

ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

HEAD 703 – BUILDINGS

Public safety – Fire services

173BF – Redevelopment of Fire Services Training School

Members are invited to recommend to Finance Committee the upgrading of **173BF** to Category A at an estimated cost of \$3,562.5 million in money-of-the-day prices for the redevelopment of Fire Services Training School.

PROBLEM

The space and facilities in the existing fire services training school are insufficient to meet the training needs of the Fire Services Department (FSD).

PROPOSAL

2. The Director of Architectural Services, with the support of the Secretary for Security, proposes to upgrade **173BF** to Category A at an estimated cost of \$3,562.5 million in money-of-the-day (MOD) prices for the redevelopment of Fire Services Training School (FSTS) at Pak Shing Kok, Area 78, Tseung Kwan O for FSD.

/PROJECT

PROJECT SCOPE AND NATURE

3. We propose to redevelop the FSTS at Pak Shing Kok. The project site will cover an area of 158 000 square metres (m²), which includes about 53 000 m² of slope area. The scope of **173BF** comprises the provision of the following facilities –

- (a) outdoor training facilities: simulated carriageway zone, simulated railway and tunnel fire cum rescue zone, compartment fire behavior training simulator, ship fire simulator, swift water rescue simulator, oil tank simulator, Liquefied Petroleum Gas (LPG) tank simulator, fuel and LPG refilling station simulator, vehicle fire simulator, aircraft fire simulator, and urban search and rescue training area. There will also be a parade ground for squad drill and drills for major incidents;
- (b) indoor training facilities: burn house (with simulated hazardous material training area incorporated), rescue training tower, drill tower, indoor rescue pool, fire investigation demonstration units and fire engineering laboratories¹;
- (c) physical training facilities: outdoor physical training ground, outdoor adventure challenge course and a physical training complex providing facilities such as gymnasium and exercise rooms;
- (d) teaching block: classrooms, auditorium, multi-purpose hall, computer rooms, resource centre and various types of syndicate training rooms;
- (e) main office block: offices, conference rooms and interview rooms;
- (f) driving training block: driving simulator training rooms, driving training ground and classrooms;

/(g)

- (g) fire services education centre: fire evacuation and

¹ The fire investigation demonstration units and fire engineering laboratories are teaching facilities for fire services personnel in conducting post-fire investigation such as ascertaining the origin, cause and spread of fire, and in illustrating and evaluating the effectiveness of fire suppression and fire prevention measures.

firefighting experience area, fire service installations and equipment demonstration area, multi-media area, basic first-aid and cardiopulmonary resuscitation training area and display area for fire services equipment and historical fire appliances; and

- (h) ancillary facilities: residential complex for recruits (which will provide about 530 residential training places²), server rooms and generator rooms, pantry, canteen and kitchen, changing rooms and shower facilities, first aid rooms, laundry/drying rooms, store rooms and dangerous goods stores, kennel complex, appliance rooms, vehicle washing bay and fuel refilling station, etc.

— A location and access plan, master layout plan, sections and bird's eye view drawings (artist's impression) of the project are at Enclosures 1 to 7. Subject to funding approval of the Finance Committee, we plan to start the construction works in August 2012 for completion in October 2015.

JUSTIFICATION

FSTS and the specialised simulators

4. Established in 1968, the existing FSTS in Pat Heung covers an area of about 29 000 m². It is used to provide 26-week basic training for all new recruits, and some refresher and advanced training courses for serving personnel. At present, the FSTS can only accommodate a maximum of 218 fire fighter trainees for residential training at any one time, which is not sufficient to meet the future training needs.

5. Moreover, the existing FSTS was originally designed with only fundamental fire-fighting and rescue training facilities, including three drill towers and a drill yard. While additional training facilities have been provided over the past years (such as three fire training chambers to provide simulations of structural fire scenes and a breathing apparatus training block for tactical training in a simulated and controlled smoke-logged environment), the existing FSTS cannot accommodate further training facilities due to site and topographical

/constraints

constraints. To better prepare fire services trainees for complex emergency

² Based on current estimation, we plan to provide about 370 and 160 residential training places for firemen and ambulancemen trainees respectively. Depending on the actual needs, the training places will be flexibly arranged for firemen and ambulancemen trainees.

scenarios nowadays, we propose to provide at the FSTS specialised simulators to facilitate training. Advanced fire brigades around the world such as the United States, the United Kingdom, and Singapore, etc. have commonly employed simulators for training purposes. The use of simulators would allow fire services personnel to receive realistic training in a safe simulated setting, so as to better equip them with fire-fighting and rescue techniques to achieve high efficiency in operations.

6. The proposed FSTS will provide simulators covering mainly seven types of possible emergency situations which are relatively complex and large scale, including incidents related to buildings, transportation, marine and water, gas, aircraft, hazardous material and structural collapse. All these incidents could possibly be encountered by firemen and ambulancemen in Hong Kong, and their impact could be relatively serious and widespread. The proposed simulators and their justifications are set out at Enclosure 8.

Fire Services Driving Training

7. To ensure that all personnel responsible for driving duties possess competent techniques in operating fire services vehicles, the staff concerned are required to receive training and pass a driving test before being assigned to operate fire appliances and ambulances. At present, FSD does not have a designated training ground for driving training. While driving theory courses are given in Yau Tong Fire Station, practical driving training is conducted at a temporary training ground in Kai Tak and on public roads. In order to enhance the effectiveness and safety of driving training, there is a need to provide a driving training block with a driving training ground in the proposed FSTS.

Ambulance Services Training

8. The current Fire Services Ambulance Command Training School (FSACTS) in Ma On Shan was established in 1992. It covers an area of about 5 900 m² and is used to provide the 26-week basic training programme for ambulancemen new recruits, as well as the refresher and recertification courses such as paramedic training for serving ambulance personnel, etc. At present, the FSACTS can only accommodate a maximum of 86 trainees for residential training at any one time, but it has been running beyond its capacity and cannot cope with the increasing number of trainees in future. As an interim measure, some ambulancemen new recruits will have to receive residential training at the FSTS in Pat Heung and other training which requires ambulance training equipment at FSACTS in Ma On Shan.

/9.

9. To cater for long-term ambulance training needs, the proposed

FSTS will also provide facilities for training ambulancemen new recruits. As fire and ambulance personnel often work closely in emergencies, the proposed FSTS will provide them with more opportunities to be trained together, thereby enhancing their coordination and ability in responding to disaster. They could also share common training resources such as drill yard, auditorium, multi-purpose hall, canteen and physical training facilities to achieve better utilisation of resources.

Fire Services Education Centre

10. At present, the FSD does not have a dedicated facility for members of the public to understand and learn about fire safety and ambulance-aid knowledge. The proposed FSTS will include a fire services education centre to promote and disseminate knowledge on fire protection, fire evacuation and first-aid. The education centre will be provided with interactive and multimedia information facilities and different experiential areas such as fire evacuation and fire-fighting simulation areas. A display area will also be set up to introduce the history of FSD and exhibit fire services uniforms of different periods, fire service installations, fire service equipment and tools, etc..

FINANCIAL IMPLICATIONS

11. We estimate the capital cost of the project to be \$3,562.5 million in MOD prices (please see paragraph 13 below), broken down as follows –

	\$ million
(a) Site works ³	102.1
(b) Foundation	30.4
(c) Basement ⁴	45.1
(d) Building ⁵	1,345.4
(e) Building services ⁶	550.5
	/(f)

³ Site works comprises mainly site formation and slope works.

⁴ Basement at the lower ground floor will be used as plant rooms. It will also integrate with the slope retaining structure.

⁵ Building works comprises superstructure of the buildings, internal partitions, doors and windows, internal/external finishes, fittings and fixtures and signage.

⁶ Building services works comprises electrical installations, air-conditioning and ventilation installation, fire service installation, lift and escalators, window cleaning equipment, etc.

		\$ million	
(f)	Drainage	60.4	
(g)	External works ⁷	143.8	
(h)	Soft landscape works	21.7	
(i)	Additional energy conservation measures	33.2	
(j)	Furniture and equipment ⁸	277.5	
(k)	Consultants fees' for quantity surveying services	8.1	
(l)	Contingencies	261.8	
	Sub-total	2,880.0	(in September 2011 prices)
(m)	Provision for price adjustment	682.5	
	Total	3,562.5	(in MOD prices)

Breakdown of the cost of the major facilities of the proposed training school is at Enclosure 9.

12. We propose to engage a consultant to undertake quantity surveying of the project. A detailed breakdown of the estimates for the consultant's fees is at Enclosure 10. The construction floor area (CFA) of **173BF** is about 74 175 m². The estimated construction unit cost, represented by building and building services costs, is \$25,560 per m² of CFA in September 2011 prices. We consider this reasonable as compared with similar projects built by the Government.

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⁷ External works comprises fence wall, external paving works, covered walkways and link bridges.

⁸ Based on an indicative list of furniture and equipment. Items required include fire and rescue simulation training equipment, breathing apparatus charging equipment, audio and video system, centralized public address system, closed-circuit television system, general office furniture and equipment items, etc.

13. Subject to approval, we will phase the expenditure as follows –

Year	\$ million (Sept 2011)	Price adjustment factor	\$ million (MOD)
2012 – 13	75.0	1.05325	79.0
2013 – 14	340.0	1.11118	377.8
2014 – 15	695.0	1.17229	814.7
2015 – 16	870.0	1.23677	1,076.0
2016 – 17	530.0	1.30479	691.5
2017 – 18	215.0	1.37656	296.0
2018 – 19	125.0	1.45227	181.5
2019 – 20	30.0	1.53214	46.0
	<hr/> 2,880.0 <hr/>		<hr/> 3,562.5 <hr/>

14. We have derived the MOD estimates on the basis of the Government's latest set of assumptions on the trend rate of change in the prices of public sector building and construction output for the period from 2012 to 2020. We will deliver the project through a design-and-build contract. We will award the contract on a lump-sum basis because the scope of the works can be clearly defined in advance. The contract will provide for price adjustments.

15. We estimate the additional annual recurrent expenditure arising from the project to be \$97.8 million.

/PUBLIC

PUBLIC CONSULTATION

16. We consulted the Sai Kung District Council on the proposed project on 1 April 2008 and 4 May 2010. We explained that due to the long distance between the proposed training school and the residential places, the noise caused by the project will not have much impact on the residents in the vicinity. The buildings providing real fire training will also be placed near hill side to reduce the noise level. The driving training will be conducted in the proposed FSTS and on roads in the territory. As the training vehicles will not be in Tseung Kwan O frequently, it will not influence the traffic in the area. Members noted the information and raised no objection to the project.

17. We also consulted the Legislative Council Panel on Security on 10 February 2011. In response to Members' concerns on the need to provide certain specialised simulation training facilities and other teaching/ ancillary facilities in the proposed FSTS, we provided a supplementary note to the Panel on 6 March 2012. Members raised no objection to the proposal. Members also asked the Administration to provide a breakdown of the cost of facilities in the Public Works Subcommittee paper, which is provided at Enclosure 9.

ENVIRONMENTAL IMPLICATIONS

18. The project is not a designated project under the Environmental Impact Assessment Ordinance (Cap. 499). We completed a Preliminary Environmental Review in July 2010 which concluded that the project would have no long-term adverse environmental impact. We have included in the project estimates the cost to implement suitable mitigation measures to control short-term environmental impacts.

19. During construction, we will control noise, dust and site runoff nuisances to levels within established standards and guidelines through the implementation of mitigation measures as required. These include the use of silencers, mufflers, acoustic lining or shields and the building of barrier walls for noisy construction activities, frequent cleaning and watering of the site, and the provision of wheel-washing facilities to prevent dust nuisance.

20. At the planning and design stages, we have considered measures to reduce the generation of construction waste where possible (e.g. using metal site hoardings and signboards so that these materials can be recycled or reused in other projects). In addition, we will require the contractor to reuse inert construction waste on site (e.g. use of excavated materials for filling within the site) or in other suitable construction sites as far as possible, in order to minimise the disposal of inert construction waste at public fill reception facilities⁹. We will encourage the contractor to maximise the use of recycled/recyclable inert construction waste, and the use of non-timber formwork to further reduce the generation of construction waste.

21. At the construction stage, we will require the contractor to submit for approval a plan setting out the waste management measures, which will include appropriate mitigation means to avoid, reduce, reuse and recycle inert construction waste. We will ensure that the day-to-day operations on site comply with the approved plan. We will require the contractor to separate the inert portion from non-inert construction waste on site for disposal at appropriate facilities. We will control the disposal of inert construction waste and non-inert construction waste at public fill reception facilities and landfills respectively through a trip-ticket system.

22. We estimate that the project will generate in total about 46 320 tonnes of construction waste. Of these, we will reuse about 23 990 tonnes (51.8%) of inert construction waste on site and deliver 15 730 tonnes (34%) of inert construction waste to public fill reception facilities for subsequent reuse. We will dispose of the remaining 6 600 tonnes (14.2%) of non-inert construction waste at landfills. The total cost for accommodating construction waste at public fill reception facilities and landfill sites is estimated to be \$1.25 million for this project (based on a unit cost of \$27 per tonne for disposal at public fill reception facilities and \$125 per tonne at landfills¹⁰).

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⁹ Public fill reception facilities are specified in Schedule 4 of the Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 354N). Disposal of inert construction waste in public fill reception facilities requires a licence issued by the Director of Civil Engineering and Development.

¹⁰ This estimate has taken into account the cost of developing, operating and restoring the landfills after they are filled and the aftercare required. It does not include the land opportunity cost of existing landfill sites (which is estimated at \$90 per m³), nor the cost to provide new landfills (which is likely to be more expensive) when the existing ones are filled.

HERITAGE IMPLICATIONS

23. This project will not affect any heritage site, i.e. all declared monuments, proposed monuments, graded historic sites/buildings, sites of archaeological interests and Government historic sites identified by the Antiquities and Monuments Office.

LAND ACQUISITION

24. The project does not require land acquisition.

ENERGY CONSERVATION MEASURES

25. This project has adopted various forms of energy efficient features, including –

- (a) high efficient water-cooled chiller with heat recovery function;
- (b) variable refrigerant volume air conditioning system;
- (c) automatic demand control of chilled water circulation system;
- (d) automatic demand control of supply air;
- (e) demand control of fresh air supply with carbon dioxide sensors;
- (f) heat wheels/heat recovery fresh air pre-conditioners for heat energy reclaim of exhaust air;
- (g) energy efficient fluorescent tubes with electronic ballast and lighting control by occupancy sensors and daylight sensors;
- (h) light-emitting diode (LED) type exit signs;
- (i) automatic on/off switching of lighting and ventilation fan inside the lift; and
- (j) building energy management system for large installations.

26. For renewable energy technologies, we will install a solar hot water system, a photovoltaic system and a wind turbine system for environmental benefits.

27. For green features, we will provide greening on rooftop and vertical greening as well as landscape features for environmental and amenity benefits.

28. For recycled features, we will provide rainwater recycling system for irrigating the greenery.

29. The total estimated additional cost for adoption of the energy conservation measures is around \$33.2 million (including \$4.3 million for energy efficient features), which has been included in the cost estimate of this project. The energy efficient features will achieve 9.9% energy savings in the annual energy consumption with a payback period of about 8.5 years.

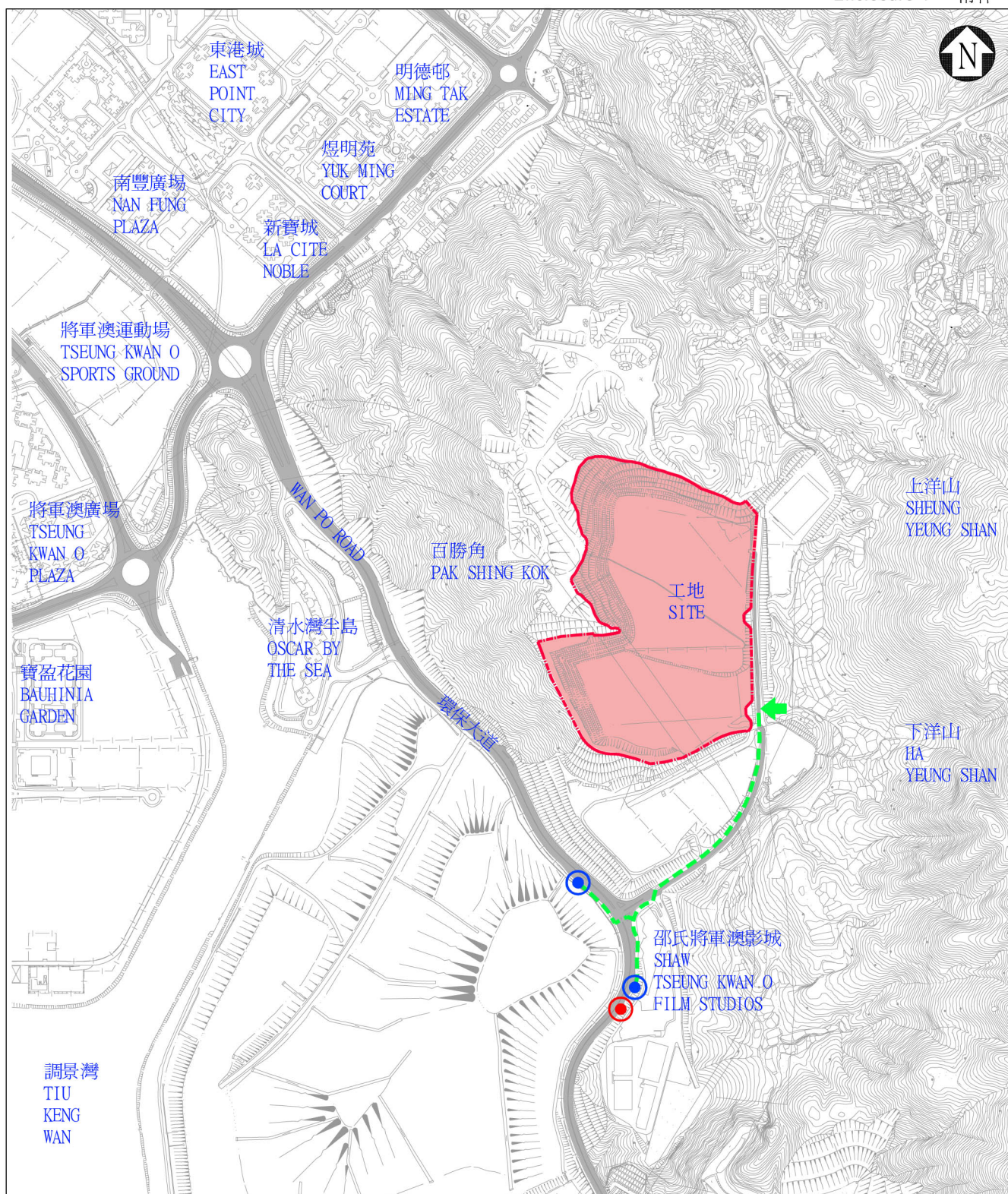
BACKGROUND INFORMATION

30. We upgraded **173BF** to Category B in October 2009. We employed a quantity surveying consultant to prepare the tender documents in July 2011. We employed a contractor to carry out ground investigation in September 2011. We charged \$2.8 million, which was the total cost of the two tasks mentioned above, to block allocation **Subhead 3100GX** "Project feasibility studies, minor investigations and consultants' fees for items in Category D of Public Works Programme". The contractor and consultant have completed all the above consultancy services and works. In addition, we engaged consultants to carry out traffic impact assessment and other technical assessments including air ventilation assessment, drainage impact assessment, landscape and visual impact assessment, preliminary environmental review, preliminary ecological impact assessment and sewerage impact assessment in May 2009 for the purpose of the re-zoning of the relevant site to FSTS. The consultants have also completed all the above assessment and consultancy services.

31. There is no existing tree within the project boundary. We will incorporate planting proposals as part of this project, including planting of about 200 trees as well as 50 000 shrubs, groundcovers and climbers.

32. We estimate that the proposed works will create about 1 205 jobs (1 127 for labourers and another 78 for professional/technical staff) providing a total employment of 33 130 man-months.

Security Bureau
May 2012



圖例
Legend



巴士站
BUS STOP



小巴士
MINIBUS STOP



主出入口
MAIN ACCESS



道路線
ACCESS ROUTE

位置及通道平面圖
LOCATION AND ACCESS PLAN

173BF

Redevelopment of Fire Services
Training School
消防訓練學校重建計劃

drawn by 繪圖

K.M. LEE

date 日期
04/2012

approved 覆核

DAVID CHAK

date 日期
04/2012

office 辦事處

PROJECT MANAGEMENT BRANCH 工程策劃管理處

drawing no. 圖則編號

PMB2/7235/XA101

scale 比例

1 : 10,000



ARCHITECTURAL
SERVICES
DEPARTMENT 建築署



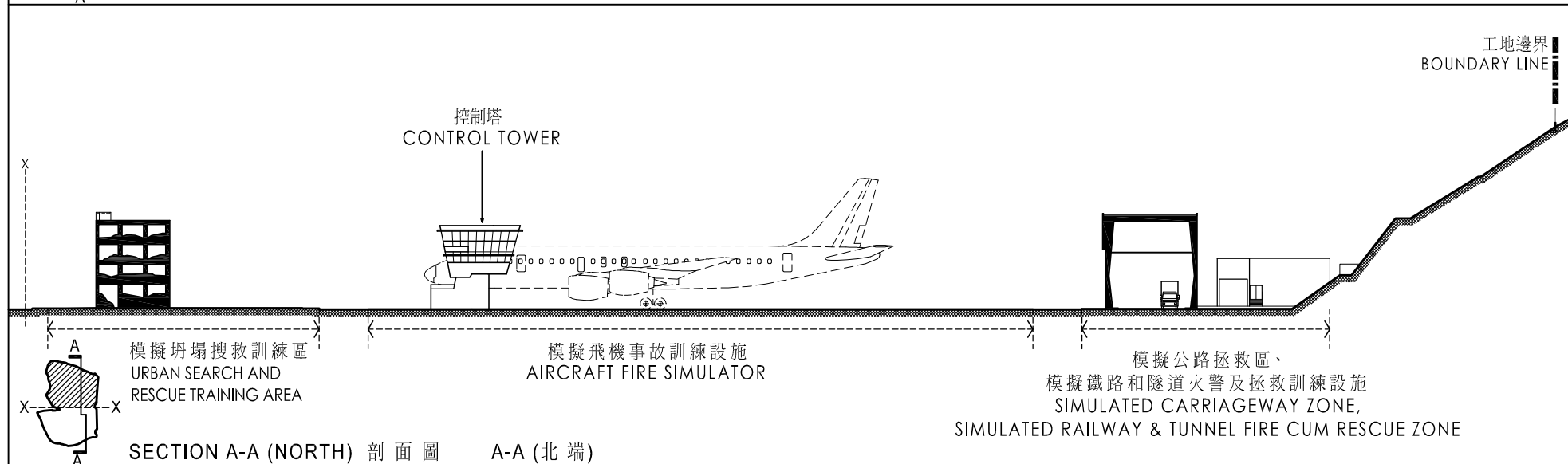
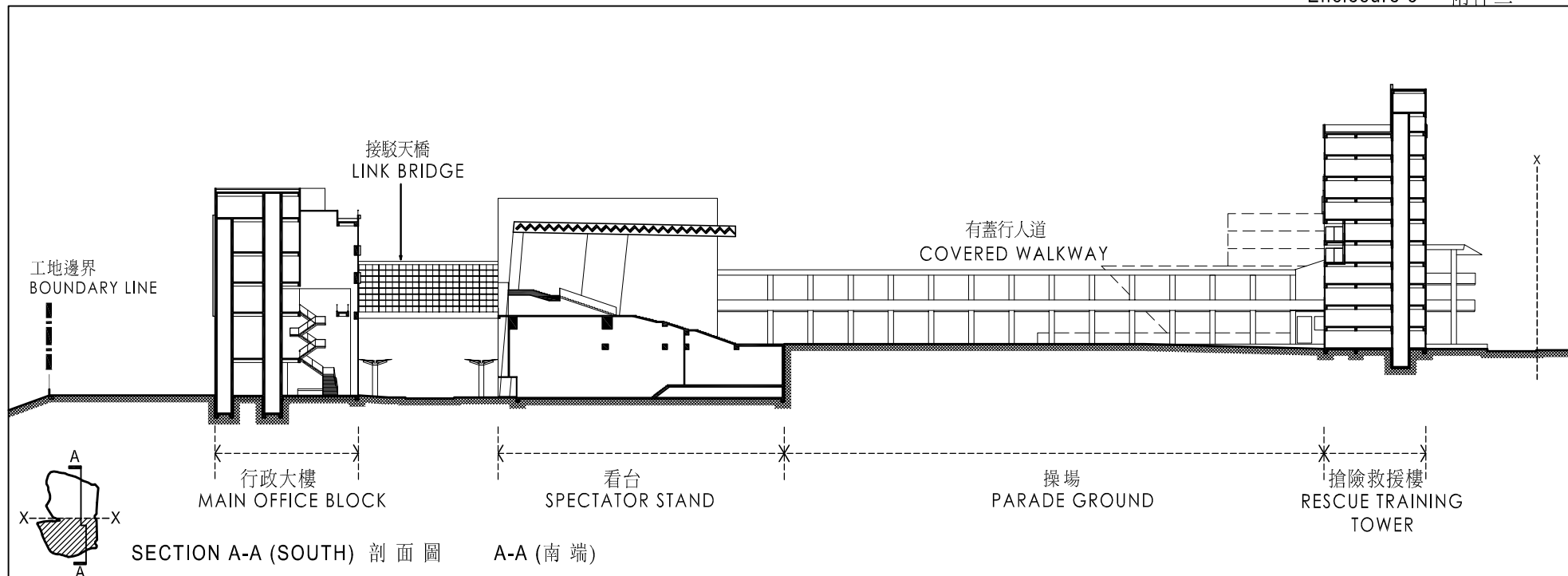
LEGEND:		
01	模擬公路拯救區、 模擬鐵路和隧道火警及拯救訓練設施 SIMULATED CARRIAGEWAY ZONE, SIMULATED RAILWAY AND TUNNEL FIRE CUM RESCUE ZONE	08* 室內實火訓練設施 (附設模擬危害物質事故訓練區) BURN HOUSE (WITH SIMULATED HAZMAT TRAINING AREA)
02	模擬煙火特性訓練設施 COMPARTMENT FIRE BEHAVIOUR TRAINING SIMULATOR	09 模擬坍塌搜救訓練區 URBAN SEARCH AND RESCUE TRAINING AREA
03	模擬船隻事故訓練設施及模擬水上拯救訓練設施 SHIP FIRE & SWIFT WATER RESCUE SIMULATORS	10 搶險救援樓 RESCUE TRAINING TOWER
04	模擬油庫事故訓練設施及模擬石油氣儲存缸訓練設施 OIL / LPG TANK SIMULATORS	11 火警調查示範室 FIRE INVESTIGATION DEMONSTRATION UNITS
05	模擬汽車事故訓練設施 VEHICLE FIRE SIMULATOR	12 操練塔 DRILL TOWER
06	模擬飛機事故訓練設施 AIRCRAFT FIRE SIMULATOR	13 教學大樓 TEACHING BLOCK
07	模擬加油及加氣站訓練設施 FUEL & LPG REFILLING STATION SIMULATOR	14 體能訓練設施 PHYSICAL TRAINING COMPLEX
		15 室外運動場 OUTDOOR PHYSICAL TRAINING GROUND
		16 操場 PARADE GROUND
		17 宿舍 RESIDENTIAL COMPLEX
		18 行政大樓 MAIN OFFICE BLOCK
		19 加油站 FUEL REFILLING STATION
		20 消防教育中心 FIRE SERVICES EDUCATION CENTRE
		21 駕駛訓練大樓 DRIVING TRAINING BLOCK
		22 駕駛訓練場 DRIVING TRAINING GROUND

* PLEASE REFER TO ENCLOSURE 7 FOR CONSTRUCTION OF A BURN ROOM IN FIRE SIMULATION SCENE
* 室內實火模擬場景建造解說圖請詳見附件七

173BF
Redevelopment of Fire Services Training School
消防訓練學校重建計劃

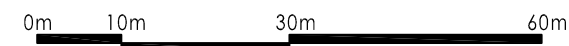
MASTER LAYOUT PLAN
總平面圖

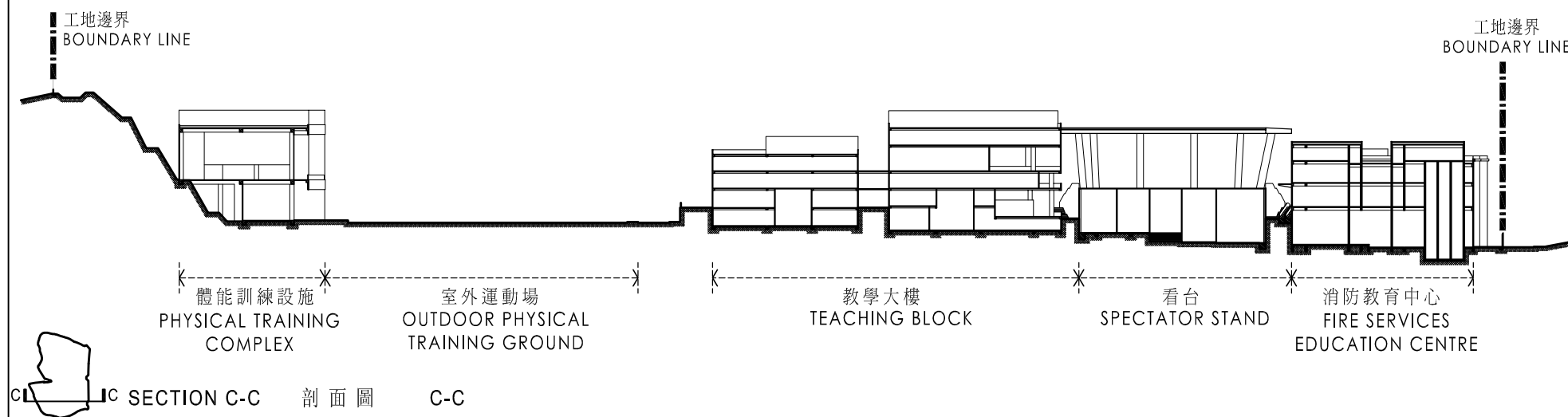
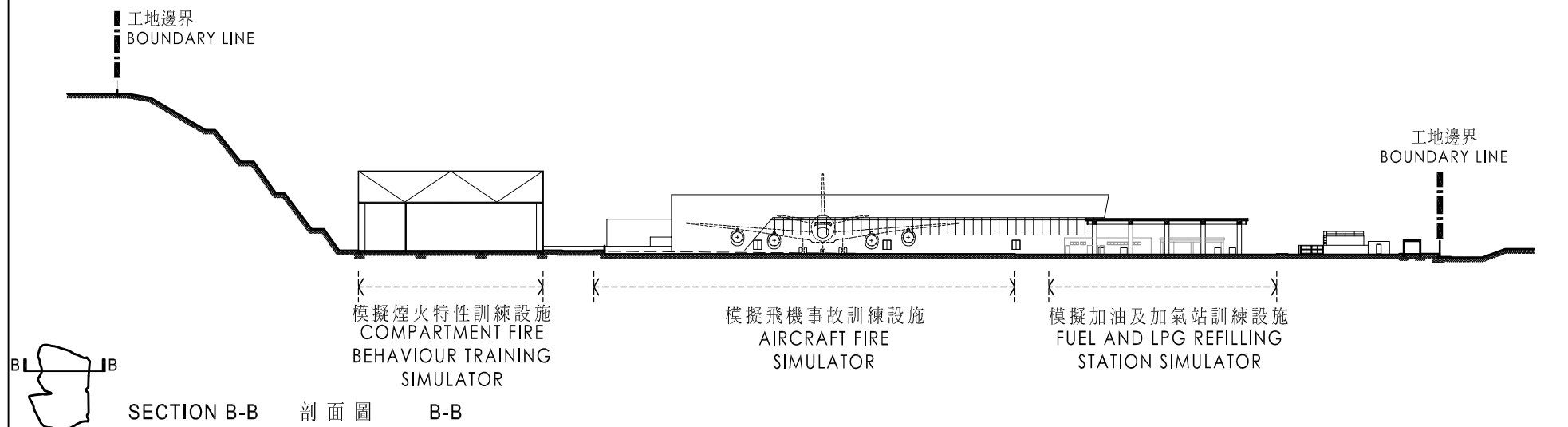
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173BF
Redevelopment of Fire Services Training School
消防訓練學校重建計劃

SECTION A-A
剖面圖 A-A

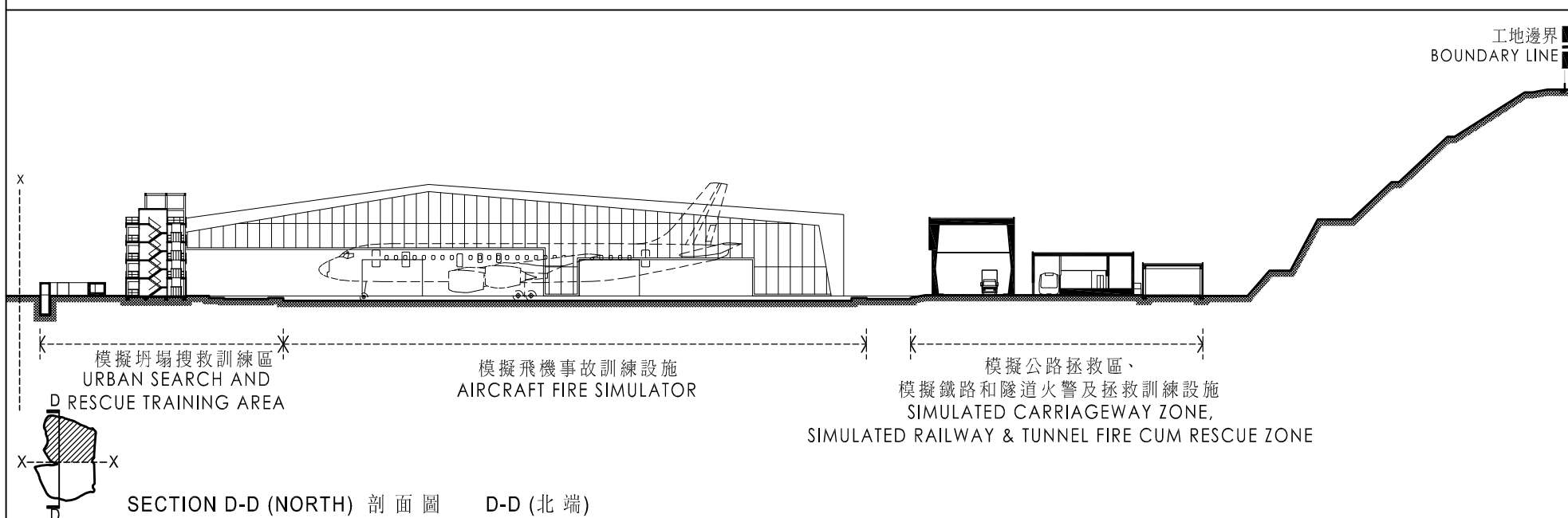
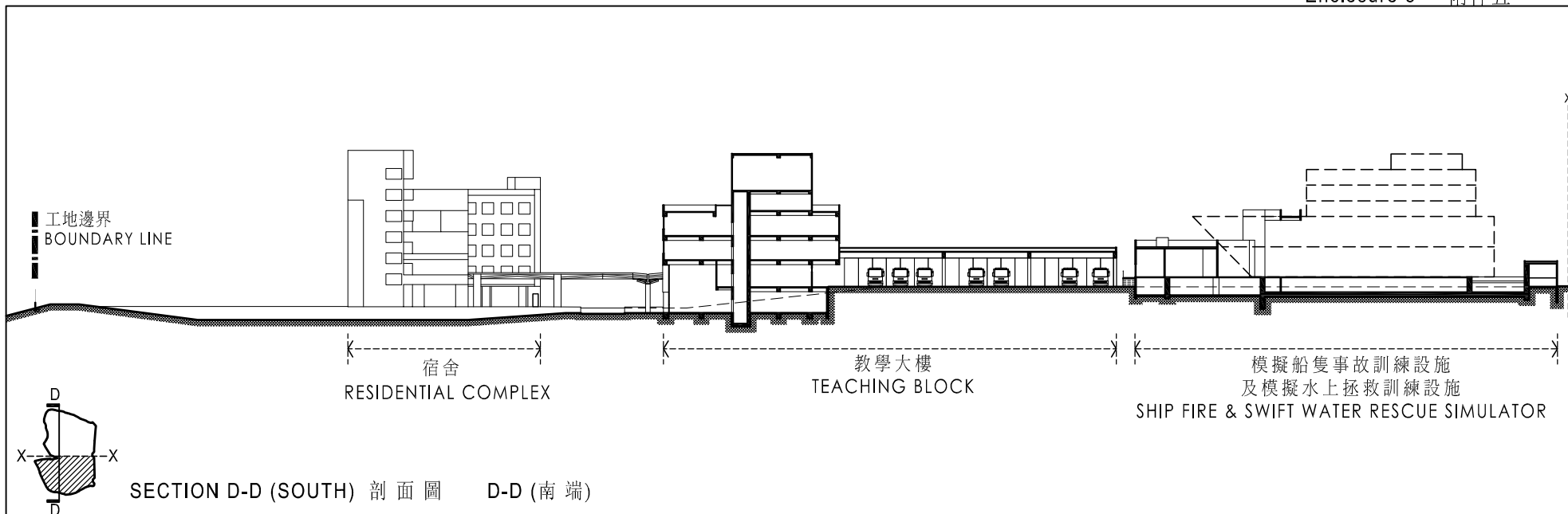




173BF
Redevelopment of Fire Services Training School
消防訓練學校重建計劃

SECTION B-B & SECTION C-C
剖面圖 B-B 及 C-C

0m 10m 30m 60m



173BF
Redevelopment of Fire Services Training School
消防訓練學校重建計劃

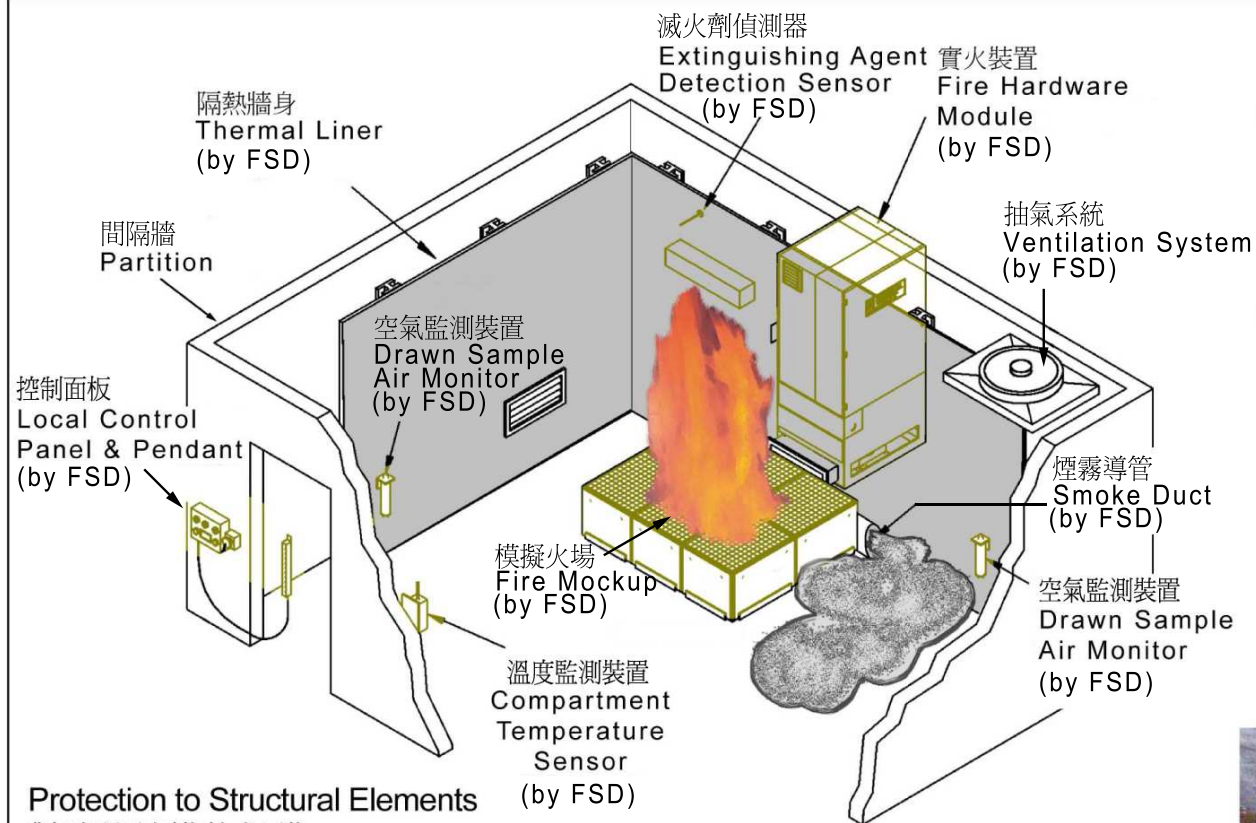
SECTION D-D
剖面圖 D-D

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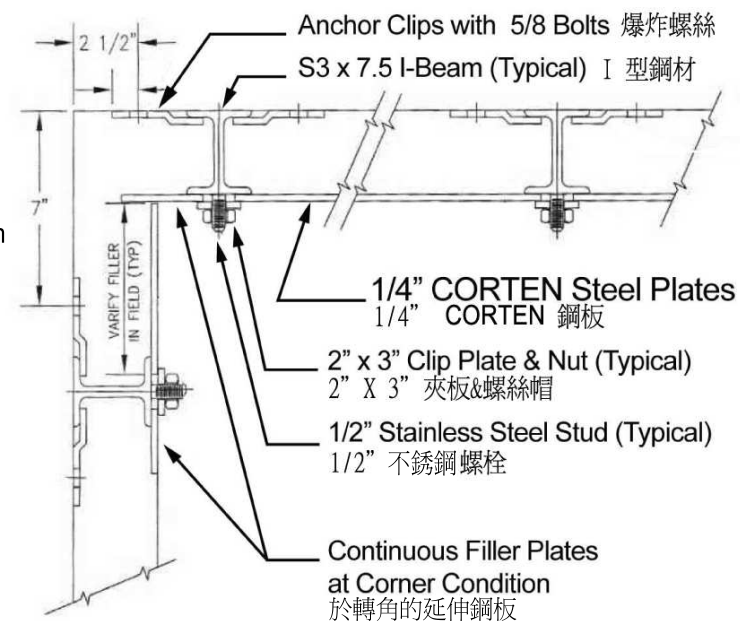


173BF
Redevelopment of Fire Services Training School
消防訓練學校重建計劃

BIRD'S EYE VIEW OF WHOLE SITE FROM SOUTHEAST (ARTIST'S IMPRESSION)
東南面整體鳥瞰構思圖



Protection to Structural Elements
對建築結構的保護



Plan View of Corner Detail
隔熱鋼板的轉角細部設計

CORTEN Steel Plate
Heat Protection Ceiling Lining (by FSD)
CORTEN鋼板隔熱天花

CORTEN Steel Plate
Heat Protection Wall Lining (by FSD)
CORTEN鋼板隔熱牆身

Fire Point (by FSD)
實火裝置

Typical Corten Lining installation in a live fire training chamber
室內實火模擬場景的典型CORTEN鋼板安裝



**Proposed Simulation Training Facilities to be provided in the
Fire Services Training School**

Types of Emergency Incidents	Simulation Training Facilities	Justifications
Buildings	Burn house	<p>The variety of the materials used, partitioning, and the furniture and storage in premises in various types of buildings increase the difficulty on the part of the firefighters in carrying out fire fighting and rescue duties. In view of this, advanced indoor live fire training facilities should be provided to enhance their fire-fighting capability in various types of fire incidents.</p> <p>With reference to fire incidents in the past, the burn house will simulate a number of indoor fire scenarios, including sub-divided units in old buildings, hotels, industrial buildings and karaokes, etc. Vivid live fire, high temperature, audio effect and smoke will be simulated to help fire services trainees acquire better fire-fighting techniques in a safe and controlled environment.</p>
	Rescue training tower	<p>With many high-rise buildings in Hong Kong, firefighters should always be prepared to deal with high angle rescue cases. Hence, FSD has established the High Angle Rescue Team in August 2011.</p> <p>FSD proposes to build a ten-storey rescue training tower in which different settings (including shopping centre, old residential building, public housing estate, factory and commercial building with curtain walls) will be simulated on different floors and at the building facade. Scenarios of people being locked in a lift will also be simulated. Trainees can practise fire-fighting and rescue strategies and techniques for different kinds of buildings. This facility can also help enhance the high angle rescue training of the High Angle Rescue Team.</p>

Types of Emergency Incidents	Simulation Training Facilities	Justifications
	Compartment fire behaviour training simulator	Firefighters often have to deal with building fires and constantly face the extreme threats of “flashovers” and “backdraughts” ¹ of indoor fires. The proposed facility comprises different training units that demonstrate “flashover” and “backdraught” effects. It will help enhance the response capability and readiness of firefighters for working under such extreme circumstances.
Transport	Simulated railway and tunnel fire cum rescue zone	Due to geographical factors, many railways and roads in Hong Kong have to pass through tunnels to be connected to a transport network. Incidents occurred inside the tunnels have the potential risk of causing significant loss of lives and property, and hence it is necessary for firefighters to enhance their fire-fighting and rescue skills in this respect. With this facility, trainees will learn and practise the techniques and deployment strategies for tackling rail and tunnel fires, which include working in confined spaces, extinguishing different types of vehicle fire in tunnels, strategies for moving trains, as well as methods and techniques for efficient evacuation of drivers and passengers, etc.
	Simulated	The simulated carriageway zone will provide

¹ Flashover is a temperature-induced phenomenon that occurs in the early stage of fire development. As the fire develops, individual items in the room will burst into flames when the temperature reaches 650 degree Celsius or above. The flames reaching the ceiling at one end of a room will be transformed to a rapid, almost simultaneous ignition of all flammable items. Backdraught occurs in the later stage of a fire. When the fire burns in a condition of limited ventilation, flammable gaseous products will accumulate. These products do not necessarily ignite. However, when air is induced into the room, it is possible for the flammable products to ignite in a fierce condition.

Types of Emergency Incidents	Simulation Training Facilities	Justifications
	carriageway zone	a training venue for simulating large scale vehicle incidents. With this facility, firefighters and ambulancemen can practise the rescue techniques required to deal with road accidents. A mock-up expressway will be built for the simulation of traffic accidents involving various types of vehicles (including heavy goods vehicles, private cars and buses etc.) which will be used to train firefighters and ambulancemen on pre-hospital emergency care, vehicle stabilisation and cutting techniques.
	Vehicle fire simulator	This facility is designed to train firefighters to deal with different types of vehicle fire. There will be a simulated vehicle for the simulation of engine fire, compartment fire and fuel tank fire.
Marine and Water	Ship fire simulator	<p>As the interior environment and structure of a ship are quite different from those of a building, firefighters face much greater challenges when performing firefighting and rescue duties inside a ship. At present, FSD does not have specific training facilities for ship fire.</p> <p>This facility simulates a six-deck ship, in which the lowest two decks simulate a cargo ship and the other four decks a cruise liner. There are a number of live fire training compartments in the mock-up ship for the simulation of scenarios like passenger compartment, engine room, heated oil piping, etc. for training purpose.</p>
	Swift water rescue simulator	There were a number of serious flooding incidents in Hong Kong in the past. Sporadic rapids brought about by heavy rain may lead to loss of lives. This facility simulates an outdoor river channel encircling the ship fire simulator, which will create artificial swift

Types of Emergency Incidents	Simulation Training Facilities	Justifications
		water effects, to enhance trainees' techniques and response capability in swift water rescue.
Gas	Fuel and LPG refilling station simulator	In Hong Kong, there are many fuel and LPG refilling stations, with many of them located in densely populated areas. Although these stations are required to provide fire service installations by law, the possibility of fire could not be completely ruled out. Fuel and LPG refilling station simulator can strengthen training in this regard.
	Oil tank simulator	Incidents in oil depots may involve fire and oil leakage. They may result in severe damages if not handled properly. Techniques on sealing and using chemical foam to suppress fire are involved in handling oil tank incidents. This facility can help trainees understand the circumstances they may face in oil tank fire and strengthen the training of firefighters in this respect.
	LPG tank simulator	There are a number of large-scale LPG tanks in Hong Kong. This facility can provide practice opportunities for trainees on the proper handling of explosion and rupture caused by internal pressure rapidly built up in an LPG tank in a fire.
Aircraft	Aircraft fire simulator	Air traffic in Hong Kong is very busy. An aircraft incident may result in a large number of casualties. These incidents may occur at the airport and at other locations. As the firefighting and rescue techniques for aircraft incidents are quite different from those used in other major incidents, it is necessary to set up an aircraft fire simulator to strengthen training of the trainees in this regard.
Hazardous	Simulated HazMat	While Hong Kong has relevant legislation to

Types of Emergency Incidents	Simulation Training Facilities	Justifications
material (HazMat)	training area (attached to the burn house)	<p>regulate the manufacture, conveyance and storage of hazardous materials, such as chemicals and radioactive materials, etc, severe damage may still be caused in case of Hazmat incidents. Specialised knowledge, techniques, tools and training are instrumental in dealing with such incidents.</p> <p>In recent years, FSD has been striving to enhance its capability in handling HazMat incidents and has recently set up a HazMat Team. The HazMat Team conducts training at part of the Sheung Wan Fire Station at present. In the long run, the HazMat Team needs a permanent venue with adequate facilities for training.</p> <p>FSD will set up a simulated HazMat training area in the burn house. Facilities in the training area include simulated gas leakage chamber, HazMat laboratory, dangerous goods store and chlorine store, etc. Trainees can acquaint themselves with operational strategies, skills of using various detectors and protective equipment, as well as sealing and decontamination techniques.</p>
Structural collapse	Urban search and rescue training area	<p>FSD established the Urban Search and Rescue (USAR) Team in end-2008. The USAR Team will conduct search and rescue operations under adverse circumstances such as landslides, building collapse or train collision incidents. To enhance the search and rescue capabilities of the USAR Team, relevant members need to be provided with facilities to receive trainings on urban search and rescue and rescue in underground conduits.</p>

**Breakdown of the cost of the major facilities of
the proposed Fire Services Training School**

Major facilities	Cost \$ million (MOD)
Main office block, teaching block, physical training facilities and ancillary facilities such as residential complex for recruits, etc.	1,663.6
Driving training block	187.6
Burn house	170.0
Rescue training tower	86.8
Compartment fire behaviour training simulator	173.1
Simulated railway and tunnel fire cum rescue zone	141.6
Simulated carriageway zone	1.2
Vehicle fire simulator	9.4
Ship fire simulator and swift water rescue simulator	136.6
Fuel and LPG refilling station simulator	43.6
Oil tank simulator and LPG tank simulator	52.3
Aircraft fire simulator	101.1
Simulated HazMat training area	18.9
Urban search and rescue training area	21.0
Others (comprising site work, drainage, external work, soft landscape works, consultant's fees for quantity surveying services and contingencies) with the provision of price adjustment	755.7
Total :	3,562.5

173BF – Redevelopment of Fire Services Training School (FSTS)

Breakdown of the estimates for consultant's fees (in September 2011 prices)

		Estimated man-months	Average master pay scale salary point	Multiplier	Estimated fees (\$ million)
(a)	Consultant's fees				
	for quantity				
	surveying services (Note 1)				
	Professional	--	--	--	4.1
	Technical	--	--	--	4.0
Total :					8.1

Note

1. The consultant's staff cost for quantity surveying services is calculated in accordance with the existing consultancy agreement for the provision of quantity surveying services for **173BF**. The consultancy assignment for the construction of the FSTS will only be executed subject to the Finance Committee's approval to upgrade **173BF** to Category A.