



CONSTRUCTION  
INDUSTRY COUNCIL  
建造業議會



生命第一  
LIFE FIRST



# REFERENCE MATERIAL

on Safety Roles and  
Responsibilities  
of Key Stakeholders in  
the Hong Kong  
Construction Industry

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Practical Reference  
Guidance On  
Electrical Work

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# Disclaimer

*Whilst reasonable efforts have been made to ensure the accuracy of the information contained in this publication, the CIC nevertheless would encourage readers to seek appropriate independent advice from their professional advisers where possible and readers should not treat or rely on this publication as a substitute for such professional advice for taking any relevant actions*

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# Preface

The Construction Industry Council (CIC) is committed to seeking continuous improvement in all aspects of the construction industry in Hong Kong. To achieve this aim, the CIC forms Committees, Task Forces and other forums to review specific areas of work with the intention of producing Alerts, Reference Materials, Guidelines and Codes of Conduct to assist participants in the industry to strive for excellence.

The CIC appreciates that some improvements and practices can be implemented immediately whilst others may take more time to adjust. It is for this reason that four separate categories of publications have been adopted, the purposes of which are as follows:

Alerts	Alerts are reminders in the form of brief leaflets produced quickly to draw the immediate attention of relevant stakeholders to the need to follow some good practices or to implement some preventive measures in relation to the construction industry.
Reference Materials	Reference materials for adopting standards or methodologies in such ways that are generally regarded by the industry as good practices. The CIC recommends the adoption of relevant Reference Materials by industry stakeholders where appropriate.
Guidelines	Guidelines provide information and guidance on particular topics relevant to the construction industry. The CIC expects all industry stakeholders to adopt the recommendations set out in relevant Guidelines where applicable.
Codes of Conduct	Codes of Conduct set out the principles for all relevant industry participants to follow. Under the Construction Industry Council Ordinance (Cap. 587), the CIC is tasked to formulate codes of conduct and enforce such codes. The CIC may take necessary actions to ensure compliance with the codes.

We encourage you to share your feedback with us. Please take a moment to fill out the Feedback Form attached to this publication for us to further enhance this publication for the benefit of all concerned. With our joint efforts, we believe our construction industry will develop further and will continue to prosper for years to come.

# Purpose

This aim of this “Practical Reference Guidance on Electrical work (PRG)” is to provide a technical-based guidance to the stakeholders who may perform electrical work in their project. Under section 6A of the Factories and Industrial Undertakings Ordinance (Cap. 59), the proprietor of an industrial undertaking has a duty to ensure, so far as is reasonable practicable, the health and safety at work of all persons employed by him at the industrial undertaking. This type of performance-based legislation requires the duty holders to conduct risk assessment to identify the hazards inherent in the process and develop appropriate precautions for remedy including provision and maintenance of a safe system of work.

To narrow down the scope of work of the duty holders based on the “Stakeholder Model”, the process-based approach is used. The purpose is to confine its application to the process of electrical work. Readers should note that it is not feasible for CIC to develop a PRG for each and every electrical work because of the variable factors involved. Readers can nevertheless model on this PRG to develop their own system of electrical work to fulfill their legal duty under section 6A of the Factories and Industrial Undertakings Ordinance (Cap. 59). Stakeholders' complied with this reference should not be deemed as complied with statutory requirements.

There are altogether 4 PRG published, covering lifting operation, work-above-ground, erection and dismantling of scaffold or platform and electrical work.

This publication focuses on the critical process of **Electrical work**. It provides a step-by-step guidance for the industry stakeholders to develop a safe system of electrical work before commencement the work. This PRG, for the purpose of widening its applicability to different electrical work processes is based on the type of operation, instead of task, after considering the various types of electrical tasks which involve the uses of different types of electrical installations, employment of different types of electrical equipment, different work environment and different natures of electrical work, etc.

This PRG, unlike other guidance document for safety at work, emphasizes not only on the ways how the work should be safely carried out, but also on the ways how the work should be safely carried out by respective persons who are playing respective roles at a designated level in a project organization.

# 1. Usage of Practical Reference Guidance

This PRG is specially prepared for those who will be / are involved in complicated electrical work. Such electrical work needs to be controlled by a well established safe system of work which is actually a legal requirement under section 6A of the Factories and Industrial Undertakings Ordinance (Cap. 59).

This PRG is modeled on the five steps in a safe system of work given in the guidebook “Safe Systems of Work” (Labour Department, 2004) and provides practical guidance for the stakeholders at tactical level to draw up safe work procedures as required by law.

At tactical level, the project-in-charge can follow the step-by-step guidance to call up the risk assessment team, develop safe system of work, deploy suitable electrical equipment and competent electrical team to take up respective post during the electrical work to reduce, so far as is reasonable foreseeable, any risk inherent in the electrical works.

At operational level, the PRG provides guidance to those in supervisory functions on safety inspection and document checking.

At behavioural level, the PRG provides guidance on proper work procedures for workers to follow and to reduce human errors at work.

## 2. Practical Reference Guidance on Electrical Work

### 2.1 Principle

The PRG adopts the Six-step Approach to ensure that the hazards are eliminated or the risk minimized through a systematic way that include:

1. Assessing the task;
2. Identifying the hazards;
3. Defining safe methods;
4. Implementing the system;
5. Monitoring the system; and
6. Reviewing the system

The PRG aims to help the construction industry stakeholders by specifying the responsibilities of each respective stakeholder in a construction project according to their designated roles and functions. The proposal makes reference to construction industry in the following ways:

1. For project controller at strategic level (i.e. developer / client) to demonstrate safety commitments and draw up tendering documents and contract specifications;
2. For company directors at strategic level to draw up job specifications for project staff before deployment;
3. For project-in-charge at tactical level to draw up project safety plan;
4. For project supervisors at operation level to execute the supervision plan; and
5. For operators at execution level to understand their rights and responsibilities in execution of the works.

## 2.2 Six-step Approach

The ten steps involved in the recommended six-step approach are listed as follows:

1. Prepare safety plan before commencement of electrical work
2. Conduct risk assessment to define the safe electrical work method
3. Devise safe working procedures related to a permit-to-work system for electrical work
4. Select safe plants and equipment for electrical work
5. Appoint qualified, experienced and competent personnel for electrical work
6. Provide training on the safety procedures and use of electrical tools and equipment
7. Conduct pre-work checking of the work place, electrical installations, equipment and emergency arrangement
8. Implement 'permit-to-work' system and necessary safety procedures of electrical work
9. Monitor the compliance of safety procedures for electrical work and safety conditions of the workplace before handing over after work is completed
10. Review the safety procedures in electrical work.

## 2.3 Safety Roles and Responsibilities of stakeholders in different levels

Safety is never a single person responsibility. It is an integrated science requiring input from different people with different safety roles and responsibilities. Different people at different levels have to jointly exercise their functions and contribute their knowledge / experiences in accordance with their respective roles and responsibilities.

## A. Client / Developer

1. Prepare safety plan before commencement of electrical work

Strategic Level:

The client should formulate policy on project development to ensure design out risk for electrical work and facilitate the contractor in preparing safety plan for electrical work through allocation of sufficient time and resources for the contractor in planning of electrical work. This can be achieved by appointing a competent designer and contractor and setting performance targets to control the safety performance of the electrical contractors appointed by him.

2. Conduct risk assessment to define the safe electrical work method

N/A

3. Devise safe working procedures related to a permit-to-work system for electrical work

N/A

4. Select of safe plants and equipment for electrical work

N/A

5. Appoint qualified, experienced and competent personnel for electrical work

N/A

6. Provide training on the safety procedures and use of electrical tools and equipment

N/A

7. Conduct pre-work checking of the work place, electrical installations, equipment and emergency arrangement

N/A

8. Implement of 'permit-to-work' system and necessary safety procedures of electrical work

N/A

9. Monitor the compliance of safety procedures for electrical work and safety conditions of the workplace before handing over after work is completed

N/A

10. Review the safety procedures in electrical work

N/A

## **B. Client's Representative**

1. Prepare safety plan before commencement of electrical work

Strategic Level:

The client's representative could be a resident engineer, a registered electrical contractor (REC) or registered electrical worker (REW) or a person of similar capacity appointed by the client / developer to oversee the electrical project. Their roles are to advise the client/developer on selection and appointment of competent electrical contractors, help client / developer to set standards in contract and participate in design out risk meeting to maintain effective communications with the client / developer, designer and contractor.

2. Conduct risk assessment to define the safe electrical work method

Tactical Level:

The client's representative should be persons who are qualified and knowledgeable on electrical engineering and safety standards. They should participate in risk assessment meeting to convey the residue design risk to the risk assessment team for discussion of mitigating measures that are in compliance with the legislative standards and contract requirements.

Operational Level:

The supervisory staff who are familiar with the physical work carried out by frontline staff in electrical projects, should participate in risk assessment meetings and provide feedback for the necessary reviews to the risk assessment process.

3. Devise safe working procedures related to a permit-to-work system for electrical work

Tactical Level:

The Client's Representative should review and endorse the electrical safety procedures and permit-to-work to check if they are in line with the safety standards and contract requirements.

4. Select safe plants and equipment for electrical work

Tactical Level:

The client's representative should review and endorse the list of plants and equipment prepared by the main contractor according to legal requirements and contract specifications.

Operational Level:

The client's representative at frontline shall provide feedback on what plants and equipment are most suitable for the type of electrical work to be carried out according to statutory requirements and contract specifications.

5. Appoint qualified, experienced and competent personnel for electrical work

Tactical Level:

The client's representative should verify the qualification and experience of the competent person and electrical workers submitted from the contractors for endorsement before the electrical work is physically carried out.

6. Provide training on the safety procedures and use of electrical tools and equipment

Tactical Level:

The client's representative should review and endorse the document relating to training program and monitor the attendance of the safety training by related team members.

Operational Level:

The client's representative should attend the training to understand the arrangement of safe work procedures and / or permit to work for effective supervision and provide feedback on the effectiveness of the training.

7. Conduct pre-work checking of the work place, electrical installations, equipment and emergency arrangement

Tactical Level:

The client's representative should review and endorse the format and the items of the pre-work checklist whether they are conformed to contract specifications.

Operational Level:

They should conduct random checks and ensure that the electrical work is carried out with approval from supervisor on the pre-work checklist.

8. Implementation of 'permit-to-work' system and necessary safety procedures of electrical work

Tactical Level:

The client's representative should track whether the records and permit-to-work are adhered to in the standard procedures for the endorsed electrical work.

Operational Level:

They should conduct random checks and closely monitor the electrical work that requires the issue of permit-to-work.

9. Monitor the compliance of safety procedures for electrical work and safety conditions of the workplace before handing over after work is completed

Tactical Level:

The client's representative should monitor the submission of the permit to work according to the laid down procedures. While during the on-site inspection, they should suspend any works that create imminent risk of electrical hazards to the frontline electrical workers. They should also vet any corrective plans submitted to the project-in-charge to see if they are conformed to legal requirements and contract specifications.

Operational Level:

They should conduct random physical checks and closely monitor the compliance according to the endorsed safety procedures and specification of the electrical installations. When there are situations where imminent risks of electrical hazards are observed, they should suspend the work and propose corrective actions to project-in-charge for approval. They should check that the electrical work should not be allowed to resume unless corrective follow-up actions have been completed.

#### 10. Review the safety procedures in electrical work

Tactical Level:

The client's representative should participate in the review meeting and provide feedback from frontline electrical workers and make comments on them.

Operational Level:

They should participate in the meetings and report feedback collected from the frontline electrical workers for discussion and provide their views and comments on the proposed remedies.

### C. Designer

#### 1. Prepare safety plan before commencement of electrical work

Strategic Level:

The designer can be an architect in design of building structures for electrical plants, an electrical engineer, an REC, an REW, or any person of similar capacity appointed by the client in design-and-build contracts. They have duties to design out risks from the entire project life cycle from construction, maintenance and demolition of electrical installations in planning and managing pre-construction design and arrangement on electrical work or projects, and inform the client and contractor any modifications from original design of the electrical system during the design out risk meeting. The design out risk should be based on the principles of eliminating the hazard as a first priority like replacement by safe hardware and work process before considering risk control measures if hazard cannot be eliminated.

2. Conduct risk assessment to define the safe electrical work method  
N/A
3. Devise safe working procedures related to a permit-to-work system for electrical work  
N/A
4. Select safe plants and equipment for electrical work  
N/A
5. Appoint qualified, experienced and competent personnel for electrical work  
N/A
6. Provide training on the safety procedures and use of electrical tools and equipment  
N/A
7. Conduct pre-work checking of the work place, electrical installations, equipment and emergency arrangement  
N/A
8. Implement 'permit-to-work' system and necessary safety procedures of electrical work  
N/A
9. Monitor the compliance of safety procedures for electrical work and safety conditions of the workplace before handing over after work is completed  
N/A
10. Review the safety procedures in electrical work  
N/A

## D. Main Contractor

### 1. Prepare safety plan before commencement of electrical work

#### Strategic Level:

The main contractor at corporate level include CEO, directors, project director or contract manager of a general building contractor or electrical contractor who have responsibilities on safety in design, construction, installation and maintenance of the electrical system and safety procedures in the electrical work. They are required to attend design out risk meeting and to formulate safety policy and define standards of performance for the electrical project. They should also allocate sufficient support and resources to fulfil the standards and requirements stipulated in the contract.

### 2. Conduct risk assessment to define the safe electrical work method

#### Tactical Level:

The main contractor should set up an accountability system to ensure the adherence of any safe electrical work procedures. In developing safe electrical work procedures, the project-in-charge should establish a risk assessment team comprising qualifying personnel from different levels of the project staff, such as electrical engineers, REC or REW, etc. The risk assessment should incorporate input from the design out risk meeting and risk assessment meeting should be held regularly and on a need basis.

#### Operational Level:

The supervisors or persons having supervisory roles on the electrical work, should provide information and feedback to the risk assessment team for review of the steps and procedures to reduce residue risks observed in the operations.

#### Behavioural Level:

The REW conducting the physical work should perform a risk assessment and record in standard form before carrying out electrical work according to the codes of practices published by EMSD. The feedback and effectiveness of the control measures are crucial information in electrical fitting out and maintenance works.

3. Devise safe working procedures related to a permit-to-work system for electrical work

Tactical Level:

The main contractor should endorse the agreed safe working procedures and set up safety rules for electrical work and, if necessary, permit to work system in de-energising live electrical circuit system to avoid accident. As a project-in-charge, he should also provide sufficient resources and time for the project in the electrical safe work procedures and permit to work.

4. Select safe plants and equipment for electrical work

Tactical Level:

The main contractor should endorse the list of safe plants and equipment for use with their specifications agreed in the risk assessment process and provide sufficient resources for placement of them.

Operational Level:

The main contractor should provide feedback on what plants and equipment are most suitable for the type of electrical work to be carried out according to the actual needs of the task.

Behavioural Level:

Qualified electricians will be called by the main contractor directly to perform the electrical work through the sub-contracts. Therefore, the plants and equipment / tools brought into the site by the electricians should conform to the endorsed legal standards and contract specifications.

Even though the electricians or workers are using plants and equipment / tools provided by the stakeholders at upper tiers, they also have the responsibilities to give feedback on the suitability of the plants and equipment according to the actual needs of the task.

5. Appoint qualified, experienced and competent personnel for electrical work

Tactical Level:

The main contractor, depending on the project or type of task, should appoint qualified and competent persons including electrical engineers to test and check live cables and electrical workers to carry out the electrical work according to the legal requirement. In situations where checking of pre-work checklist and / or permit to work are involved, he should appoint qualified and competent person to carry out the checking or approval work.

Operational Level:

The supervisors should assess the suitability on competence of the electrical workers and provide feedback on their suitability on the type of that electrical work.

6. Provide training on the safety procedures and use of electrical tools and equipment

Tactical Level:

The main contractor should endorse the safety training plan for electrical work and ensure that the training on the safe work procedures and / or permit to work reach down from operational to behavioural levels of the electrical team members. To ensure that the training plan is in place, the project-in-charge should provide sufficient time and resources to the electrical team members to attend the safety training.

Operational Level:

The supervisors should also attend the safety training to understand the arrangement of the safe work procedures and / or permit to work for effective supervision and to provide feedback on the effectiveness of the training.

Behavioural Level:

The frontline electrical workers should attend the training to understand the arrangement of the safe work procedures and / or permit to work and raise feedback on their physical implementation for review.

7. Conduct pre-work checking of the work place, electrical installations, equipment and emergency arrangement

Tactical Level:

The main contractor should endorse the format of a pre-work checklist prepared by the safety personnel on what items are to be checked daily before carrying out the work and to appoint competent person to carry out the pre-work check.

Operational Level:

The supervisors should ensure all items in the checklist should have been checked before their approval. They should also report defects to the project-in-charge for any abnormal situations reported in the pre-work check.

Behavioural Level:

The frontline electrical workers should comply with the safety requirements defined in the pre-work checklist. The appointed competent person should conduct pre-work check according to the checklist and submit to the supervisor for approval if every item in the checklist is in proper order. This appointed person should provide feedback to the project-in-charge if the conditions are not in conformity with the items on the checklist.

8. Implement 'permit-to-work' system and necessary safety procedures of electrical work

Tactical Level:

The main contractor should ensure works adhere to the current safety procedures on electrical work. When necessary, they should endorse the permit-to-work after verification by competent a person appointed by him before commencement of the electrical work.

Operational Level:

The supervisors should strictly adhere to the procedures and apply the permit to work if necessary. They should ensure that electrical operations are carried out under permit to work. They should suspend the work when imminent risk to electrical workers is found. The situation should be reported to project-in-charge and ensure that remedies are taken before resuming the operations by the electrical workers.

Behavioural Level:

The electrical workers should adhere to the endorsed electrical work procedures and specific requirements on permit-to-work and if required, the pre-work checklist signed by the appointed person. They should report to supervisors any hazards identified during their electrical work and stop work until instruction to resume work has been received from supervisor.

9. Monitor the compliance of safety procedures for electrical work and safety conditions of the workplace before handing over after work is completed

Tactical Level:

The main contractor should develop disciplinary policy to enforce the established safe work procedures and permit to work. This can be enforced by an inspection system to prevent any non-compliance at the operational and behavioural levels. To enhance the effectiveness of this monitoring system, the frontline supervisors at operational level should be delegated with authority to suspend works that create imminent risk of electrical hazards to the electrical workers. When corrective plans are prepared, the project-in-charge should vet the proposed plans and endorse it for prompt rectification.

Operational Level:

The supervisors should inspect and conduct on-site supervision to ensure that the endorsed safety procedures and standards of performance in the electrical installations are strictly adhered to and suspend the work that create imminent risk of electrical hazards to the electrical workers. They should report to site management and propose corrective actions for approval. Once approved, they should follow up the remedies before the electrical work can be resumed.

10. Review the safety procedures in electrical work

Tactical Level:

The main contractor should establish channel for feedback from operational to behavioural levels and to ensure that the reported hazards via the feedback channel should be promptly followed up to ensure hazards are being removed. The project-in-charge shall convene review meeting on a regular basis or when situation warranted such as happening of an accident.

Operational Level:

The supervisors should participate in the review meeting and report feedback collected from frontline electrical workers for discussion and provide their views and comments on the proposed remedies.

Behavioural Level:

The frontline electrical workers should participate in the meeting and report their observations and findings encountered in carrying out electrical work and propose corrective measures for discussion.

## **E. Sub-contractor**

1. Prepare safety plan before commencement of electrical work

Sub-contractor and the main contractor should jointly compile the safety plan

2. Conduct risk assessment to define the safe electrical work method

Tactical Level:

Employees of similar positions and qualifications of the main contractor aforementioned have duties in risk assessment. They should participate in the risk assessment meeting to identify and convey the hazards to the electrical working team and suggest controls for discussion in the meeting.

Operational Level:

The supervisors should provide information and feedback to the risk assessment team for review of the steps and procedures to reduce residue risks observed in the operations.

Behavioural Level:

The REW conducting the physical work should perform a risk assessment and record in standard form before carrying out electrical work according to the codes of practices issued by EMSD. Their feedback and effectiveness of the control measures are crucial information in electrical fitting out and maintenance works.

3. Devise safe working procedures related to a permit-to-work system for electrical work

Tactical Level:

The project-in-charge should endorse the agreed safe working procedures and set up safety rules for electrical work and, if necessary, permit to work system in de-energising live electrical circuit system to avoid accidental contacts. As a project-in-charge, he / she should also provide sufficient resources and times for fulfilling the requirements in the electrical safe work procedures and permit to work.

4. Selection of safe plants and equipment for electrical work

Tactical Level:

The person-in-charge should endorse the list of safe plants and equipment for use with their specifications agreed in the risk assessment process and provide sufficient resources for placement of them.

Operational Level:

The frontline sub-contractor staff should provide feedback on what plants and equipment are the most suitable for the type of electrical work to be carried out according to the actual needs of the task.

Behavioural Level:

Qualified electrician will be called by the sub-contractor directly to perform the electrical work through the sub-contracts. Therefore, the plants and equipment / tools brought in to the site by the electricians who should conform to the endorsed legal standards and contract specifications.

Even though the electricians or workers are using plants, and equipment / tools provided by the stakeholders at upper tiers, they also have the responsibilities to give feedback on the suitability of the plants and equipment according to the actual needs of the task.

5. Appoint qualified, experienced and competent personnel for electrical work

Tactical Level:

The project-in-charge of the sub-contractors, depending on the project or type of task, should appoint qualified and competent persons including electrical engineers to test and check live cables and electrical workers to carry out the electrical work. In situations where checking of pre-work checklist and / or permit to work is involved, he should appoint qualified and competent person to carry out the checking or approval work.

Operational Level:

The supervisors should assess the suitability on competence of the electrical workers and provide feedback on their suitability on the type of that electrical work.

6. Provide training on the safety procedures and use of electrical tools and equipment

Tactical Level:

The person-in-charge of the sub-contractors should endorse the safety training plan for electrical work and ensure that the training on the safe work procedures and / or permit to work reach down from operational to behavioural levels of the electrical team members. To ensure that the training plan is in place, the project-in-charge should provide sufficient time and resources to the electrical team members to attend the safety training.

Operational Level:

The supervisors should also attend the safety training to understand the arrangement of the safe work procedures and / or permit to work for effective supervision and provide feedback on the effectiveness of the training.

Behavioural Level:

The frontline electrical workers should attend the training to understand the arrangement of the safe work procedures and / or permit to work and raise feedback on their physical implementation for review.

7. Conduct pre-work checking of the work place, electrical installations, equipment and emergency arrangement

Tactical Level:

The project-in-charge of the sub-contractors should endorse the format of a pre-work checklist prepared by the safety personnel on what items are to be checked daily before carrying out the work and appoint competent person to carry out the pre-work check.

Operational Level:

The supervisors should ensure all items in the checklist should have been checked before their approval. They should also report defects to the project-in-charge for any abnormal situations reported in the pre-work check.

Behavioural Level:

The frontline electrical workers should comply with the safety requirements defined in the pre-work checklist. The appointed competent person should conduct pre-work check according to the checklist and submit to the supervisor for approval if every item in the checklist is in proper order. This appointed person should provide feedback to project-in-charge if the conditions are not in conformity with the items on the checklist.

8. Implement of 'permit-to-work' system and necessary safety procedures of electrical work

Tactical Level:

The project-in-charge of the sub-contractors should ensure works adhere to the current safety procedures on electrical work. When necessary, they should endorse the permit-to-work after verification by a competent person appointed by him before commencement of the electrical work.

Operational Level:

The supervisors should strictly adhere to the procedures and apply the permit to work if necessary. They should ensure that electrical operations are carried out under permit to work. They should suspend the work when imminent risk to electrical workers is found. The situation should be reported to project-in-charge and ensure that remedies are taken before resuming the operations by the electrical workers.

Behavioural Level:

The electrical workers should adhere to the endorsed electrical work procedures and specific requirements on permit-to-work and if require, the pre-work checklist signed by the appointed person. They should report to supervisors any hazards identified during their electrical work and stop work until instruction to resume work has been received from supervisor.

9. Monitor the compliance of safety procedures for electrical work and safety conditions of the workplace before handing over after work is completed

Tactical Level:

The project-in-charge of the sub-contractors should develop disciplinary policy to enforce the established safe work procedures and permit to work. This can be enforced by an inspection system to prevent any non-compliance at the operational and behavioural levels. To enhance the effectiveness of the monitoring system, the frontline supervisors should be delegated with authority to suspend works that create imminent risk of electrical hazards to the electrical workers. When corrective plans are prepared, the project-in-charge should vet the proposed plans and endorse it for prompt rectification.

Operational Level:

The supervisors should inspect and conduct on-site supervision to ensure that the endorsed safety procedures and standards of performance in the electrical installations are strictly adhered to and suspend the work that create imminent risk of electrical hazards to the electrical workers. They should report to site management and propose corrective actions for approval. Once approved, they should follow up the remedies before the electrical work can be resumed.

10. Review the safety procedures in electrical work

Tactical Level:

The project in-charge of the sub-contractors should establish channel for feedback from operational to behavioural levels and to ensure that the reported hazards via the feedback channel should be promptly followed up to ensure hazards are being removed. The project-in-charge should convene review meeting on a regular basis or when warranted, such as happening of an accident.

Operational Level:

The supervisors should participate in the review meeting and report feedback collected from frontline electrical workers for discussion and provide their views and comments on the proposed remedies.

Behavioural Level:

The electrical workers should participate in the meeting and report their observations and findings encountered in carrying out electrical work and propose corrective measures for discussion.

## **F. Safety Personnel**

1. Prepare safety plan before commencement of electrical work

Safety personnel should understand the legal and contractual requirements of electrical work.

2. Conduct risk assessment to define the safe electrical work method

Tactical Level:

The safety personnel from the Main Contractor and Sub-contractor, depending on the project or type of task, should participate in the risk assessment meeting and assist to identify and communicate hazards with electrical work to the risk assessment team. They should also suggest safety controls for discussion in the meeting for the purpose of eliminating hazards or controlling the risks.

3. Devise safe working procedures related to a permit-to-work system for electrical work

Tactical Level:

Depending on the safe work procedures for the project or type of task, the safety personnel of main / subcontractors should assist to prepare the safe work procedures as resolved in the risk assessment meeting for review and endorsement by project-in-charge and client's representative.

4. Selection of safe plants and equipment for electrical work

Tactical Level:

The safety personnel of the main contractor / subcontractor, depending on project or type of task, should assist to draft a list of safe plants and equipment that conformed with legal standards and contract specifications provided by the designer, manufacturer, and supplier for endorsement by the project-in-charge.

5. Appoint qualified, experienced and competent personnel for electrical work

Tactical Level:

The safety personnel of the main / sub-contractors, depending on the project or type of task, should specify the criteria for respective electrical team members and check for statutory standards and contract specifications on competence of electrical team members according to the types of electrical work.

6. Training on the safety procedures and use of electrical tools and equipment

Tactical Level:

The safety personnel of the main contractor and sub-contractor should assist to prepare the training plan on safe work procedures and / or permit to work of electrical work. They should also assist to identify suitable personnel to attend the training and keep the attendance records and feedback on the training for review.

7. Conduct pre-work checking of the work place, electrical installations, equipment and emergency arrangement

Tactical Level:

The safety personnel of the main contractor and sub-contractor should assist to prepare a pre-work checklist which should be conformed to legal standards and contract specifications. Records of signed pre-work checklist should be kept for review.

8. Implement 'permit-to-work' system and necessary safety procedures of electrical work

Tactical Level:

The safety personnel of the main contractor and subcontractor should assist to check and verify all items in the permit to work are properly checked and in place.

9. Monitor the compliance of safety procedures for electrical work and safety conditions of the workplace before handing over after work is completed

Tactical Level:

The safety personnel of the main contractor and subcontractor should conduct inspections to check for compliance of safety rules and procedures, and follow up the implementation of endorsed corrective plan. They should also suspend works that create imminent risk of electrical hazards and propose recommendations for corrective plan. To obtain a full picture of overall performance of the electrical team, they should also prepare performance data sheet for detail analysis of root problems.

10. Review the safety procedures in electrical work

Tactical Level:

The safety personnel of the main contractor and sub-contractor should participate in the review meeting. Before the meeting, he / she should consolidate the feedback collected from front line electrical workers for discussion in the meeting and provide their views and comments on the proposed remedies.

A matrix showing the **Safety Roles of Respective Stakeholders and their Safety Responsibilities at Respective Level correlating to each step of the “Practical Reference Guidance on Electrical work”** is given in **Appendix 1** for reference.

Appendix I – Safety Roles of Respective Stakeholders and their Safety Responsibilities at Respective Level correlating to each step of the “Practical Reference Guidance on Electrical work”

			1	2	3	4
		Position (Subject to individual organisation decision and arrangement)	Prepare safety plan before commencement of electrical work	Conduct risk assessment to define the safe electrical work method	Devise safe working procedures related to a permit-to-work system for electrical work	Select safe plants and equipment for electrical work
Strategic Level (High-level Decision Making)	Client / Developer	Project Director, Project Manager, etc.	1. Ensure design out risk system in place 2. Allocate sufficient time and resources 3. Select and appoint competent designer and contractor 4. Convene design out risk meeting A1			
	Client's Representative	Architect, Principle Engineer	1. Advise on requirements in contract 2. Advise on selection and appointment of contractor 3. Participate in design out risk meeting B1			
	Designer	Architect, Engineer	1. Plan and manage electrical works design 2. Communicate residue risk on design 3. Participate in design out risk meeting C1			
	Main Contractor	Director, Project Director, Contract Manager, etc.	1. Ensure accountability system in place 2. Provide sufficient time and resources 3. Participate in design out risk meeting D1			
Tactical Level (Line Management Function)	Client's Representative	Architect, Resident Engineer		1. Participate in risk assessment 2. Review solution of residue risk on design B2	1. Review and comment safe electrical work procedures and / or permit to work B3	1. Review and comment safe electrical equipment following contract specifications B4
	Main Contractor / Sub-contractor	Project Manager, Construction Manager, Site Agent, Superintendent, etc.		1. Set up accountability system 2. Establish risk assessment team 3. Convene risk assessment meeting 4. Decide solution of residue risk on design D2 / E2	1. Prepare and endorse safe electrical work procedures 2. Develop relevant permit to work 3. Set up safety rules and disciplinary policy for enforcement D3 / E3	1. Provide sufficient resources D4 / E4
	Main / Subcontractor Safety Personnel	Safety Manager, Safety Officer, Safety Supervisor, Safety Representative	1. Understand the legal and contractual requirment F1	1. Participate in risk assessment 2. Assist in identifying hazards 3. Provide advice on control measures 4. Record solutions on risk assessment F2	1. Assist the preparation of safe electrical work procedures and / or permit to work F3	1. Advice legal standards on electrical equipment F4
Operation Level (Supervising Function)	Client's Representative	Inspectorates, Work Supervisors, etc.		1. Participate in risk assessment 2. Feedback on hazards and controls B2		1. Feedback on suitability of electrical equipment B4
	Main Contractor / Sub-contractor	Engineer, Supervisor, Foremen, etc.		1. Participate in risk assessment 2. Feedback on hazards and controls D2 / E2		1. Feedback on suitability of electrical equipment D4 / E4
Behavioural Level (Works Executing Fuction)	Main Contractor / Subcontractor	Registered Electrical Worker, Worker using electrical equipment		1. Participate in risk assessment 2. Feedback on hazards and workability of controls D2 / E2		1. Feedback on suitability of electrical equipment deployed to them D4 / E4

Appendix I – Safety Roles of Respective Stakeholders and their Safety Responsibilities at Respective Level correlating to each step of the “Practical Reference Guidance on Electrical work”

5	Appoint qualified, experienced and competent personnel for electrical work	6	Provide training on the safety procedures and use of electrical tools and equipment	7	Conduct pre-work checking of the work place, electrical installations, equipment and emergency arrangement
8	Implement ‘permit-to-work’ system and necessary safety procedures of electrical work	9	Monitor the compliance of safety procedures for electrical work and safety conditions of the workplace before handing over after work is completed	10	Review the safety procedures in electrical work
	1. Review and comment the competence of appointed electrical teamB5	1. Review and comment training planB6	1. Review and comment on pre-work checklist according to contract specificationsB7		1. Monitor submission of endorsed permit to lift 2. Delegate authority for suspension of workB9
	1. Appoint qualified and competent electrical engineers / electricians 2. Appoint qualified and competent electrical workers 3. Appoint qualified and competent person to approve pre-work checklist and / or permit to workD5 / E5	1. Endorse the training plan for electrical work 2. Appoint suitable trainer 3. Provide sufficient time and resources 4. Ensure electrical training plan to reach all required levels 5. Ensure training up for necessary competenceD6 / E6	1. Endorse items to be checked on pre-work checklistD7 / E7	1. Endorse permit to work 2. Pass permit to work to operational level 3. Ensure adherence of safe electrical procedures and / or permit to workD8 / E8	1. Enforce the disciplinary policy 2. Delegate authority for suspension of work 3. Ensure effective inspection 4. Endorse corrective actionsD9 / E9
	1. Ensure the appointments compile with legal standardsF5	1. Identify targets for training 2. Prepare training planF6	1. Devise pre-work checklist as appropriateF7	1. Ensure adherence of safe electrical procedures 2. Comment on details of permit to workF8	1. Conduct inspection 2. Prepare inspection analysis 3. Follow-up endorsed corrective actions 4. Suspend work with imminent riskF9
	1. Provide feedback on suitability of the electrical workersB5	1. Participate in safety trainingB6	1. Track record of approved checklistB7		1. Conduct inspection 2. Suspend work with imminent risk 3. Propose corrective actionsB9
	1. Provide feedback on suitability of the electrical workersD5 / E5	1. Participate in safety trainingD6 / E6	1. Approved pre-work checklist 2. Pass approved checklist to electrical workerD7 / E7	1. Apply permit to work before electrical operations 2. Ensure electrical operations are carried out under permitD8 / E8	1. Conduct inspection 2. Suspend work with imminent risk 3. Propose corrective actionsD9 / E9
		1. Participate in safety trainingD6 / E6	1. Conduct pre-work check of approved checklist 2. Adhere to safe electrical proceduresD7 / E7	1. Adhere to permit to work and/or safe electrical procedures 2. Report to supervisor on new hazards if identified 3. Stop work on new hazards if identifiedD8 / E8	1. Report hazards to supervisor 2. Give feedback 3. Make suggestions for improvementD10 / E10

## Feedback Form [Reference Materials - Safety Roles and Responsibilities of Key Stakeholders in the Hong Kong Construction Industry - Practical Reference Guidance On Electrical Work]

Thanks for reading this publication. To pursue improvement in our future versions, we appreciate your valuable suggestions.

(Please put a "✓" in the appropriate box)

1. As a whole, I feel that the publication is:	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Informative	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comprehensive	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Useful	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Practical	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Does the publication enable you to understand more about the Safety Roles and Responsibilities of Key Stakeholders on Electrical Work?	Yes <input type="checkbox"/>		No <input type="checkbox"/>	No Comment <input type="checkbox"/>	
3. Have you made reference to the publication in your work?	Quite Often <input type="checkbox"/>		Sometimes <input type="checkbox"/>	Never <input type="checkbox"/>	
4. To what extent have you incorporated the recommendations of the publication in your work?	Most <input type="checkbox"/>		Some <input type="checkbox"/>	None <input type="checkbox"/>	
5. Overall, how would you rate the publication?	Excellent <input type="checkbox"/>	Very Good <input type="checkbox"/>	Satisfactory <input type="checkbox"/>	Fair <input type="checkbox"/>	Poor <input type="checkbox"/>
6. Please give any other comments and suggestions (use separate sheets if necessary).					
<b>Personal Particulars (optional)* :</b> Name : <u>Mr. / Mrs./ Ms./ Dr./ Prof./ Ir / Sr ^</u> Company : _____ Tel : _____ Address : _____ E-mail : _____					

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