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Ref. : DEVB(W) 710/83/01

Group : 16

31 July 2019

Development Bureau
Technical Circular (Works) No. 1/2019

Railway Protection

Scope

This Circular promulgates the guidelines for planning and undertaking public works and maintenance works within the Railway Protection Area¹ (“the Area”).

2. Transport and Housing Bureau and MTR Corporation Limited have been consulted and agreed to the content of this Circular.

Effective Date

3. This Circular takes immediate effect.

Effect on Existing Circulars

4. This Circular supersedes WBTC No. 19/2002, ETWB TC(W) No. 33/2003 and ETWB TC(W) No. 2/2005, which are hereby cancelled.

¹ The Railway Protection Area is defined in Buildings Department’s “Practice Note for Authorized Persons, Registered Structural Engineers and Registered Geotechnical Engineers – No. APP-24”, and the respective definition is replicated in paragraph 6 of this Circular.

Background

5. Upon the merger of the Mass Transit Railway and Kowloon-Canton Railway systems on 2 December 2007, Mass Transit Railway Corporation Limited (MTRCL) became the operator of all the railway lines in the Hong Kong Special Administrative Region, including those new railway lines and extension lines which came into operation in recent years.

6. As a general guide, the boundary of the Area is about 30 m outside the outer surface of the railway structures or the railway fence/wall, or from the nearest rail if there is no railway fence/wall, but it encompasses the whole of any lot where any part thereof lies within the 30 m distance. At railway stations, the boundary of the Area is more extensive².

Policy

Liaison with MTRCL for Works within the Area

7. No capital works or maintenance works (e.g. construction works, ground investigation, utility works), including tree planting works, shall take place within the Area unless the works proposals have been forwarded to MTRCL for comment and stipulation of any measures necessary to protect the railways.

8. Works Departments shall check whether any part of their capital works or maintenance works, including tree planting works, falls within the Area. In case of any doubt as to whether the proposed works will have an effect on the railway, Works Departments should liaise with MTRCL.

9. For any proposed works within the Area, Works Departments shall liaise with MTRCL to minimise any potential/possible interference of the proposed works to railway operation. Where necessary, Works Departments shall consult MTRCL on various issues such as details of works proposals, protective measures, construction methods, monitoring mechanisms and maintenance requirements. In designing any structure spanning over a railway, Works Departments shall take account of the relevant requirements in the “Structures Design Manual for Highways and Railways” issued by the Highways Department.

² The railway protection areas of some of the railway lines are designated as Area No. 3 of the scheduled areas in Schedule 5 to the Buildings Ordinance. Copies of these plans can be downloaded from the Buildings Department’s website (<https://www.bd.gov.hk/en/resources/codes-and-references/scheduled-areas/index.html>). Also, a whole set of the plans showing the railway protection areas are available for inspection in MTRCL. They can also be downloaded from MTRCL’s website (https://www.mtr.com.hk/en/corporate/operations/protection_boundary_map.html).

Openings adjacent to Railway Vent Shafts

10. When planning projects or works in close proximity to railway vent shafts, openings of the new structures (e.g. operable or fixed windows, doorways, building ventilation system intakes or exhausts) should not be located closer than 5 m to the vent shaft irrespective of whether the vent shaft is free standing or is accommodated in a structure. Subject to the compliance with relevant statutory requirements, this distance may be reduced to 2.5 m provided that the exhaust air from the railway vent shaft is directed away from and is not likely to affect the openings by natural convection. Advice should be sought from MTRCL where necessary.

Tree Planting within the Area

11. For tree planting works within the Area, the respective planting proposal shall be sent to MTRCL for comment. The tree planting proposal shall provide an estimation of the sizes (including height and spread width at maturity) of the proposed trees where possible. The tree planting locations should be agreed by MTRCL such that collapse of tree trunk or branches (reaching the maturity stage) would not affect railway operation, including the supporting facilities (e.g. power supply, signalling system). In addition, trees should not be planted at a distance less than 2 m away from the nearest rail of the unfenced railway section. In this connection, MTRCL has agreed to take a more flexible and balanced approach where practicable in considering such proposal.

Contract Provisions

12. When carrying out any works within the Area, the respective public works contracts for which tenders are invited after the promulgation of this Circular shall include the following contract provisions at **Appendices A, B and C**.

- (a) the “Notes to Tenderers for Works within the Railway Protection Area” at **Appendix A** to this Circular;
- (b) the “Special Conditions of Contract for Works within the Railway Protection Area” at **Appendix B** to this Circular; and
- (c) the “Particular Specification for Works within the Railway Protection Area” at **Appendix C** to this Circular.

13. The “Technical Notes for Guidance in Assessing the Effects of Civil Engineering Construction/Building Development on Railway Structures and Operations” (“Technical Notes”) at **Annex 1(PS) of Appendix C** to this Circular are modelled on “Appendix A” of the Buildings Department’s “Practice Note for Authorised Persons, Registered Structural Engineers and Registered Geotechnical Engineers – No. APP-24”, which provides guidance on the measures and requirements necessary to protect the railways. The Technical Notes are to be used for guidance only and should apply mutatis mutandis, taking cognisance of the nature of the proposed works.

14. Works Departments shall clearly delineate on the contract drawings the details of works access to and within the Area, as well as area of the site within which the Special Conditions of Contract and the Particular Specification as described in paragraph 12 above shall apply.

Execution of Works

15. Works Departments shall make every effort to ensure that all necessary measures are taken at all times by the Contractor to protect the railway structures/installations, particularly the power supply facilities (e.g. overhead cables) and the signalling system.

16. Works Departments shall request the Contractor to complete “MTRCL’s Indemnity Form” at **Annex 3(PS)** and “Letter of Undertaking” at **Annex 4(PS) of Appendix C** to this Circular before entering into railway premises or working in the vicinity of at-grade or overhead railway structures/installations.

17. Works Departments shall arrange to monitor movement and vibration on railway structures/installations if so requested by MTRCL. The relevant monitoring records should be sent to MTRCL. Works Departments shall ensure the Supervising Officer/Engineer/Architect to submit proposal to MTRCL six weeks in advance of the commencement of any works within the Area for planning of an appropriate monitoring programme. Works Departments shall closely liaise with MTRCL on the results of monitoring and take appropriate action as deemed necessary.

18. Any other necessary monitoring within the construction site (e.g. monitoring of groundwater level) shall be carried out by the Supervising Officer/Engineer/Architect, who should liaise closely with MTRCL. All parties should keep each other informed of the monitoring records as soon as practicable.

Exemption

19. Exemption is given to those works involving only ground breaking and excavation not exceeding 1 m deep within the Area under the following conditions, provided that MTRCL has been advised of the works in advance:

- (a) outside an area not less than 6 m from at-grade railway tracks and station entrances; or
- (b) outside the areas bounded by railway fence/wall.

20. The provisions in this Circular do not apply to emergency works, which include urgent repair works to existing utility services, water mains, stormwater drains, sewers, roads, slopes, street furniture and highway structures or emergency tree maintenance/clearance works, if these works fall outside the railway premises but within the Area. However, MTRCL should be advised of these works including the location and

depth of excavation as soon as possible.

Enquiries

21. Enquiries on this Circular should be addressed to Chief Assistant Secretary (Works) 3.

(LAM Sai-hung)
Permanent Secretary for Development (Works)

Notes to Tenderers for Works within the Railway Protection Area

Tenderers shall note that part of the Works will take place within the Railway Protection Area and that the Contractor shall be required to complete and return to the MTR Corporation Limited an indemnity form and letter of undertaking in accordance with Clause [18]* of the Particular Specification before being permitted to enter the Railway Protection Area. Tenderers shall approach MTR Corporation Limited to obtain the latest “Rate of Charge for Service/Information Provided by MTR Corporation Limited” and to include the same in the tender price submitted in the tender.

** Update clause reference as appropriate.*

Appendix B

SCC X

Special Condition of Contract for Works within the Railway Protection Area

- (1) This Special Condition of Contract shall apply to works within the Railway Protection Area as shown on the Drawings and shall be read in conjunction with the General Conditions of Contract.

Definitions

- (2) Further to Clause 1 of the General Conditions of Contract the following words and expressions shall have the meaning hereby assigned to them except when the context otherwise requires :-

“Competent Person” means the person assigned by the MTR Corporation Limited from time to time for the purposes of Clause (6)(o) of the Particular Specification for Works within the Railway Protection Area.

"Isolation" means isolation of the electrical equipment, which is the disconnection of a section of such equipment from all sources of electricity supply.

“MTRCL” means the MTR Corporation Limited.

"Possession" means possession of a specific section of track or tracks under the sole control of a Competent Person trained and qualified by MTRCL.

“Railway” means all the railway lines in the Hong Kong Special Administrative Region operated by MTRCL.

“Railway Protection Area” means the area enclosed by the railway protection boundary as shown on railway protection plans, which is situated approximately 30 m outside the outer surface of the railway structures/installations, the railway fence/wall, or the nearest rail if there is no railway fence/wall, but it encompasses the whole of any lot as appropriate where any part lies within the 30 m distance. At the railway stations, the area enclosed by the boundary is more extensive. The railway protection plans can be inspected at MTRCL or viewed from the official website of MTRCL.

“Restriction” means train speed restriction, which is a limitation of the normal permitted speed of rail traffic over a specified length of the railway track.

Compliance with requirements (3)(a) The Contractor shall have regard to the Particular Specification for Works within the Railway Protection Area and shall comply strictly with the requirements as set out therein. The Contractor shall comply with any instructions given by MTRCL through the Supervising Officer/Engineer/Architect with regard to planning, method of working, safety requirements and on any other matters which may affect the operation of the railway. Provided that if a situation occurs which in the opinion of either the Contractor or MTRCL may give rise to or actually constitute an emergency and either the Contractor or MTRCL considers that it is not practicable to communicate through the Supervising Officer/Engineer/Architect, then the Contractor and MTRCL may communicate directly with each other and MTRCL may give a direct instruction to the Contractor to carry out any remedial or other works or repairs and such instruction shall be regarded for the purposes of this Contract as an instruction from the Supervising Officer/Engineer/Architect.

(3)(b) Should the Contractor be unwilling or unable at once to comply with a direct instruction from MTRCL under the provisions of this Clause, the Contractor shall not prevent and shall permit MTRCL or MTRCL's workers or contractors to carry out the remedial works or other works or repairs required by the direct instruction.

(3)(c) If in the opinion of the Supervising Officer/Engineer/Architect, the Contractor was obligated under the Contract to carry out the remedial or other works or repairs referred to in sub-clause(3)(b), all costs and charges which are in the opinion of the Supervising Officer/Engineer/Architect properly incurred by the MTRCL in carrying out the same shall on demand be paid by the Contractor to the Employer or may be deducted by the Employer from any monies due or which may become due to the Contractor whether under this or any other contract(s) with the Employer.

(3)(d) The Contractor shall notify the Supervising Officer/Engineer/Architect as soon as possible of any direct instruction received from MTRCL under the provisions of this Clause.

Work on or near railway track (4)(a) Where any part of the Works has to be carried out during the period of Restriction, Possession or Isolation and the period of such Restriction, Possession or Isolation is set out in the Contract, the Contractor shall plan and execute that part of the Works so that such period is not exceeded and so that no further periods are required.

- (4)(b)** If no period of Restriction, Possession or Isolation is set out in the Contract, the Contractor shall before commencing any work through the Supervising Officer/Engineer/Architect liaise with MTRCL who will decide if any part of the Works is to be carried out during a period of Restriction, Possession or Isolation. MTRCL may alter or cancel the said period whenever MTRCL considers necessary. The decision of MTRCL in that event shall be binding on the Contractor. Any claims by the Contractor for extension of time or additional payment shall be supported by such contemporaneous records as may reasonably be necessary for consideration by the Supervising Officer/Engineer/Architect in consultation with MTRCL.
- (4)(c)** After the method of carrying out the works has been agreed with MTRCL (and taking into account any provisional arrangements which had been made), the Contractor shall in all cases other than for emergency works submit written notice of his programme of works, which shall include details of any Restriction, Possession or Isolation previously notified as being necessary by MTRCL, to the MTRCL at least ten calendar weeks in advance of the proposed commencement of works within the Railway Protection Area.
- (4)(d)** When an entry into the area where there is a period of Restriction, Possession or Isolation is necessary, the Contractor shall be responsible for initiating the necessary action to obtain the requisite approval from MTRCL. The Contractor shall be solely responsible for all delays caused through failure to submit the necessary application for approval, submission of inadequate information or late submission of any such application.
- (4)(e)** The Contractor shall organize the execution of the works during any period of a Restriction and/or Possession and/or Isolation so that MTRCL will be able to remove such Restriction, Possession or Isolation at the time set out in the Contract or the time previously agreed by MTRCL. Should the Contractor in the opinion of the Supervising Officer/Engineer/Architect or MTRCL not make sufficient or adequate arrangements (including the provision of standby plant) for completing the whole or any stage of the works within the time set out in the Contract or agreed with MTRCL, MTRCL may at his discretion cancel the Restriction and/or Possession and/or Isolation, or MTRCL may employ other contractor(s) to finish or to carry out such works as is necessary to enable the Restriction and/or Possession and/or Isolation to end at the earliest possible moment.
- (4)(f)** A period of Restriction and/or Possession and/or Isolation cannot normally be extended and if the Contractor fails to

carry out the works during any such period he shall be required to re-apply to MTRCL for a further period of Restriction and/or Possession and/or Isolation.

- Cancellation of Restrictions, Possession or Isolations at short notice
- (4)(g) All expenses which in the opinion of the Supervising Officer/Engineer/Architect are properly incurred by the MTRCL as a result of the MTRCL making necessary arrangements in accordance with sub-clause (4)(e) to assist the Contractor or carrying out any necessary works in accordance with sub-clause (4)(e) shall on demand be paid by the Contractor to the Employer or may be deducted by the Employer from any monies due or which may become due to the Contractor whether under this or any other contract(s) with the Employer.
- (5)(a) MTRCL shall have the right to cancel or alter the date and the timing of any Restriction, Possession or Isolation whether such date and timing are set out in the Contract or have been previously agreed, if in his opinion, it is necessary to do so for the safe and uninterrupted running of rail traffic. In such an event MTRCL shall make alternative arrangements as soon as practicable.
- (5)(b) Subject to any default by the Contractor under sub-clause (4)(e), if the Contractor suffers delay or incurs expense due to MTRCL cancelling or altering at short notice the date or the timing of any Restriction, Possession or Isolation set out in the Contract or previously agreed by MTRCL, the Supervising Officer/Engineer/Architect shall on application by the Contractor and following receipt from the Contractor of particulars, as full and detailed as possible, value and certify such sum, if any, as the Supervising Officer/Engineer/Architect considers fair and reasonable.
- (5)(c) General Conditions of Contract Clause 50(1)(b) is amended by adding the following after sub-clause (b)(xi): “or (xii) subject to any default by the Contractor under sub-clause (4)(e) of SCC X, cancellation or alteration by MTRCL at short notice of the date or timing of any Restriction, Possession or Isolation set out in the Contract or previously agreed to by MTRCL; or” and “(xiii) delay on the part of any Nominated Sub-contractor for any reason specified in sub-clause (1)(b)(xii) of this Clause and which the Contractor has taken all reasonable steps to avoid or reduce.” [*Contract drafter shall amend the sub-clause number if any other SCC extends the causes of delay entitling EOT under GCC Clause 50(1)(b)*]

OR

General Conditions of Contract for Term Contract Clause 52(1)(b) is amended by adding the following after sub-clause (b)(x): “or (xi) subject to any default by the Contractor under

sub-clause (4)(e) of SCC X, cancellation or alteration by MTRCL at short notice of the date or timing of any Restriction, Possession or Isolation set out in the Contract or previously agreed to by MTRCL; or” and “(xii) delay on the part of any Nominated Sub-contractor for any reason specified in sub-clause (1)(b)(xi) of this Clause and which the Contractor has taken all reasonable steps to avoid or reduce.” [*Contract drafter shall amend the sub-clause number if any other SCC extends the causes of delay entitling EOT under GCC for Term Contract Clause 52(1)(b)*]

**Particular Specification
for Works within the Railway Protection Area**

(1) PROCEDURE FOR POSSESSION

Provided the Contractor has completed all his obligations to obtain a Possession and has made satisfactory arrangements with MTRCL in respect of the extent of working area and procedure for such Possession, MTRCL shall before the Possession advise the Contractor of the detailed time, limits and conditions with which the Contractor must comply.

(2) WORKING IN THE VICINITY OF THE RAILWAY TRACK

Except with the prior written approval of MTRCL the Contractor shall not carry out any works in the vicinity of the railway track without the attendance of a MTRCL “Competent Person” to take care of track safety.

(3) TRESPASSING ON RAILWAY PREMISES

The Contractor shall be responsible for ensuring that none of his personnel, sub-contractors or other persons employed by him or on his behalf proceed beyond the agreed limits of the working area or access route or trespass upon railway premises.

(4) PREVENTION OF ACCIDENTS

Before entry is made within the railway premises, the Contractor shall consult MTRCL regarding the latest safety requirements for working within the railway premises. The Contractor shall brief each person employed by or on behalf of him, and those employed by or on behalf of any sub-contractor who may work on or above the track, including persons recruited during the progress of the Works. The Contractor shall ensure that all such persons are fully conversant with the requirements and that those requirements are strictly observed. The Contractor shall arrange induction courses for each and every member of staff (including those of the sub-contractors and the Supervising Officer/Engineer/Architect) before they are allowed to work within the railway premises and he shall arrange for all personnel to wear identification cards to facilitate control if required by MTRCL.

(5) WORKS DESIGNED BY CONTRACTOR

Where the Contractor is required to carry out any design works for permanent or temporary works, the Contractor shall prepare the design works with reference to the DEVB TC(W) No. 1/2019 on Railway Protection and shall in addition to the requirements specified in other relevant contract documents:-

- (5)(a) hold early preliminary discussions, through the Supervising Officer/Engineer/Architect, with MTRCL and make provisional arrangements so that the works can be carried out with the minimum interference to railway traffic and within the extent of Restriction, Possession and Isolation periods that MTRCL can make available. (Nevertheless the actual dates for any Restriction, Possession or Isolation previously agreed may, depending on the railway traffic requirements, be subject to amendment by MTRCL when the firm program is drawn up. If MTRCL agrees that such works do not require a Restriction, Possession or Isolation then no early provisional arrangements are necessary);
- (5)(b) submit full details, drawings and calculations of such works for consideration by MTRCL. No examination by MTRCL of any document submitted by the Contractor or of any Contractor's drawings of such works or agreement expressed by MTRCL shall absolve the Contractor of his responsibility for the adequacy of the design; and
- (5)(c) bear in mind that there are certain restraints on the design of and making alteration to properties in close proximity to a railway vent shaft to minimize the possibility of contamination by fire or smoke. Openings of the new structure such as an openable or fixed window, doorway, building ventilation system intake or exhaust and the like in any building shall be located not closer than 5 m to any railway vent shaft, irrespective of whether such vent shaft is free-standing or is accommodated in a building. The distance may be reduced to 2.5 m if the exhaust air from the railway vent shaft is directed away from and is not likely to affect the opening by natural convection.

(6) METHOD OF CARRYING OUT THE WORKS AND USE OF PLANT

- (6)(a) At least six weeks prior to the commencement of those part of the Works within the Railway Protection Area, full details, including calculations, drawings and construction method statements on such permanent works, temporary works, slope works, drainage works, tree planting works, ground investigation works, hoarding works, fire protection measures, lifting operations, construction sequence and program and the likes shall be submitted to MTRCL for comments and agreement. MTRCL's agreement with such submission shall not relieve the Contractor of any of his duties or responsibilities under the Contract.
- (6)(b) All works and plant operations within the Railway Protection Area shall be carried out in such manner as to avoid risk of danger to the railway traffic facilities and to passengers or to persons entitled to be within the railway premises and so as to avoid (except to the extent previously agreed in writing) any interference with or obstruction of the free movement of the railway traffic or any such passengers or persons.
- (6)(c) Detailed plans and sections showing the relationship amongst the proposed works, plant operations, railway structures and tracks shall be

provided for MTRCL's prior comments and agreement.

- (6)(d) All works shall be arranged and carried out in compliance with the requirements as stipulated in the "Technical Notes for Guidance in Assessing the Effects of Civil Engineering Construction/Building Development on Railway Structures and Operations" in Annex 1(PS) of this Particular Specification and the "Key industrial safety precautions for Contractors working within railway premises" in Annex 2(PS) of this Particular Specification.
- (6)(e) Prior to the commencement of any structural works in connection with railway structure, if agreed by MTRCL, a structural compatibility check certified by the original designer of the railway structure or by a Registered Structural Engineer shall be submitted to MTRCL for comments and agreement. As built information of the railway structure can be viewed in MTRCL.
- (6)(f) Assessment to check the effects induced in railway structures / installations arising from the works in accordance with Annex 1(PS) of this Particular Specification shall be carried out and submitted to MTRCL for prior comments and agreement.
- (6)(g) Any damage done to railway structures / installations or any works done which affect the safe operation of the railway shall be repaired and reinstated by the Contractor to the satisfaction of MTRCL.
- (6)(h) Prior to the commencement of any works within the Railway Protection Area, a survey to record the condition of the railway structures / installations constructed within 30 m from the works shall be carried out and submitted to MTRCL for comments and agreement.
- (6)(i) The movement, deformation, change in stress and vibration induced in any railway structures / installations arising from the works shall be monitored by the Contractor. A monitoring proposal shall be submitted to MTRCL for prior comments and agreement.
- (6)(j) No excavated materials, building materials, debris, containers, sheds of any kind, huts, compressors, power generators, dangerous goods or inflammable materials shall be placed or stored within 6 m of the railway premises.
- (6)(k) At all times, a safe, fluent and unimpeded passageway must be maintained on the Site for MTRCL staff to all railway structures / installations.
- (6)(l) The free and unblocked passenger access, maintenance access and emergency vehicle access (EVA) of the railway must not be affected by the works at all times.
- (6)(m) **Working Hours**

Prior comments and agreement from MTRCL shall be obtained on the working hours for the works such as erection of hoarding, working platform, lifting operations and all other works to be carried out within railway premises as well as in the vicinity of the railway structures and installation such as overhead power cables which will in the opinion of MTRCL affect the safe operation of the railway. MTRCL may require these works to be carried out outside the peak railway traffic hours or to be carried out during the non-traffic hours of the railway.

(6)(n) Site Representative

- (6)(n)(i)** When working within or above the railway premises and/or within 6 m of the railway track and/or overhead power cables, the Contractor shall provide a competent site representative to supervise the proper execution of the works. The site representative shall be a professionally qualified engineer and a member of the Hong Kong Institution of Engineers or the Institution of Civil Engineers, UK or equivalent, and have site management experience appropriate to the nature of works.
- (6)(n)(ii)** The site representative shall have the authority to receive and carry out the directives and instructions from MTRCL. The site representative shall carry a mobile phone at all times and respond to the MTRCL's calls immediately.
- (6)(n)(iii)** The site representative shall be present on site full time during the construction works carried out within or above the railway premises and/or within 6 m of the railway track and/or overhead power cables. If such site representative is absent, no works shall be allowed to be executed.

(6)(o) MTRCL Competent Persons

All works to be carried out within or above the railway premises and/or the works which have high risk on the safe operation of the railway and are required by MTRCL to be carried out during non-traffic hours of the railway, shall be carried out in the presence of a MTRCL's Competent Person and/or MTRCL's engineer's person-in-charge and/or hand signalman and/or lookoutman depending on the nature of the works and its possible effects on the railway. The Contractor shall be required to make request to MTRCL three weeks in advance for such arrangements.

- (6)(p)** With regard to all works to be carried out within railway premises, the Contractor shall apply for the necessary construction noise permit from the relevant Government Departments.
- (6)(q)** For safety and operational reasons, MTRCL shall have the authority to stop the works when required. The Contractor shall stop the works immediately when such an instruction is given by MTRCL and the works shall not be resumed until permission is given by MTRCL.

- (6)(r) Before the Contractor takes over the Site within the Railway Protection Area, the Contractor shall establish an effective communication channel amongst MTRCL, the Supervising Officer/Engineer/Architect and the Contractor. Such a communication channel shall be adequate to cover all hours.
- (6)(s) MTRCL shall be informed at least three weeks prior to the actual commencement of any site works.

(7) INTERFERENCE WITH DRAINS AND SERVICES

- (7)(a) The Contractor shall not interfere with the MTRCL's cables, signals, telegraph wires or any other apparatuses affecting the operations of the railway. The Contractor shall give sufficient notice to MTRCL to enable him to arrange for any diversion, protection or support works which MTRCL considers could be and should be carried out prior to the commencement of any works which may affect such apparatuses.
- (7)(b) The Contractor shall not interfere with any public utility services within the railway premises. The Contractor shall give sufficient notice to the public utility companies, the MTRCL and/or the relevant Government Departments to enable them to arrange for any diversion, protection or support works which they consider could be and should be carried out prior to the commencement of any works which may affect such services.
- (7)(c) The Contractor shall ensure that no metallic object (including metallic surveying tapes) is allowed to come into contact with two or more running rails nor bridge the gap across insulated rail joints. Failure to do so will cause interference with the signaling system and corresponding delays to traffic.
- (7)(d) The Contractor shall divert to a suitable outlet, by pipes or other means, water from springs, water courses, or drains which may be affected by the works and every reasonable precaution shall be taken by the Contractor to prevent damage to MTRCL's property. The Contractor shall not be allowed without the prior agreement of MTRCL to make temporary or permanent connections to the railway drains, pipes or other services.

(8) CROSSING THE TRACK

Persons engaged on the Works shall not be allowed to cross or convey material across the tracks except under conditions previously agreed in writing by MTRCL.

(9) OVERHEAD ELECTRICAL EQUIPMENT

The Contractor's attention is drawn to the presence of the overhead electrical

equipment which should be treated live at all times unless it has been isolated and earthed. Overhead electrical equipment is charged at high voltage and the Contractor shall observe the following precautions :-

- (9)(a) Works shall not be carried out, cranes or other plant shall not be erected, operated or dismantled, or materials shall not be stored, within the prohibited space which is within 3 m of a vertical plane from the nearest live overhead electrical equipment including return conductors and all supports to such electrical equipment.
- (9)(b) The prohibited space in sub-clause (9)(a) of this Clause shall be increased by the length of any tool or material being handled. However, works below the overhead electrical equipment on the permanent way, platforms, walkways and the like is permitted without special precautions provided that tools or equipment are not at any time raised or extended above head height.
- (9)(c) The prohibited space in sub-clause (9)(a) of this Clause shall be increased by the length of the longest individual unit of any scaffolding. MTRCL may require the scaffolds or similar apparatuses to be earthed.
- (9)(d) If a crane or other construction equipment is used, crane stops, protective catch fence and warning notices shall be provided by the Contractor to ensure that there can be no encroachment by the crane, load or other construction equipment on the prohibited space defined in sub-clause (9)(a) of this Clause even if such crane, load or construction equipment slips, fails, falls or overturns. The design of the protective catch fence shall be agreed with MTRCL.
- (9)(e) Portable ladders used shall be of non-conducting material and shall not be reinforced by metal attachments running along the stiles of the ladders. Special precautions must be taken to ensure that the ladder cannot slip and encroach on the prohibited space defined in sub-clause (9)(a) of this Clause.
- (9)(f) Any disturbance of or attachment to any equipment forming part of the overhead electrical equipment system must be carried out by authorized personnel of MTRCL.
- (9)(g) Provided that where it is impracticable to comply with any of the above requirements, the Contractor shall request MTRCL to arrange any possible special precautions which MTRCL considers could be taken.

(10) USE OF EXPLOSIVES

Explosives shall not be used in connection with the Works without the written consent of MTRCL and the Commissioner of Mines, Hong Kong Special Administrative Region. If approval to blast is given then it shall only be carried out under such conditions as the Commissioner of Mines may impose.

(11) EMERGENCY CREW

The Contractor shall provide an emergency crew during heavy rains and typhoons and, if required by MTRCL, at critical stages of the Works. The name of, and the method of communication with, the person who will be in charge of the crew for the following month shall be forwarded to MTRCL not less than two weeks before the first day of that month.

(12) STACKING OF MATERIAL

The Contractor shall stack and place all materials, plant and appliances in such a manner as to prevent their causing injury or damage to persons or property and at a safe distance both from railway tracks and platform edges, normally not less than 2.8 m from the nearest rail of operating track or 2.5 m from a platform edge, but subject to the requirements of sub-clause (9). The Contractor shall also strictly observe any instructions given by MTRCL as to the precautions to be taken and the distance from railway tracks and platform edges within which materials, plant and appliances shall not be stacked or placed.

(13) SCREENING OF LIGHTS

All lights provided by the Contractor shall be placed or screened so as not to interfere with any railway signals and shall not form a source of glare to the train operator. The Contractor shall inform MTRCL and obtain his written permission before commencing any temporary works which might interfere with the railway signals or the sighting of such.

(14) FIRE PREVENTION

The Contractor shall during the performance of the works make adequate arrangements, to the satisfaction of MTRCL, for the protection of the works and any adjacent railway premises from fire and shall comply with MTRCL's requirements, if any, with regard to such protection. The Contractor shall give MTRCL all facilitations to inspect the fire prevention arrangements within the railway premises and within such distance from them as MTRCL may consider necessary and shall remove such materials and take such steps to reduce the fire risk as MTRCL may from time to time require.

(15) NOTICE OF ACCIDENTS

In the case of any accident arising out of the works within the railway premises, the Contractor shall without delay notify MTRCL in addition to any other notification which he is required to make by law and/or under the Contract.

(16) ADVERTISEMENTS

The Contractor shall not permit any advertisement to be displayed within the railway premises.

(17) CLEARANCE OF LAND AND PROPERTY WITHIN THE RAILWAY PREMISES

The Contractor shall prevent mud or water falling or draining from the Works on to the land or property within the railway premises and particularly on to the track, ballast or walkways. The Contractor shall not leave any rubbish on the land and property within the railway premises. The Contractor shall clear away and remove all constructional plant, surplus materials and temporary works as and when in the opinion of MTRCL these cease to be required for the works being carried out. Any damage to the land or property within the railway premises shall be repaired and reinstated to the satisfaction of MTRCL.

(18) CONDITIONS FOR WORKING WITHIN/ IN THE VICINITY OF THE RAILWAY PREMISES

The Contractor shall be liable for and shall indemnify MTRCL against any liabilities, claims or proceedings in respect of any damage or injury arising out of or in connection with his works within/in the vicinity of the railway premises. The Contractor shall complete and provide to MTRCL an indemnity and a letter of undertaking in the form set out in **Annex 3(PS) and Annex 4(PS)** respectively.

**Technical Notes for Guidance in Assessing the Effects of
Civil Engineering Construction/Building Development
on Railway Structures and Operations**

A. General

All proposals for new building and engineering works including utilities works involving excavation within the limits of the Railway Protection Area shall be subject to special scrutiny by MTRCL prior to giving approval to any plans and consent for commencing construction works. Every proposal shall be assessed individually on its impact on existing railway and related structures/installations including all plant and fixtures necessary for the safe operation of the railway and subject to satisfactory compliance with the following technical requirements.

B. Underground Railway Structures

1. Site Formation/Foundation Works

Where site formation or foundation works or excavation works etc. are proposed above, beneath or adjacent to railway underground structures/installations including cooling water mains system, the effects of such works shall not exceed the following limits: -

- (a) The vertical or horizontal pressure change on any underground structures/installations due to the works, including filling, ground improvement, dewatering etc. and due to addition or reduction of loads transmitted from foundations (including any loads arising during construction), shall not exceed 20 kPa.
- (b) Differential movement resulting from the works shall not produce distortion in any railway structures/installations including the plinth or track in excess of 1 in 1 000 in any plane or a total movement in any railway structures/installations including the plinth or track exceeding 20 mm in any plane.
- (c) The induced level difference between rails of a track in perpendicular plan resulting from the works shall not exceed 5 mm.
- (d) The peak particle velocities induced to any railway structures resulting from blasting (where permitted) and from driving or withdrawing of piles or any similar operation which can induce prolonged vibration shall not exceed 25 mm/sec and 15 mm/sec respectively, when measured with a vibrograph.
- (e) No pile, foundation, borehole/drillhole, well, soil nail, horizontal drain, rock bolt/dowel or other geotechnical installation shall be driven, constructed or installed within a distance of 3 m from any point of the underground railway structures.

- (f) Any part of an anchor, if allowed, shall be more than 3 m away from any part of a railway structure/installation, and the centroid of the fixed length of the anchor shall be more than twice the fixed length away from any railway structure/installation.

2. Ground Investigation Works

Ground investigation proposals should include the following details and requirements: -

- (a) Details of the exploration and locations of the proposed exploration holes, trial pits, trenches, field testing or instrumentations relative to any railway structures whether inside or outside the lot;
- (b) Proposed depth of boreholes/drillholes, pits or trenches;
- (c) A method statement for sinking boreholes/drillholes, excavating trial pits and trenches including back-filling, conducting field testing or installing instrumentation;
- (d) A method statement for checking verticality of boreholes/drillholes located within a distance of 10 m on plan of any point of the underground railway structure, should boreholes/drillholes be sunk to a depth of 3 m from the highest point of the railway structures; and
- (e) A method statement for controlling depth of boreholes/drillholes sinking within a distance of 3 m on plan of any point of the underground railway structures.

Each proposal will also be judged against the technical guidelines as specified in paragraph B.1 above.

3. Utility Works

Utility trenches/pits which require excavation within the Railway Protection Area shall not be carried out without the approval of MTRCL.

4. Marine Works

Any reclamation, dredging, laying of pipes, dropping of anchors, or other engineering works to be carried out within the Railway Protection Area shall be submitted to MTRCL for approval.

5. Sinking of Wells

Sinking of wells within Railway Protection Area shall not be carried out without the approval of MTRCL.

C. Overhead Railway Structures

1. Scaffolding, Advertising Signs, Projections

Erection of scaffolding, working platforms, advertising signs or any projections at a level above the railway tracks shall not be allowed within a distance of 6 m on plan of any point of the railway tracks, without the agreement from MTRCL. When such works are permitted to be carried out within the 6 m limit, effective measures to protect the railway structures shall be provided. According to individual circumstances it may be necessary for such works to be conducted outside the railway operation hours and all protective works shall be subject to the special approval of MTRCL.

2. Overhead Structures

The requirements of paragraph B.1(b) to B.1(f) shall also apply to overhead structures.

3. Utility Works

When cables, ducts and pipes, etc are to cross above or below railway overhead structures, the Utility Undertaker shall submit to MTRCL details of the cables, ducts, pipes and the method of construction and seek approval before works can commence. When cables, ducts and pipes, etc are to pass over the railway, the provisions of paragraphs B.1, C.1 and D shall apply.

D. At-grade Railway Structures

1. When utility works are to be carried out across the at-grade railway tracks, agreement from MTRCL has to be sought.
2. Unless prior special agreement has been obtained from MTRCL, piling works will not be permitted within 3 m on plan from the railway fence or wall along the Railway Protection Area, or 7 m on plan from the centreline of the nearest track when there is no railway fence or wall.
3. Vibration measured on the overhead power line mast or signalling and telecommunication furniture of the railway shall not exceed the peak particle velocity of 10 mm/sec and the vibration amplitudes shall not exceed 80 μm .
4. The requirements of paragraphs B.1, B.2, B.3 and C.1 shall also apply to the at-grade railway structures and tracks.

E. Operation of Stationary Lifting Appliance (tower crane, hoist, piling/drilling rigs)

1. When a stationary lifting appliance is erected adjacent to railway tracks and/or above ground structures/installations, effective measures to protect the railway structures shall be provided. According to individual circumstances it may be necessary for such works to be conducted outside the railway operation hours. All protective works shall be subject to MTRCL's approval. MTRCL may impose conditions on the operation and positioning of the appliance if in its opinion such operation and positioning may endanger the safe operation of the railway.
2. The swings of the lifting appliance shall not encroach within 6 m of the railway tracks and/or above ground structures/installations on plan except with special approval from MTRCL.

F. Mobile Lifting Appliance

Where a mobile lifting appliance (e.g. crane, excavator) operates within 6 m on plan of railway structures and any part of the appliance is higher than the railway track level, the provisions of paragraph E shall apply.

G. Maintenance of Road Lamp Standards

When road lighting tower maintenance vehicles are to be used to service road lamp standards adjacent to railway tracks, the working equipment shall not be positioned closer to the railway tracks than the nearest part of the road lamp standard where the height of the lamp standard is greater than the height of the tracks. If the working equipment is to be operated at a level higher than 1 m above railway tracks and closer than 6 m from the railway tracks, provisions of paragraphs C.1, E and F shall also apply.

H. Fire Services Department/Police Force Vehicles

The operation of Fire Services/Police vehicles adjacent to the railway tracks or vent shafts under emergency situations shall be in accordance with the emergency procedure(s) agreed between MTRCL and the respective organization.

I. Storage of Materials

1. No materials, containers, huts etc. shall be stored within 6 m on plan of the railway structures/tracks and vent shaft openings except with the special approval from MTRCL.
2. No dangerous goods or other inflammable materials shall be stored within 6 m on plan of railway structures/tracks except with the special approval from MTRCL.

J. Demolition Works

Where demolition and removal works for any structure which includes scaffolding, advertising signs, container offices and buildings are proposed above or adjacent to above ground railway structures, such as entrances, vent shafts, power distribution substations, traction substations, plant rooms, overhead railway structures and at-grade railway tracks, effective measures to protect the railway structures shall be provided. Demolition works proposal with the protective measures shall be submitted to MTRCL for approval and consent prior to commencing the works.

K. Exemption

Exemption is given to those works involving only ground breaking and excavations not exceeding 1 m deep, provided that MTRCL has been advised of the works in advance, and under the following condition:

- (a) outside the areas measuring at 6 m from the at-grade railway tracks and station entrances; or
- (b) outside the areas bounded by railway fence/wall.

**Key industrial safety precautions for Contractors
working within railway premises**

1 General Requirements

The Contractor shall comply with all of MTRCL's Railway Safety Rules, Procedures and Code of Practice and the relevant Ordinances and statutory regulations, especially the Factories and Industrial Undertakings Ordinance, Dangerous Goods Ordinance and their subsidiary legislations.

2 Breach of Requirements

The Contractor shall be required to stop the works whenever any of the requirements mentioned in these precautions is found breached and shall not resume the works until the satisfactory rectification of the unsafe condition.

3 Site of Works and Routes of Access

Within MTRCL's railway premises, the Contractor shall not work in areas other than the works site defined and agreed by the MTRCL ("the MTRCL Site"). Suitable barriers and warning signs shall be erected where necessary to segregate the Site.

4 Person-in-Charge

The Contractor shall appoint a person-in-charge for the job to ensure that all works are done safely. He shall be present at the Site at all times of works. The person-in-charge shall ensure that all sources of ignition are removed, all power supplies are isolated, and the Site is in a safe condition before leaving the Site.

5 Portable Fire Extinguisher

At least one 4.5 kg dry chemical powder type portable fire extinguisher, or its equivalent, in efficient working state, shall be provided at each working location of the Site to guard against incipient fires. Additional fire extinguishers shall be required as necessary.

6 Flammable Substance

No flammable substance shall be kept at the Site unless prior approval has been obtained from MTRCL. However, if such material shall be used on the Site and permitted by MTRCL it shall be contained in suitable receptacles for the specific work requirement, the quantity shall be kept as low as possible in a closed metal cabinet provided by MTRCL, and the Contractor shall comply with the safety precautions as may be instructed by the Supervising Officer/Engineer/Architect.

7 Dangerous Substances

The Contractor shall label all dangerous substances, keep them in suitable containers and handle with extreme care as per statutory requirements.

8 Welding and Flame-cutting

No welding or flame-cutting is permitted without prior authorisation from MTRCL. Only one set of oxy-acetylene is allowed at the Site, and it shall be fitted with proper flashback arrestors. The oxygen and acetylene set shall be in good working conditions and free of cracks and leaks.

9 Painting

Painting and welding or flame-cutting shall not be done simultaneously at the Site.

10 Guarding of Machinery

All machinery in use shall be properly guarded against human bodies reaching its dangerous parts.

11 Electrical Tools, Equipment and Installation

The Contractor shall ensure that all electrical tools, equipment and installation in use shall be –

- 11.1 suitable for the supply voltage and loading current;
- 11.2 suitable for the type of environmental condition;
- 11.3 properly insulated; and
- 11.4 properly protected against electrocution by earth leakage circuit breakers or by earthing.

12 Temporary Electric Wiring

The Contractor shall ensure that all temporary wiring in use shall be –

- 12.1 free of frayed portions;
- 12.2 free of exposed live conductors;
- 12.3 free of sloppily-taped joints;
- 12.4 properly connected by plugs and sockets;
- 12.5 properly protected against mechanical damage;
- 12.6 properly secured and running at high levels; and
- 12.7 properly secured at suitable locations.

13 Conveyance of Bulky Items

No bulky items shall be conveyed onto MTRCL's railway premises without the prior permission from the MTRCL.

14 Dangerous Tools and Equipment

Dangerous tools and equipment shall not be brought onto MTRCL's railway premises including –

- 14.1** cartridge operated fixing tools;
- 14.2** open type welding transformers;
- 14.3** spray painting equipment; and
- 14.4** asbestos products.

15 Pressure Receivers

All air receivers in use on MTRCL Site shall be in good working condition and provided with a valid certificate to prove that they have been properly tested and examined in accordance with the provisions of the Boilers and Pressure Vessels Ordinance.

16 Lifting Appliance

All lifting appliances and gears in use within and in the vicinity of MTRCL's railway premises shall be in good working condition, and shall not be expired on their weekly inspections and 6/14 monthly examinations as per the requirements under the Construction Sites (Safety) Regulations. The Contractor shall obtain valid certificates of inspection and examination before use, and produce them for inspection on demand.

17 Scaffolding

All scaffolding, if permitted, including mobile scaffoldings in use shall be –

- 17.1** erected by competent persons;
- 17.2** guarded against overturning by the erection of outriggers or other suitable means;
- 17.3** displayed with warning signs on the danger of falling objects;
- 17.4** kept away from causing obstruction to any passageway;
- 17.5** locked at designated locations after each workshift;
- 17.6** maintained in good working condition; and
- 17.7** inspected periodically by a competent person as per statutory requirements.

18 High Level Working Platform

All high level working platforms shall be –

- 18.1** without access to MTR operating area; and
- 18.2** closely planked with minimum 2 m long solid planks.

Safety belts, safety nets or fall arrestors shall be used by all workers when working at height.

19 House-keeping

Good house-keeping shall be maintained at the Site at all times. All flammable waste

and sources of ignition shall be removed, all power supplies isolated and the Site left in a safe condition after each workshift.

20 Electric Cables

The Contractor shall treat all electric cables and the like installed within MTRCL's railway premises as "LIVE" and no work shall be carried out on or cause any damage to them.

21 Personal Protective Equipment

All workmen on the Site shall wear the necessary personal protective equipment, i.e. safety helmets, eye goggles, ear protectors, respirators and safety belts, etc. as required by the nature of work.

22 Smoking

The Contractor shall ensure that there is no smoking when working within MTRCL's railway premises.

23 Working on MTRCL Equipment

The Contractor and its workers shall not work on any MTRCL equipment unless prior approval has been obtained from MTRCL.

24 Working on or near Railway Tracks

24.1 High-visibility clothing shall be worn when working on or near railway tracks; and

24.2 All persons, tools and materials shall be cleared of the track upon completion of each workshift.

25 Illumination

The Contractor shall provide adequate lighting to the Site within and in the vicinity of MTRCL's railway premises.

26 First Aid Facilities

Sufficient first aid facilities shall be provided in a first aid box at the Site as per statutory requirements.

27 Ladders

27.1 All ladders in use shall be of good construction and be made of good material. Each ladder shall bear an identification mark and be inspected six-monthly by a competent person. The next due date for examination shall be marked on the equipment.

27.2 No metal ladder shall be permitted to be used on the Site.

28 Additional Safety Precautions

The aforementioned safety precautions are in no way exhaustive and additional ones will be imposed whenever necessary.

MTRCL'S INDEMNITY FORM

The Indemnity

In consideration of your permission to allow me/ourselves to visit/work at _____ (site location) from _____ to _____ (duration of work), I, _____ (full name), the duly authorised representative of _____ (name of Company), hereby agree that I/we shall do so entirely at my/our own risk and that the MTR Corporation Limited, its servants and agents shall not be liable in any manner whatsoever to whomsoever in respect of all claims, costs, damages or expenses for any damage to or loss of property, personal injury or loss of life howsoever caused arising out of or in any way connected with my/our visit/work, and I/we for myself/ourselves and for and on behalf of _____ (name of aforesaid Company) hereby agree to indemnify and keep the MTR Corporation Limited indemnified from and against all claims, cost, damages and expenses in respect of any damage to or loss of property, personal injury or loss of life howsoever caused arising out of or in any way connected with my/our visit/work within/in the vicinity of MTR Corporation Limited premises.

Dated this _____ day of _____ 20

Witness: _____

Signed: _____

Name (block letter): _____

Name (block letter): _____

Address: _____

Occupation or description: _____

Occupation or description: _____

Name of the Company: _____

Company Chop: _____

To: MTR Corporation Limited

LETTER OF UNDERTAKING

In consideration of your permission to allow me/ourselves to visit/work at _____ (site location) from _____ to _____ (duration of work), I, _____ (full name), the duly authorised representative of _____ (name of Company), hereby agree that I/we shall undertake to indemnify and keep the MTR Corporation Limited indemnified or to make good any damage to its services equipment or property to the satisfaction of MTR Corporation Limited due to my/our activities within/in the vicinity of MTR Corporation Limited premises.

Dated this _____ day of _____ 20

Witness: _____

Signed: _____

Name (block letter): _____

Name (block letter): _____

Address: _____

Occupation or description: _____

Occupation or description: _____

Name of the Company: _____

Company Chop: _____