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METHOD STATEMENT TITLE	Rev. -

Method Statement for General Underground Utility Survey for Operation Area (OA)

	Prepared by:	Checked by:	Reviewed by:	Reviewed by:
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Date:	22-Mar-2024	22-Mar-2024	22-Mar-2024	22-Mar-2024
	Reviewed by:	Reviewed by:	Reviewed by:	Approved by:
Signature:				
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Position:	EM/EO	A. Project Director	Sr. Project Director / A. Project Director	Project Director
Date:	22-Mar-2024	22-Mar-2024	22-Mar-2024	22-Mar-2024

CONTENT

1. Introduction (Overview of the operation/works)

This Method Statement gives a general guideline for the execution of the Underground Utility Detection and Survey work procedure for the Operation Area (OA) under Contract 1701. This document shall be distributed to relevant parties to introduce the work scopes, to present the sequence of works and to define the associated responsibilities to ensure the health, safety, environment and quality issues addressed. The details of the procedures contained herewith shall be reviewed periodically and updated based on the actual site conditions. The principle methods as described in the following sections are subject to review during construction and may be amended if required.

The general working procedures outlined in this method statement are applicable to the following scopes of work:

- Conducting non-destructive underground utility survey in Operation Area
- Provision of underground utility reports and drawings for Operation Area

This method statement needs to be complied into EDOC and approved by MTR.

2. Reference Documents (Identify relevant documents by name and reference number)

- General Specification for Civil Engineering Works (NEC4) (MTR Corporation Limited - 2022)
- Scope for Contract 1701.
- Materials and Workmanship Specification for Civil Engineering Works

3. Responsibilities for Activities described within Method Statement

CSHK is responsible to inspect and carry out the construction works. The following persons, as listed in the table below, will attend the specific tool-box talk and be responsible for the activities:

Name	Position
Howard Siu	Construction Manager
CF Chan	Construction Manager
Anthony He	Assistant Construction Manager
Nick Wang	Section Agent
Tim Cai	Engineer
Andrew Mak	Engineer
Andrew Lo	Graduate Engineer
Charles Xu	Graduate Engineer
Vincent Li	Construction Manager
Nana Chung	Assistant Construction Manager
Johnson Chun	Senior Engineer
David Lam	Senior Engineer
Man Hin Li	Assistant Engineer
Ted Leung	Construction Manager
Li Yuk Wa	Assistant Construction Manager
Jack Wong	Senior Engineer

Andy Lo	Engineer
Edward Yang	Graduate Engineer
Kyle Lai	Graduate Engineer
Leung Kwok Fung	Safety Manager
Hui Wai Kwan	Safety Officer
Ernest Young	Safety Officer
Lau Yu Tat	Senior Surveyor
Cheung Siu Kei	Superintendent

(a) Construction Manager
Responsible for overall administration, monitoring, controlling progress and quality of works in a safe manner.

(b) Site Engineer/ Assistant Engineer/ Site Foreman
Responsible for developing works procedures, controlling progress and quality of works in a safe manner. They also have to implement safety at works area for workers via guidance from safety officers.

(c) Safety Manager/ Safety Officer
Responsible for assessing working conditions of work areas in safety means. To prepare risk assessment before works, enforce safety works practice and environment in the workplace and work site.

(d) Worksite Person In Charge (WPIC)
WPIC is in charge of the work in the works areas, which are located at various positions of site. Site Supervisor is also responsible in implementing works control checklist. WPIC/ Site supervisor shall attend pre-work briefing and deliver the work arrangement, included but not limited to proposed working area, sequence of works and safety precautions measures.

(e) Registered Electrical Workers (REW)
Workers who have valid certificate of registered electrical worker and completed MTR RSI training and obtain qualification.

(f) Workers
Workers who have completed RSI training and received a valid qualification.

(g) Competent Person CP for Underground Utilities Survey
CP shall undertake the investigation for the purpose of ascertaining within the proposed works site and its vicinity the existence, alignment and depth of any cable and provision of a written report on the findings.

(h) Competent Person (CP(T)/CP(NT))
CP shall provide pre-work briefing to all workers and anyone work within the Railway Operation Area (Siu Ho Wan Depot). Pre-work briefing shall cover the regulation within the proposed working area and relevant work safety precaution measures. Briefing attendance records shall be kept on site for inspection. CP shall report to depot before works could commence.

CP(T)/CP(NT) is to ensure works are within OA area and any opening of the existing Manhole shall notify Depot relevant parties such as IMD in advance.

Emergency Team contact list is enclosed so that work can be safely arranged to suspend for contingency/ reasons. Please refer to **Appendix C**.

4. Programme and Working Hours (Start & finish date of operation/works)

The tentative work commencement is scheduled in late April 2024. The general working hours will be from 08:00 – 19:00 daily, from Monday to Saturday. However, it may be required to carry out works from 19:00 to 23:00 and Sunday and Public Holidays in case of essential speeding up of the working process. CSHK would check internally to fulfil the Construction Noise Permit Requirement.

All the works shall be led by WPIC during the approved working period at different areas, details are summarised in the below table:

Location of Works	Allowed Working Period	Remarks
Mainline	Non-Traffic Hour (02:00 – 04:00)	3 days per week
Test Track	Night Shift (Exact time to be coordinated)	3 days per week
Depot Track Area	Non-Peak Hour (11:00 – 15:00) Night Shift (Exact time to be coordinated)	

5. Plant, Equipment & Material (Identify type, model and specification of MAJOR plant & equipment)

The major equipment will be deployed to carry out the works are as follow: -

For Underground Signal/Electrical Cable:

- Radiodetection Precision Locator RD8200 or equivalent
- Ground-penetrating radar (GPR)
- Theodolite
- Tape measures
- Spray paint/ chalk
- Removable tape
- Assorted tools for opening and closing manholes
- Torches
- Manhole cover lifters

For Underground Drainage Pipes:

- A colour CCTV camera with a lighting system mounted on a self propelled tractor unit/ floatation raft.
- A control unit incorporating a monitor screen which displays the output from the camera.
- A Video Recorder linked to the control unit to record the picture and digital display.
- Cable drum

The specification of major plants and equipment are shown in **Appendix B**.

6. Construction Methods

The location for inspection (for underground drainage, underground signal/ Electrical cables and other pipelines) is summarised on the combined existing underground utility layout with Works Area in **Appendix A.**

6.1 Survey Methods for Underground Signal/ Electrical Cables

6.1.1 Prior to beginning the survey, carry out a visual inspection of the area for familiarization purposes. Photographs of each site location shall be taken and kept for reference purposes and inclusion in the report.

6.1.2 Locate the corners/ boundary of the area and mark with spray paint/ chalk. Using these points to mark out a grid pattern covering the entire survey area. If this grid overlaps the boundaries of the survey area, scans shall still be carried out over the entire grid. A grid pattern shall be used dependent on the size of the site.

6.1.3 Carry out a visual inspection of the area and locate all manholes, valves, vaults and chambers and record their location, size and type. Measurements shall be made using a tape measure. Before open any covers, relevant parties shall be informed.

6.1.4 Open all the located manholes, valves, vaults and chambers, measure, and record the depth and the form of structure.

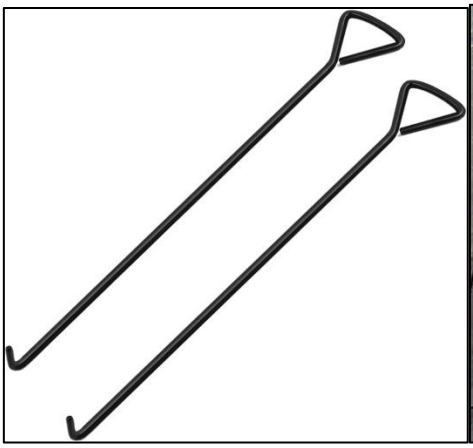
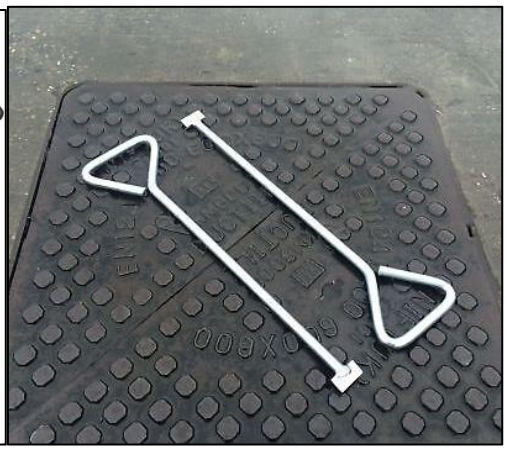
6.1.5 For storm water and foul sewer manholes check for pipes and record the depth to the bottom of the pipe from ground level, the diameter of the pipes and the direction of flow, if any, through the pipes. Also, record and measure the dimensions, if possible, of the chamber (i.e. Depth, width & length). For power cables, Electrical & Mechanical Services cable, street lighting cables, cable TV or telecom cable manholes, record the configuration of inlet and outlet ducts and their depths to the top of the ducts

6.1.6 Check and record all surface features relating to the underground utilities. (i.e. fire hydrants, standpipes, lamp posts, bollards, traffic lights or telephone booths).

6.2 Methods for Opening Cable Trough, Manhole or Draw Pit Cover

6.2.1 Clean the surrounding loose materials and elements to avoid materials fell into the cable trough/ manholes/ draw pit.

6.2.2 Use appropriate manholes cover lifters for opening the manhole cover. Below pictures are shown several typical safe working procedures for opening heavy duty manhole cover.

6.2.3 The lifting handles are for two-handed lifting

6.2.4 Locking nut on the threaded key section shall be secured with the key in place tightly on the cover.

6.2.5 Worker shall check the key nut fully insert to the cover hole to reduce risk of dropping cover.

6.2.6 Carefully lift up the cover simultaneously with two workers, and then place the cover onto the flat ground.

6.2.7 After completion of UU survey, workers shall reverse the above-mentioned procedure to reinstate.

6.2.8 No worker shall enter into the Manhole unless adequate safety measure such as for confined space provided and notify Depot relevant parties.

Barrier shall be provided to fence off any opening for safety.

The opening shall be closed as soon as possible and do not allow it remain open when not attended.

6.2.9 The opening must be fenced off to prevent anybody falling into the opening.

6.2.10 Confined space assessment by certified competent person must be performed before any personnel entering the opening.

6.3 Methods for CCTV General Operational Procedures

6.3.1 The CCTV team comprises at least 2 men. One man being the push rod driver, and the other as the team leader being the camera man and code recorder.

	6.3.2 On arrival at site, the crew will deploy the crawler in close proximity to the start manhole.The exit and entry manhole covers will be removed to allow for venting of the pipe line. 6.3.3 Air test is required when open the manhole cover. 6.3.4 The crew will place the camera cable drum at the start point and connect the camera unit to ensure all is in working order. 6.3.5 Insert the camera into the pipe run. The meter counter is activated by the camera turning a counter wheel on the cable drum. This transmits a signal to the control unit and the counter is displayed on the monitor screen. 6.3.6 The crew leader adjusts the light and focus to show the best picture on monitor. Then he activates the video recorder and the tractor unit. The camera traverses the pipe to identify all faults and record them. 6.3.7 The crew will record the information of the pipeline and note all defects on the log sheet and if necessary will take photographs of major faults by digital camera. 6.3.8 On completion of the full survey, the video are returned to the office where the information is compiled into report format. **6.4 Methods for Box Culverts Survey** 6.4.1 As the dark river box culverts, go down stairs to the inlet by step irons, wear life jacket at all time and install fencing to the edge before commencement. Please refer to Appendix G for the Box Culverts Details. 6.4.2 Put the camera into the box culvert and hold the camera on the water by using a floatation raft. 6.4.3 Start pipe inspection and control the camera inspection of the condition along the pipe and video recording , table controller records and saves pipeline internal video. **6.5 Methods for CCTV Inspection for Underground Drainage Pipes work procedure is shown in Appendix F.**
7.	**Precaution and Preparation Before Commencement of Works**
	● Fully Supervision at all times shall be provided at work fronts, especially for the location with significant interfaces with SHD daily operation or other construction works within depot. ● Temporary Protective Fence will be installed to isolate work fronts from MTR/s tracks as required in the contract. ● Advanced coordination and communication shall be made with interfacing contractors to facilitate works nearby. ● For lifting works by crane lorry or crane, the operator shall ensure a clear and unrestricted view of the load carried in prior to lifting works. ● CP(T) shall report to depot before works could commence and brief safety rules to workers before commencement of work. ● CP(T) shall supervise at all time and lock the gate after work. ● CP(T) / WPIC shall check no tools or loose material left after each work shift to ensure no handy material or heavy equipment to be carried on track.
8.	**Safety** (Risk Assessments)

	8.1 General Safety ● All workers shall attend a site-specific induction course conducted by Safety Team. The Safety Officer shall explain the necessary safety requirements as identified in the Risk Assessment Record and the Construction Manager/ Engineer / Foreman in charge of the work shall explain the system of work to his supervisors and workers. ● All workers shall be equipped with reflective vests and safety helmets during operation. All workers must go through a briefing by the Construction Manager / Safety Officer / Safety Supervisor before commencement of any works. All workers on site shall obtain an approved "Mandatory Basic Safety Training Certificate". ● Toolbox talk training with reference to the recommended safety and environmental control measures after Construction Risk Assessment will be provided to the site personnel prior to commencing works. ● A pre-meeting will be arranged before commencement of the work among Foreman / Engineer / Construction Manager, MTR's representatives and Safety Department to brief the nature of works, the safety aspects and the requirements. ● Safety helmets fitted with chin straps must be worn within the site, safety boots, hearing protectors (if needed), high visibility jackets / sashes, reflective vest, goggles, gloves and full body harnesses for work at height will be provided to all staff working on site. Warning signs and barriers will be erected where necessary. ● Particular care needs to be taken when working on or near busy roads. No works will be undertaken unless safe access, including approved and fully implemented TTM / TTAs where necessary. The voltage of any handheld power tools should not exceed 110V and preferably be less than 24V ● Any emergency situation shall be reported to Subcontractor and Contractor (i.e. Construction Manager / Engineer / Foreman and Safety Department, etc.) for prompt response. The emergency contact list is shown in **Appendix C**. **8.2 Risk Assessment** The risk for the works shall be assessed and the Risk Assessment Analysis is shown in **Appendix D.**
9.	**Environmental**
	● Works near the track can only be carried out at the NTH / NPH, details refer to Section 4.0. ● The risk of causing damage to existing trees during survey works is low. If any of the proposed location is immediately adjacent to an existing tree, Construction Manager will be informed immediately for resolving. ● The works shall follow relevant mitigation measures as required under the Environmental Permit (EP) / EP submission and Contractor' s Environmental Management Plan (EMP).
10.	**Quality Control**
	Refer to **Appendix E** for Inspection and Test Plan. Construction works shall be fully complied with Quality Plan. For work activity which is classified as "Quality Hold Point", no subsequent work can be started unless the former work activity was inspected and accepted by MTR's inspectorate.
11.	**Appendices** (Identify and include additional information in the submission package)
	A. Combined Underground Utility Layout B. Technical Specification of Major Equipment

	C. Emergency Contact List D. Risk Assessment E. Inspection and Test Plan (ITP) F. CCTV Inspection for Underground Drainage Pipes Method G. Details of the Box Culvert Inlet