, there are regular security patrols in the PCB round-the clock. Any issue found will be reported immediately and be dealt with in a timely manner.

Conclusion

13. Currently, the construction of the HZMB HKP, including the PCB and other ancillary buildings and facilities, has been substantially completed. The remaining finishing works and acceptance testing process are now underway. HyD will supervise the inspection and acceptance testing work stringently to ensure that the quality of the works will meet the standards as stipulated in the works contracts. At the moment, various user departments of HKP are installing their equipment and facilities, carrying out associated testing works, as well as conducting training for the staff working at the HKP.

14. The Government will ensure that the construction quality meets the required standards and passes various acceptance tests, before commissioning of the HZMB HKP.

15. Members are invited to take note of the status of concerned incidents and the follow-up actions taken by HyD.

**Transport and Housing Bureau
Highways Department
July 2018**

Press Releases

HyD's response to media enquiries on water leakage at basement of Passenger Clearance Building of Hong Kong-Zhuhai-Macao Bridge Hong Kong Port (with photos)

Regarding media enquiries made yesterday (July 2) on a news report about water leakage previously found at the basement of the Passenger Clearance Building (PCB) at the Hong Kong Port (HKP) of the Hong Kong-Zhuhai-Macao Bridge (HZMB), the Highways Department (HyD) today (July 3) responded as follows:

The basement of the PCB at the HKP of the HZMB does not only house the electrical and mechanical equipment for the PCB, but also accommodates the district cooling system for the HKP. The district cooling system supplies chilled sea water via underground conduits to the air conditioning systems of the building cluster in the vehicle clearance plaza, so as to achieve the energy saving objective. Therefore, it is a reasonable arrangement to house the plant room of the PCB at its basement.

Soon after the contractor and the HyD's resident site staff discovered the leakage problem at the PCB in early 2018, they had swiftly followed up the issue and arranged rectification works. According to the records kept by the resident site staff of the consultant appointed by the HyD, after the structural and fitting-out works of the PCB were completed, some underground cable ducts had not been sealed up timely after cable installation, thus leading to leakage of rainwater into the basement via these ducts on April 15, 2018. The contractor had subsequently rectified the problem by properly sealing up the relevant ducts. After recent rainstorms, including the amber rainstorm yesterday (July 2), the HyD has not observed any noticeable water leakage during site inspections at the basement of the PCB.

As regards the news report about smoke emission from the pillar box, the incident occurred on June 20, 2018 according to the records. During testing and commissioning for the PCB, the resident site staff found that there had been smoke emission from the pillar box of the air conditioning system. The incident was believed to have been caused by malfunctioning of a component, leading to over-heating of the equipment and subsequently smoke emission. The contractor has completed the rectification works for the malfunctioned component and the system is currently in normal operation. The HyD emphasised that this incident of smoke emission from the pillar box and the earlier water leakage incident at the basement are two independent incidents which are completely unrelated to each other.

The PCB is undergoing testing and commissioning at present. The HyD will strictly conduct the testing and commissioning with a view to ensuring that the works would only pass the acceptance procedures if their qualities meet the required standards.

For the present conditions inside the PCB basement, please refer to the photographs attached.

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Regarding the water leakage incident at the Passenger Clearance Building of Hong Kong-Zhuhai-Macao Bridge Hong Kong Port, photo (taken on July 3, 2018) shows the present condition of the location of the April 15, 2018 water leakage incident.



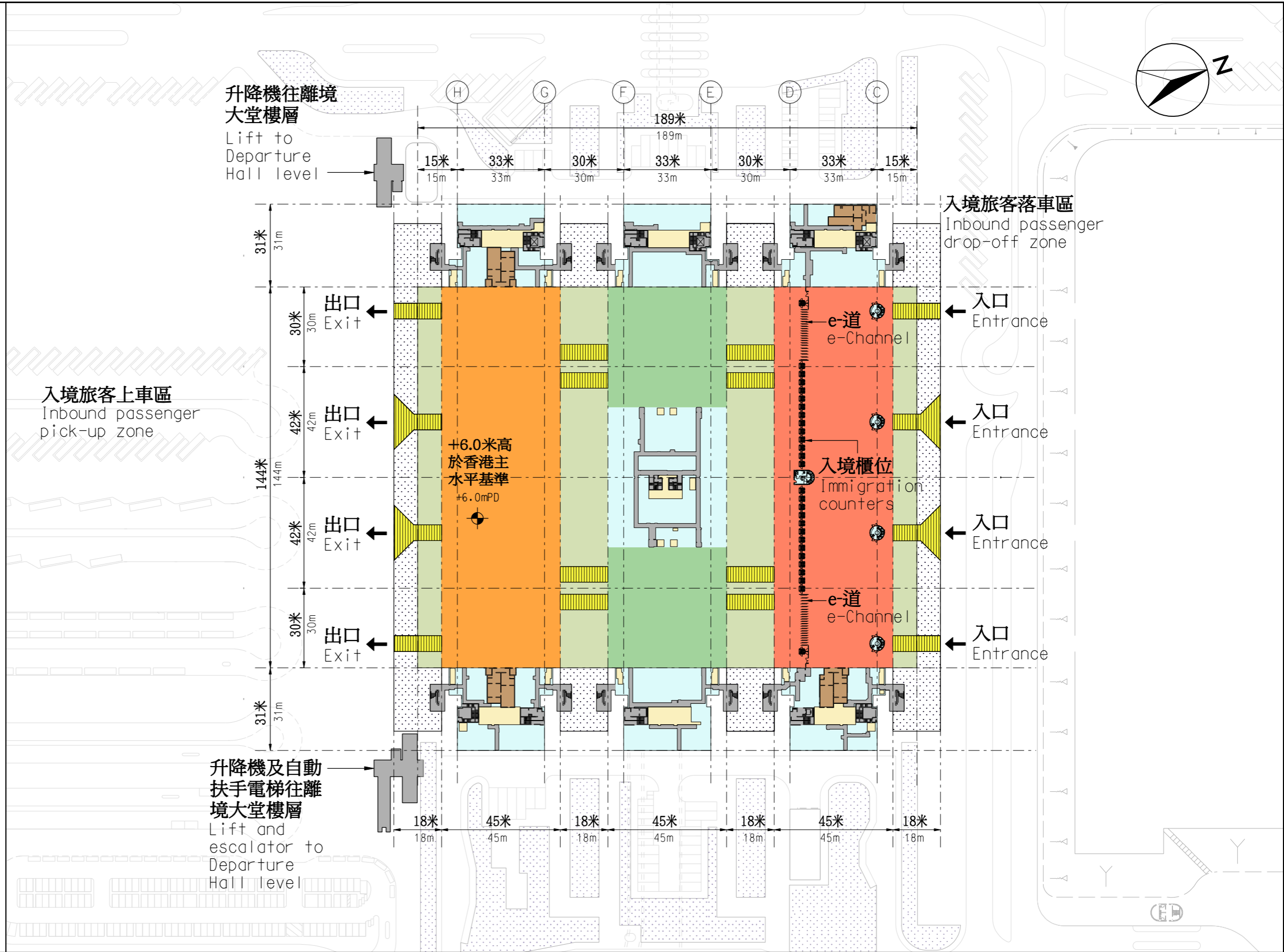
Regarding the water leakage incident at the Passenger Clearance Building of Hong Kong-Zhuhai-Macao Bridge Hong Kong Port, photo (taken on July 3, 2018) shows the present condition of the location of the June 20, 2018 smoke emission incident.

圖例 Legend

- 入境檢查區
Immigration clearance zone
- 海關檢查區
Customs clearance zone
- 清關後區
Post clearance zone
- 辦公室
Office
- 後勤地方/機房
Back of house/plant room
- 公廁
Public toilet
- 室內綠化區域
Indoor planting area
- 室外綠化區域
Outdoor planting area
- 衛生署健康檢查站
Department of Health Health Screening Station
- 緊急出入口
Means of escape/access
- 大約地面水平
Approximate level

註釋 NOTE

1. 所有地面水準均以香港主水平基準為計算根據，並以米為單位。
All levels refer to Hong Kong Principal Datum (PD) and are in metres (m).



旅檢大樓的平面圖 - 地面平面圖 (入境樓層)

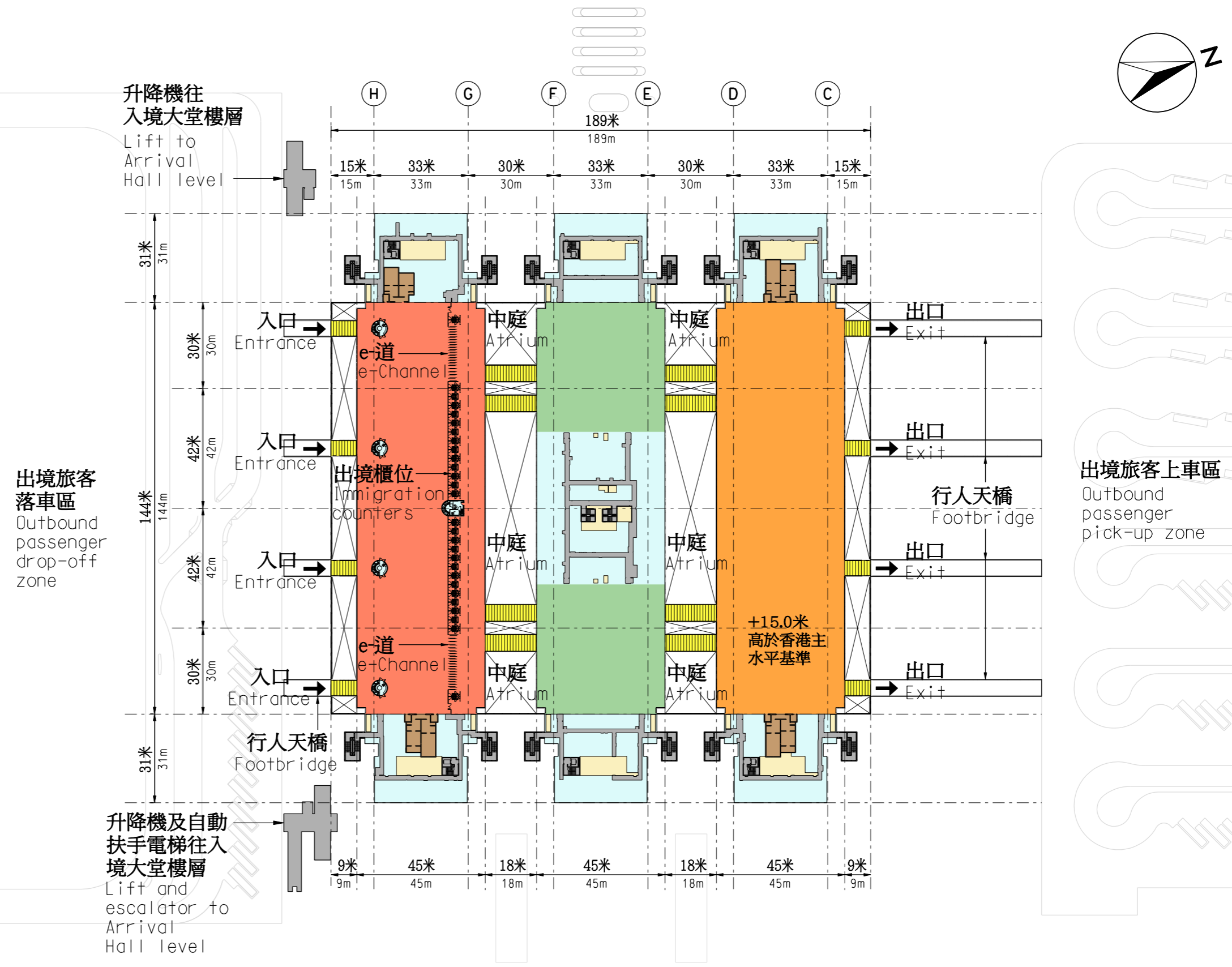
Passenger Clearance Building - Ground Floor Plan (Arrival Hall Level)

圖例 Legend

- 出境檢查區
Immigration clearance zone
- 海關檢查區
Customs clearance zone
- 清關後區
Post clearance zone
- 辦公室
Office
- 後勤地方/機房
Back of house/plant room
- 公廁
Public toilet
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Indoor planting area
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Means of escape/access
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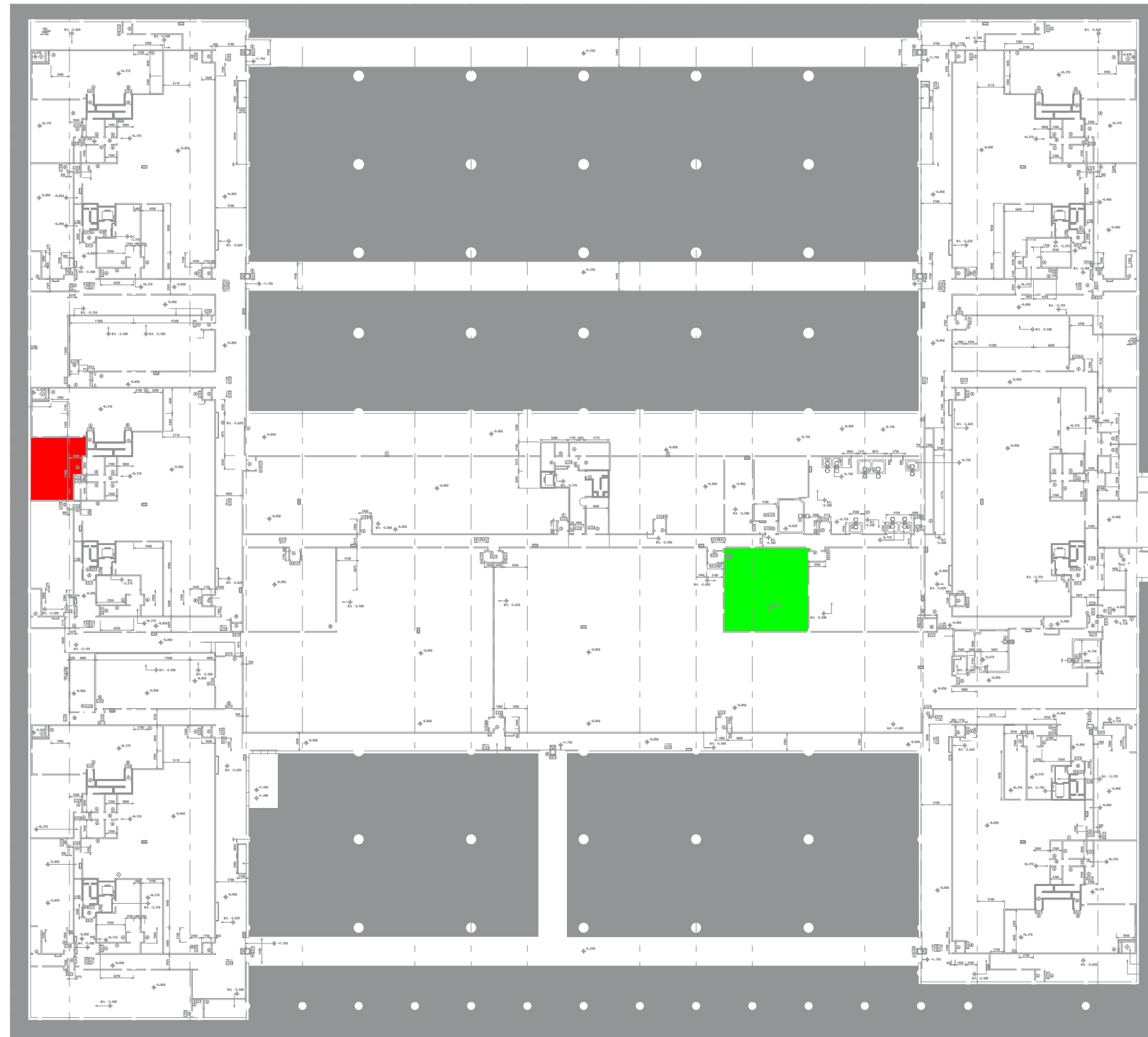
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旅檢大樓的平面圖 - 一樓平面圖 (出境樓層)
Passenger Clearance Building - First Floor Plan (Departure Hall Level)

圖例 Legend

-  發生漏水事件的低壓電掣房
The Low Voltage Switch Room
with Water Leakage Incident
-  發生冒煙事件的區域供冷系統控制中心
The Control Centre of
District Cooling System with
Smoke Emission Incident



圖則名稱 plan title

旅檢大樓地庫的平面圖 — 發生漏水事件的低壓電掣房及發生冒煙事件的區域供冷系統控制中心的位置
Basement Floor Plan of Passenger Clearance Building -
Location of the Low Voltage Switch Room with Water Leakage Incident
and the Control Centre of District Cooling System with Smoke Emission Incident