



**2-YEAR SUPPLY CONTRACT OF
0.50% LOW SULPHUR 180 cSt FUEL OIL
(TENDER REF. PLD-MP1/25/55)**

LIST OF DOCUMENTS

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C	PLD-MP1/25/55.TS	Technical Specification
D	Site Regulation & Health and Safety Manual	Site Regulation & Health and Safety Manual
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**2-YEAR SUPPLY CONTRACT OF 0.50% LOW SULPHUR
180 cSt FUEL OIL**

Tender Documents

Tender Ref.: **PLD-MP1/25/55**

澳門電力股份有限公司

Companhia de Electricidade de Macau - CEM, S.A.



**INSTRUCTIONS TO TENDERERS
AND RELATED DOCUMENTS**

PLD-MP1/25/55

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1. INTRODUCTION

"Companhia de Electricidade de Macau - CEM, S.A.", hereinafter referred to as "CEM", is calling Tenders for the supply of the following, globally called the "Goods":

***SUPPLY OF 0.50% LOW SULPHUR 180 cSt FUEL OIL
FOR 2026-2027***

2. BRIEF DESCRIPTION OF THE SCOPE OF SUPPLY

- 2.1 Purpose of this tender is to purchase 0.50% maximum sulphur content Fuel Oil for our Coloane Power Station. The **estimated quantity** for the supply of 0.50% maximum sulphur content Fuel Oil in the contract is **20,112 metric tons(MT)** for 2026-2027.
- 2.2 This contract is valid for an initial period as from 1st January, 2026 until 31st December, 2027.
- 2.3 Refer to "PLD-MP1/25/55 - Technical Specification" attached for detailed Scope of Supply and Requirements.

3. SITE CONDITIONS AND INTENDED USAGE

- 3.1 The predominant type of CEM's generation technology deployed is the low speed diesel generator. In fact, this kind of generating units make up of 56.7% of total capacity installed (231 MW).
- 3.2 The net storage capacity for Heavy Fuel Oil (HFO) is currently of 26,076 m3 distributed by 4 tanks, 3 of them with a net capacity of about 5,300 m3 each and one tank with a net capacity of 10,176 m3.
- 3.3 Coloane A Power Station can be accessed by sea. It has a pier where a barge can berth with an unloading maximum capacity of 1,600 MT of HFO. Two barges may berth at the pier at the same time but only one can discharge at a time.
- 3.4 CEM is certified by international standards for Environment, Health and Safety and Quality. Air emissions are monitored online and follow GB Standard and the legal requirements of Macau SAR.
- 3.5 Coloane A Power Station has six low speed Diesel units installed (G03-G08). Each unit has a Selective Catalytic Reduction (SCR) system installed to limit the NOx emissions.

Instruction to Tenderers and Related Documents

- 3.6 The main technical data of the six low speed Diesel generator units are summarised as below:

<u>Engine Unit</u>	<u>G05/G06</u>	<u>G07/G08</u>
GENERAL		
Contractor	BWSC	BWSC
Year of Commissioning	1991/1992	1995/1996
Unit Rated Output	38MW	53MW
DIESEL ENGINE		
Manufacturer	Mitsui/B&W	Mitsui/B&W
Type	12k80MC-S	12k90MC-S
Rated Power	37MW	51MW
Rated Speed	100 rpm	103.4 rpm
No. of Cylinders	12	12
Cylinder Bore	800mm	900mm
Piston Stroke	2,300mm	2,300mm
Engine Weight (dry)	1,445 tons	1,850 tons

4. GENERAL

- 4.1 CEM accepts tenders for the Goods in accordance with the Tender Documents (later defined).
- 4.2 The information (including but not limited to the description of the Coloane A Power Station) as given in any Schedule, information sheets, plans, and/or these Tender Documents provided by CEM is general information and for reference only, whilst Tenderers should rely on their own investigation and verification and satisfy themselves regarding these Tender Documents and CEM's local conditions, and shall be deemed to have done so, no claims being acceptable in the future that may be explained by a misjudgement of the requirements or cost for successfully completing the supply of Goods.
- 4.3 Tenders and all correspondence and documents relating to the Tender exchanged between the Tenderers and CEM and/or CEM's Representative shall be written in the **English** Language. Printed manufacturer's literature furnished by the Tenderer may be written in another language if accompanied by an English translation.

- 4.4 The information contained in the Tender Documents is confidential and Tenderers may not disclose it to third parties without CEM's prior written consent.
- 4.5 The Closing Time and Date for reception of the Tenders will be at **17:00 hrs on 16th Jun 2025 (Monday)**.
- 4.6 The validity period of the Tenders is due to begin on the closing time and date above and valid for at least 180 days from thereafter.
- 4.7 Tenders shall be delivered to the following email address on or before the closing time and date above:

etender@cem-macau.com

Please use this email address ONLY for the tender submission and please DO NOT put any other email address on "Cc" or "Bcc"

- 4.8 Should a Tenderer detect any error or mistake in his Tender after delivery, he shall notify CEM in writing for the tender resubmission of the necessary corrections, which will be fully acceptable if received before the Closing Date.
- 4.9 Tenders received after the Closing Date will not be considered, unless the Tenderer is able to provide evidence that his complete Tender was mailed in such a date that would under normal circumstances allow for its timely reception by CEM.
- 4.10 Once surrendered, the Tenders shall not be changed in any way on the Tenderer's own initiative.
- 4.11 Tenderers will not be entitled to reimbursement of costs incurred with the preparation of their Tenders, and no such provisos shall be accepted by CEM.

5. TENDER DOCUMENTS

- 5.1 Each set comprises the following:
- a) Instructions to Tenderers and related documents, such as:
 - Form of Tender;

Instruction to Tenderers and Related Documents

- Price Schedule;
 - Deviation Form - Commercial Part;
 - Deviation Form - Technical Part;
 - Job Reference Form;
 - Specimen of Performance Security;
 - Statement of Bidder Eligibility Form;
 - Sample of Declaration
- b) General Conditions of Contract
- c) Technical Specification
- d) CEM Power Stations Site Regulation & Health and Safety Manual
- e) Health and Safety Manual for CEM Contractors (Version 5)
- f) CEM Safety, Health, Environment and Quality Requirements & Responsibilities for Materials Suppliers (Version 5)
- g) CEM Safety, Health, Environment and Quality Requirements & Responsibilities for Services Suppliers (Version 6)
- h) SHE Non-Compliance in Contracts Managed by CEM (Version 4)
- 5.2 Tenderers are requested to check the page numbers in order to make sure they have received the complete set and, should some be missing, advise CEM at once.
- 5.3 Should a Tenderer find discrepancies to the Tender Documents or should the intent or meaning appear to him to be ambiguous, he shall request in writing an interpretation, clarification or correction thereof.

Replies will be made under the form of "supplementary notices", issued to all Tenderers and which will become part of the Tender Documents.

6. PERFORMANCE SECURITY

- 6.1 The Performance Security shall preferably be in the form of an unconditional bank guarantee or a certified QR code cheque, in an amount of USD1,000,000.00 (United States Dollars One Million Only).
- 6.2 Bank security shall be payable in Macau and shall be issued by one of the approved banks. It must be payable to CEM on first demand, without any

need for judicial settlement and despite any objection by the Tenderer or the bank.

Certified QR code cheque shall be payable to CEM in Macau and drawn on one of the approved banks in Macau.

6.3 Bank guarantees shall be issued by one of the following banks, through their head-offices or representatives in Macau:

- Bank of China Limited, Macau Branch
中國銀行股份有限公司 - 澳門分行
- Banco Nacional Ultramarino, S.A.
大西洋銀行股份有限公司
- Luso International Banking Limited
澳門國際銀行股份有限公司
- China Guangfa Bank Co., Limited, Macau Branch
廣發銀行股份有限公司 - 澳門分行
- Banco Comercial de Macau, S.A.
澳門商業銀行股份有限公司
- The HongKong & Shanghai Banking Corporation Limited, Macau Branch
香港上海滙豐銀行有限公司 - 澳門分行
- Banco Well Link, S.A.
立橋銀行股份有限公司
- Tai Fung Bank Limited
大豐銀行股份有限公司
- Macao Development Bank Limited
澳門發展銀行股份有限公司
- Industrial and Commercial Bank of China (Macau) Limited
中國工商銀行(澳門)股份有限公司
- China Construction Bank Corporation, Macau Branch
中國建設銀行股份有限公司 - 澳門分行
- The Bank of East Asia Limited, Macau Branch
東亞銀行有限公司 - 澳門分行

Instruction to Tenderers and Related Documents

7. TENDERS

7.1 Tenders will be submitted in accordance with the Tender Documents supplied by CEM.

7.2 Each Tender shall consist two separate sets of:

➤ Commercial Documents:

- Form of Tender as per enclosed specimen, duly completed, signed and dated
- Price schedule, Tenderer shall quote the price of Cost, Insurance & Freight (CIF) Macau CEM Coloane Power Station and CIF shall be fixed for the whole length of this Contract
- Annual report, at least 3-year financials
- List of commercial references
- Deviation Form - Commercial Part, listing all deviations (if any) to the requirements set forth in the Instructions to Tenderers, General Conditions of Contract

➤ Technical Documents:

- Deviation Form - Technical Part, listing all deviations (if any) to the requirements set forth in the technical specification and all relevant document enclosed
- Statement of Bidder Eligibility Form as per enclosed specimen, duly completed, signed and dated
- Laboratory facilities
- Location of contractor's oil terminal and the capacity of oil tanks
- Track records & relevant experience in Asia region in past 10 years
- Company profile
- Ownership and shareholders, headquarters
- Completed CEM Safety, Health, Environment and Quality Requirements & Responsibilities for Materials Suppliers (Version 5)
- Completed CEM Safety, Health, Environment and Quality Requirements & Responsibilities for Services Suppliers (Version 6)
- Other information that are considered to be relevant to your proposal

7.3 Tenderers may submit alternative solution for the best interest of CEM. A separate sets of envelopes, clearly identified as BASE TENDER and ALTERNATIVE TENDER, should be used. The alternative tender shall

provide a specification and typical properties of the Goods, and the compatibility between the Goods and 180cSt fuel oil is guaranteed by the Tenderer.

7.4 Submission of Tenders

7.4.1 **The tender in electronic format*** with all the information required in the proposal as per Sub-Clause 6.2 above should be addressed, as per Sub-Clause 4.7 above, to etender@cem-macau.com in separate, and labelled:

PLD-MP1/25/55-1 (Technical Proposal)
&
PLD-MP1/25/55-2 (Commercial Proposal)

When submitting your tender, it is mandatory to include at least the corresponding reference **“PLD-MP1/25/55-1”** for Technical Proposal and **“PLD-MP1/25/55-2”** for Commercial Proposal in the email subject for the System to recognize it.

** The System only accepts emails with sizes below 20Mb. If your email is larger than that, please split it into several with sizes below 20Mb, but please ensure to number them accordingly in the email subject for our follow-up, e.g. **“PLD-MP1/25/55-1 - 1/3”**, **“PLD-MP1/25/55-1 - 2/3”**...*

7.4.2 If Alternative Tenders are also submitted, separate sets of envelopes, clearly identified as BASE TENDER and ALTERNATIVE TENDER, should be used.

7.4.3 Failure to submit any one of the documents referred to in Clause 6 may lead to elimination of the Tender during the period of Tender evaluation.

8. CLARIFICATION

8.1 Tenderers inquiring for clarification with respect to any of the aspects mentioned in this Tender should be made in writing and deliver by fax to (853) 2830 8361, or via email to jenny.ma@cem-macau.com and dorothy.lao@cem-macau.com.

8.2 Please label on the written query with:
“2-YEAR SUPPLY CONTRACT OF 0.50% LOW SULPHUR 180 cSt FUEL OIL” TENDER REF. PLD-MP1/25/55

Instruction to Tenderers and Related Documents

- 8.3 Inquiries will be closed at 17:00 of 26th May 2025. Written response to written inquiries will be made and posted on the CEM website (www.cem-macau.com) no later than 3rd Jun 2025.
- 8.4 Tenderers are responsible in acquiring the latest information posted on the website before submitting their proposals.

9 TENDER EVALUATION

- 9.1 The tenderers, whose tender that meet the best interest of CEM, shall be qualified as the Shortlisted Suppliers. The Shortlisted Suppliers shall enter the clarification phase.
- 9.2 Tenders may be disqualified:
- If not in accordance with the Tender Documents supplied by CEM
 - For any price revision without the request of CEM during the tender process
 - If found to have committed any acts of corruption and bribery
 - If found to have committed any acts that result in bid-rigging
 - If found to have provided false information
- 9.3 Upon request by CEM, the Tenderers shall provide additional details as may be needed for a perfect and fair evaluation of their Tenders.
- 9.4 CEM reserves the right:
- Not to choose the lowest price tender
 - To select the tender that it deems more adequate at its sole discretion to meet its objectives
 - To reject all tenders
 - Not to choose the tender that violates any clauses mentioned in the Statement of Bidder Eligibility
- 9.5 The main selection of the preferred tender are based on the criteria of fitness to technical requirements, logistics, price and also taking into consideration the possession of Management and Quality Certifications such as ISO9001, ISO14001 and ISO45001.
- 9.6 The performance of the Contractor shall be evaluated after completion of the project or every 12 months if the Contractor provides continuous services to CEM. To evaluate the Contractor's success in meeting the concerns of CEM, six major performance criteria shall be considered:
- Time Control
 - Cost Control
 - Quality Control

- Occupational Health & Safety (H&S) Control
- Environmental Protection Control
- Cyber Security Control

Contractor shall be mailed/faxed a copy of their Contractor Performance Evaluation Report within a reasonable time after the Taking Over Certificate is issued or the end of the service period. The evaluation result will be taking into consideration for future tender invitation and/or contract renewal.

10. AWARD PROCEDURES

- 10.1 The successful Tenderer will be notified as soon as CEM decides to accept his Tender.
- 10.2 The successful Tenderer will sign a Contract with CEM, which will include any additional conditions that may have been agreed during the evaluation and discussion process.
- 10.3 The successful Tenderer will confirm in writing his acceptance of the Contract and shall submit the Performance Security within 30 days after the date of the Contract.
- 10.4 In the event that the name of the issuer of the performance security is not the same as the name of the successful Tenderer (thenceforth referred to as the “Contractor”), the Contractor shall provide a declaration as per enclosed specimen for declaring the relationship between the issuer of performance guarantee and the Contractor, and for agreement of returning the performance security to the issuer. This declaration shall be submitted to CEM together with the performance security.
- 10.5 Failure to comply with Sub-Clause 9.2 or 9.3 shall constitute sufficient grounds for the annulment of the award/contract. In this event CEM may award the Contract to another Tenderer or call for new Tenders.
- 10.6 Upon acceptance of the Contract awarded to him, the Contractor shall arrange to commence the supply of Fuel Oil without delay.
- 10.7 The remaining Shortlisted Tenderers will also be individually notified to that effect, at the same time and with the shortest possible delay, but not before Sub-Clause 9.3 has been fulfilled.

Instruction to Tenderers and Related Documents

- 10.8 Should CEM decide to cancel the Tender, all Tenderers will be notified simultaneously at the earliest possible time.

11. BRIBES

- 11.1 If a Tenderer or any of his agents or servants offers to give or agrees to offer or give to any person, any bribe, gift, gratuity or commission as an inducement or reward for doing or forbearing to do any action in relation to his Tender, then CEM may disqualify the Tender.
- 11.2 Any attempt by a Tenderer to influence CEM in the process of examination, clarification, evaluation and comparison of Tenders or in the decision concerning the award of any contract or to disclose any information on his Tender or the evaluation process to any other Tenderer or person not officially involved with such process may result in the rejection of the Tender.

12. CONFIDENTIALITY

All information relating to the examination, clarification, evaluation and comparison of Tenders and recommendations concerning the award of any contract will be held confidential by CEM.

13. APPENDED DOCUMENTS

- | | | |
|------|--------------------------------------|------------|
| 13.1 | Form of Tender | (specimen) |
| 13.2 | Price Schedule | (") |
| 13.3 | Deviation Form - Commercial Part | (") |
| 13.4 | Deviation Form - Technical Part | (") |
| 13.5 | Job Reference Form | (") |
| 13.6 | Performance Security | (") |
| 13.7 | Statement of Bidder Eligibility Form | (") |

FORM OF TENDER

**Name of Contract: 2-YEAR SUPPLY CONTRACT OF 0.50% LOW SULPHUR
180 cSt FUEL OIL
(TENDER REF. PLD-MP1/25/55)**

To: Companhia de Electricidade de Macau - CEM, S.A.

1. Having examined the Instructions to Tenderers and all Tender Documents, as defined, we, the undersigned, offer to supply and deliver such 'Goods' and remedy any defects therein in conformity with the above mentioned documents for the premium price (per MT) as stated in the "Price Schedule".
2. If our Tender is accepted, we undertake to start the first supply of the 'Goods' within _____ calendar days from date of purchase order.
3. We agree to abide by this Tender for a period of **180 days** from the closing date, during which period it may be accepted at any time.
4. Unless and until a formal contract is prepared and executed, this Tender, together with your written acceptance thereof, shall constitute a binding agreement between us.

Dated this [day/month/year].

Signature / Company Stamp _____ in the capacity

of _____ duly authorized to sign tenders for

and on behalf of _____

Address _____

Instruction to Tenderers and Related Documents

PRICE SCHEDULE

**Name of Contract: 2-YEAR SUPPLY CONTRACT OF 0.50% LOW SULPHUR
180 cSt FUEL OIL
(TENDER REF. PLD-MP1/25/55)**

- In this Price Schedule, the following formula(s) should be considered:

Unit Price (USD/MT) = MOPS Marine Fuel 0.5% + Fixed Premium

Where

- Premium should be quoted on unit price basis.
- MOPS Marine Fuel 0.5% is the Singapore spot market price of "Marine Fuel 0.5%" as published by "Platt's Global Alert" of the working day during which the order is placed.

- The estimated order quantity for 2026 and 2027 (2 years) will be 20,112 MT.

Qty (MT)	Unit Price Formula	Fixed Premium in USD	Location of Tenderer's Oil Terminal
		CIF Macau CEM Coloane Power Station	
20,112			

Dated this [day/month/year].

Signature / Company Stamp_____

Printed Name / Title _____

PRICE SCHEDULE

**Name of Contract: 2-YEAR SUPPLY CONTRACT OF 0.50% LOW SULPHUR
180 cSt FUEL OIL
(TENDER REF. PLD-MP1/25/55)**

Month	MOPS Marine Fuel 0.5% (USD/MT)
May-23	
Jun-23	
Jul-23	
Aug-23	
Sep-23	
Oct-23	
Nov-23	
Dec-23	
Jan-24	
Feb-24	
Mar-24	
Apr-24	
May-24	
Jun-24	
Jul-24	
Aug-24	
Sep-24	
Oct-24	
Nov-24	
Dec-24	
Jan-25	
Feb-25	
Mar-25	
Apr-25	
Monthly Average	
Premium	
Unit Price	
Price for estimated order quantity 20,112 MT	

- Tenderers are requested to provide the details with daily data **in Excel** of the above table.

Dated this [day/month/year].

Instruction to Tenderers and Related Documents

Signature / Company Stamp _____

Printed Name / Title _____

DEVIATION FORM - COMMERCIAL PART


**Name of Contract: 2-YEAR SUPPLY CONTRACT OF 0.50% LOW SULPHUR
180 cSt FUEL OIL
(TENDER REF. PLD-MP1/25/55)**

Tenderers shall indicate whether their offer has any deviation(s) from CEM commercial requirements, as stipulated on the Instructions to Tenderers and General Conditions of Contract of the Tender.

YES / NO

If Yes, the tenderers should provide details on each deviation.

If No, the tenderers should still fill in this form with confirmation of "No deviation".



Tenderer:

Authorized Signature:

Date: [day/month/year]

Instruction to Tenderers and Related Documents

DEVIATION FORM - TECHNICAL PART

**Name of Contract: 2-YEAR SUPPLY CONTRACT OF 0.50% LOW SULPHUR
180 cSt FUEL OIL
(TENDER REF. PLD-MP1/25/55)**

Tenderers shall indicate whether their offer has any deviation(s) from CEM technical requirements, as stipulated on Technical Documents of the Tender.

YES / NO

If Yes, the tenderers should provide details on each deviation.

If No, the tenderers should still fill in this form with confirmation of "No deviation".

Patient Information	
First Name	
Last Name	
Address	
City	
State	
Zip	
Phone	
Insurance	
Physician Information	
Physician Name	
Physician Address	
Physician City	
Physician State	
Physician Zip	
Physician Phone	
Physician Insurance	
Referral Information	
Referral Number	
Referral Date	
Referral Type	
Referral Reason	
Referral Physician	
Referral Facility	
Referral Status	
Referral Notes	

Tenderer:

Authorized Signature:

Date: [day/month/year]

JOB REFERENCE FORM

**Name of Contract: 2-YEAR SUPPLY CONTRACT OF 0.50% LOW SULPHUR
180 cSt FUEL OIL
(TENDER REF. PLD-MP1/25/55)**

Year	Corporation	Country of Corporation	Description of Trading Item(s)	Contact Person	Contact No.

- Tenderers are requested to specify the province if the country of corporation is China.
- Tenderers are required to provide job references covering at least the most recent 10 years.
- Tenderers are requested to submit supporting documents verifying the job references provided above.
- Tenderers are requested to have relevant experience in Asia region in the most recent 10 years or it will result in disqualification.

Instruction to Tenderers and Related Documents

PERFORMANCE SECURITY
(Only required when contract award)

By this Guarantee, we, _____ [*bank name and address*] with Head Office at _____, at the request of _____ [*name and address of Contractor*] (hereinafter called "the Contractor"), are bound unto Companhia de Electricidade de Macau - CEM, S.A. (hereinafter called "CEM") in the sum of USD1,000,000.00 (say United States Dollars One Million Only), for which payment the Bank binds itself, its successors and assigns by these presents.

Whereas CEM has awarded the Contractor the contract for **"2-YEAR SUPPLY CONTRACT OF 0.50% LOW SULPHUR 180 cSt FUEL OIL"**.

The conditions of this obligation are:

1. The Bank undertakes to pay to CEM any sum up to the above amount upon receipt of written demand from CEM. The execution of this covenant must offer CEM equal guarantee to the one resulting from a money deposit made by the Contractor, so, the Bank will deliver the money demanded by CEM without delay and without it being necessary to prove to the Bank the defects or shortcomings or debts of the Contractor.
2. This guarantee is valid until **60 days after the expiry date of the contract**.

This guarantee is governed by the laws and regulations of Macau Special Administrative Region of the People's Republic of China.

Remarks:

This security must be signed with the authorized signatures of the Bank, with the witness of a Public Notary.

STATEMENT OF BIDDER ELIGIBILITY FORM

Name of Contract: **2-Year Supply Contract of 0.5% Low Sulphur 180cSt Fuel Oil
(Tender Ref. PLD-MP1/25/55)**

- 1) I,(Name), of(nationality/citizenship)....., acting in the capacity of lawful representative of , do hereby state that the company I represent:
 - a) Has not committed any acts of corruption and bribery;
 - b) Has not committed any acts that result in bid-rigging;
 - c) Has not been given additional penalties as specified in item no. 1 (1) of article no. 82 of Law no. 16/2021 (i.e. to be deprived of right to participate in direct negotiation, restricted enquiries or public tenders) in the past five years,
 - d) Has not been finally convicted in a court of law for an offence affecting its professional respectability, or has been otherwise sanctioned administratively for serious professional misconduct in the past five years,
- 2) I fully understand that if our company or any of his agents or servants offers to give or agrees to offer or give to any person, any bribe, gift, gratuity or commission as an inducement or reward for doing or forbearing to do any action in relation to the tender, then CEM may disqualify the tender.
- 3) I fully understand that any attempt to influence CEM in the process of examination, clarification, evaluation and comparison of tenders or in the decision concerning the award of any contract or to disclose any information of the tender or the evaluation process to any other tenderer or person not officially involved with such process may result in disqualification.
- 4) I state that neither our company nor any of our officers, directors, employees, representatives and/or any agent acting on behalf of the company has made or will make, directly or indirectly, any offer, payment, agreement or promise to pay money or anything of value, or has authorized or will authorize the offer, gift, agreement or promise to pay money or anything of value, in either case to any person or entity unlawfully to influence or induce any act, omission or decision of the CEM including, without limitation, in connection with this tender, the negotiation, preparation, execution or performance of this project or the procurement process leading to the award of this project. Any violation to this will lead to disqualification of proposal.
- 5) I state further that I am fully aware that the provision of false information shall imply the exclusion of the proposal submitted, as well as make the author thereof liable for criminal prosecution.

Instruction to Tenderers and Related Documents

- 6) The Tenderer undertakes to submit, upon request of the adjudicating body, all the documents evidencing the situations provided in Sub-Clause above.
- 7) I state further that I am fully aware that the failure to submit the documents as provided in Clause 6, for reasons ascribable to the Tenderer, shall imply either the exclusion of the Tenderer from the Invitation to Tender or the voiding of any adjudication already made, as the case may be. Besides voiding of adjudication already made, any costs and losses incurred shall be borne by the Tenderer.

Dated this [day/month/year].

Signature / Company Stamp_____

Printed Name / Title _____

duly authorized to sign tenders for and on behalf of

Address_____

Remarks:

The personal data to be collected during this tender is only used for selection of award. All the data submitted will be handled according to the Personal Data Protection Act.

SAMPLE OF DECLARATION

_____ (*Name of the Issuer of Performance Security*), is
_____ (*Relationship with the Contractor*) of _____
(*Name of the Contractor*), hereby declare to provide the security for the award of “**Supply of 0.5% Low Sulphur 180cSt Fuel Oil for 2026-2027**” on behalf of _____
(*Name of the Contractor*). Both parties (the undersigned below) agree to return the security to the issuer of performance security.

Dated this [day/month/year].

Signature of the Issuer of Performance Security _____ *

Printed Name / Title _____

Dated this [day/month/year].

Signature and Company Stamp of the Contractor _____ *

Printed Name / Title _____

* Signature(s) shall be officially certified by a Notary.

Remarks:

This sample is used for reference only, the Issuer of Performance Security and the Contractor shall produce their document based on their own suitable contents.



**TENDER DOCUMENTS
GENERAL CONDITIONS OF CONTRACT**

PLD-MP1/25/55

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1. DEFINITIONS

In the Contract the following words shall have the meanings herein assigned to them unless there is something in the subject matter or context inconsistent with such construction:-

Contract means the agreement between CEM (Purchaser) and the Contractor, howsoever made, for the supply of goods, including all documents referred to therein which set out the rights and obligations of the parties under the said agreement.

Contract Price means the sum established in accordance with the Contract to be paid by the Purchaser to the Contractor for the supply and delivery of each item of goods ordered by the Purchaser in accordance with sub-clause 5.1 of Clause 5 (Ordering of Goods, Variations and Omissions), subject to such additions thereto and deductions therefrom as may be made in accordance with the Contract, and the fulfilment by the Contractor of all his other activities and obligations under the Contract.

Contractor/Supplier means the person(s), firm, company, whose Tender has been accepted by CEM and includes the Contractor's legal personal representatives, successors and permitted assignees.

Delivery Date means the date specified in the Contract for delivery of the goods subject to such adjustments as may be made in accordance with the Contract.

Goods means 0.50% maximum sulphur fuel oil 180cSt at 50 degree Celsius in accordance with the Specification for which the Purchaser contracted with the Contractor, or any portion of it which shall be made clear by the context.

Purchaser means the Companhia de Electricidade de Macau - CEM, S.A.

Purchase Order means the order issued to the Contractor by the Purchaser from time to time in accordance with the provisions of Clause 5 (Ordering of goods, Variations and Omissions).

2. FORMATION OF CONTRACT AND VALIDITY

2.1 The Contract shall enter into force upon the signature by the Purchaser and Contractor, notwithstanding the provisions set forth in the Instructions to Tenderers whereby, the Contractor shall arrange to commence the delivery of goods upon receipt of the Purchase Order/Contract.

2.2 The Contract shall consist of the following documents including their amendments and other related documents:

- The Contract
- These General Conditions of Contract
- The Technical Specifications
- The Minutes of Clarification meetings (if applicable)
- The Tenderer's Proposal

2.3 Each Contract document shall constitute an integral part of this Contract to the extent that each shall interpret and complement the other.

2.4 In case of apparent contradictions in the Contract documents, to the extent that they cannot be reconciled, the preceding document shall prevail over the documents that follow, in the sequence set forth here above and, for documents on the same level as per above list, that document issued at a later date shall prevail over the earlier ones.

2.5 If the Contractor intends to supply Goods which deviates from the description given in the Tender, it shall obtain prior written approval from the Purchaser.

3. CONTRACTUAL OBLIGATION

3.1 The Contractor hereby warrants that:

- he possesses the necessary professional qualifications, skilled personnel, expertise to carry out his obligations according to this Contract.
- he will make available the necessary facilities, manpower and services to perform the production and delivery of Goods in an efficient, workmanlike and timely manner in accordance with all the conditions and terms of this Contract.

3.2 Purchaser hereby agrees to purchase and receive the Goods, and pay the Contractor pursuant to the terms and conditions set forth in this Contract.

4. INDEPENDENT CONTRACTOR

Nothing contained in this Contract or any sub-Contract awarded by the Contractor or any agreement between the Contractor and any third party shall create any Contractual relationship between the Purchaser and any third party, except as otherwise agreed upon.

5. CONTRACTOR TO INFORM HIMSELF

5.1 The Contractor shall be deemed to have examined the Conditions of Contract and Specification, together with such schedules, drawings and plans as may be annexed thereto or referred to therein and to have satisfied himself as to all matters he may be required to undertake in fulfilling his obligations under the Contract.

5.2 The Contractor shall be deemed upon signature of the Contract as having investigated and satisfied himself concerning the general and local conditions in Macau and particularly, but without limitation, with respect of the following:

- access to and conditions of work in Purchaser's premises
- laws and regulations of Macau
- handling and storage facilities

and all other matters which can in anyway affect the supply and delivery of the Goods or the cost associated with it.

5.3 Failure of the Contractor to acquaint himself with any applicable conditions will not relieve him from his responsibility to properly estimating the difficulties or the cost of Goods at the Purchaser's satisfaction.

6. ORDERING OF GOODS, VARIATIONS AND OMISSIONS

6.1 The Purchaser shall at all times have the right to issue Purchase Orders to the Contractor specifying:

- (i) the Goods to be delivered in accordance with the Contract
- (ii) the Contract Price for such Goods established in accordance with the provisions of the Contract

- (iii) the Delivery Date for such Goods-

The Contractor shall supply Goods in accordance with such Purchase Orders, or as may be varied in accordance with other provisions of this Clause.

- 6.2 The Contractor shall not alter any of the Goods ordered by the Purchaser in accordance with sub-clause 6.1 except as directed in writing by the Purchaser. The Contractor shall carry out such variations and be bound by the same conditions, so far as applicable, as though the said variations were stated in the Specification provided that:

- (a) no such variation shall alter these Conditions of Contract; and
- (b) if the Contract Price or the Delivery Date are affected, the Purchaser shall issue a Variation Order to the extent allowed in the Contract and the Contractor shall accept the Variation Order.

7. SUFFICIENCY OF CONTRACT PRICES

The Contractor shall be deemed to have satisfied himself as to the correctness and sufficiency of the prices which shall cover all his obligations under this Contract and all matters, and things necessary for the proper supply and delivery of Goods.

8. PERFORMANCE SECURITY

- 8.1 The Contractor shall guarantee the due fulfillment of its obligations under this Contract by providing at his own expense a Performance Security in the form described below.
- 8.2 The Performance Security shall remain in force until its validity date insofar as the Contractor has by that date fulfilled his obligations stated at the guarantee of the Performance Security.
- 8.3 The Performance Security shall preferably be in the form of an unconditional bank Security or a certified cheque, in an amount as specified on the Instruction to Tenderers.

Bank security shall be payable in Macau and shall be issued by one of the approved banks. It must be payable to the Purchaser on first demand, without any need for judicial settlement and despite any objection by the Contractor or the bank.

Certified cheque shall be payable to the Purchaser in Macau and drawn on one of the approved banks in Macau.

- 8.4 Due authority for an extension of the validity of this Performance Security shall be lodged by the Contractor with the Bank of Guarantor concerned if such extension is desired by the Purchaser.
- 8.5 Should the Contractor fail to produce evidence of the establishment of the Performance Security on time, the Purchaser shall be entitled to:
- seize the Tender Security (if applicable)
 - terminate the Contract without compensation for the Contractor

Before applying such measure, the Purchaser will send the Contractor a registered letter giving formal notice regarding the establishment of the Performance Security. This notice shall set a new time limit which will take effect from the date of postage of the letter.

- 8.6 Should the Contract price be changed by means of Variation Orders, the Contractor shall adjust the security accordingly. Should the Contractor fail to do so, the Purchaser may deduct such equal amount from future payments and use it to replenish the Performance Security.

9. SCOPE OF SUPPLIES

9.1 SCOPE OF SUPPLY

- 9.1.1 By signing the contract, the Contractor shall be deemed to accept the obligation of supplying everything necessary for the object mentioned in the Contract agreement.
- 9.1.2 The Contractor shall accept the responsibility for the completeness and faultless execution of the supply and delivery, which shall be done in accordance with our technical specifications and relevant requirements, in such a manner that a maximum of operational reliability and efficiency is assured.
- 9.1.3 The Contractor shall apply to the Purchaser if he so requires for any clarification concerning obscurities or discrepancies in the Contract documents. The Contractor shall be responsible for any error or loss resulting from his failure to timely obtain such clarification.

9.2 VARIATION ORDERS

- 9.2.1 The word "Changes" as used hereafter, means substitutions, additions, deletion, modifications in this scope of the Contract.
- 9.2.2 Changes shall be administered according to the following procedure:
- The Purchaser issues instructions to Contractor, on his own behalf or upon suggestions made by the Contractor to carry out changes

- The Contractor submits a proposal, a cost estimate and the impact on the time schedule for completion
- The Purchaser issues a Variation Order
- In case of urgency - in the event that an urgent decision is required with regard to changes to be carried out and in order not to disrupt the delivery, verbal instructions may be given but shall be confirmed in writing as soon as feasible

9.3 SUBLETTING

9.3.1 The Contractor shall not Contract with any sub-Contractor or any vendor who is to supply the Goods without prior written consent of CEM. The Contractor shall be responsible for all acts, defaults, neglects of his subcontractor, and for the observance by these sub-contractors of the terms and conditions of this Contract.

9.3.2 The Purchaser shall not be responsible for delays and costs incurred by the Contractor because of disapproval of a sub-contractor or vendor or the late submittal of his name for approval.

9.4 ASSURED QUALITY

9.4.1 The Contractor warrants that upon delivery, the Goods will be in good conditions and the most suitable for the services required, as per the Purchaser's specifications.

9.4.2 Whenever the Contractor has unloaded any Goods to their oil tanks that are dedicated to the Purchaser, the Contractor shall provide the Purchaser a laboratory test report of the Goods in the tank.

9.4.3 Along with each delivery, the Contractor shall also provide the Purchaser with a laboratory test report on the Goods delivered meeting the Goods specification. Three samples of the loaded product of each delivery shall be drawn at the loading pipeline of the loading terminal and sealed by surveyor who is assigned by the Purchaser and the Contractor in accordance with usual standard practices. The method of taking representative oil samples shall be by means of a continue drip. One sample shall be retained by the Contractor, while the other two forwarded to the Purchaser along with the shipment.

9.4.4 The Purchaser will also draw and seal, in front of a representative from the Contractor, five samples of the loaded product from the oil barge at Macau

by immersion method in each of the barge's deposits (left and right side of the barge) or by a continue drip installed at Purchaser loading pipe, before discharging, two samples of which will be analyzed by the Purchaser's laboratory and the remaining three will be sealed: two retained by the Purchaser and one retained by Contractor.

9.4.5 In case of dispute of quality measurement, the Purchaser should raise the request for re-analysis within 90 working days after delivery. Under such circumstances, one sample drawn at the terminal and the other taken from the oil barge at Macau before discharge shall be sent for re-analysis by a mutually accepted independent surveyor in Hong Kong, whose test report on the sample drawn at the loading terminal should be the conclusive certificate of the quality of the delivered product and binding upon both parties.

9.4.6 The Purchaser has the right to discuss and settle with the Contractor the problem case by case the discrepancies between the two samples, if any. Cost of the independent Surveyor should be borne by the "losing party". If the Goods delivered is proven to be off-specification, the Goods price shall be subject to a "quality adjustment". Detailed calculation shall follow the Technical Specification.

9.4.7 The Purchaser shall have the right to send an independent inspector to oil terminals of the Contractor for inspecting the loading process and auditing the storage and loading/unloading system. The Contractor shall make available the documents and information of the fuel oil storage and loading/unloading system to the inspector if necessary.

9.4.8 Other means of transportation shall be subject to the approval of the Purchaser. The Contractor has to provide detailed information on the logistic for the Purchaser's consideration, including but not limited to sample collection, quantity measurement, safety and environmental precaution measures.

10. DELIVERY

10.1 Delivery of the quantities as stated in the "Price Schedule" shall be monthly distributed. The Purchaser shall inform the order quantities of the Goods for each month at most 30 days in advance.

10.2 The Purchaser shall give the Contractor not later than the 20th day of each calendar month, the Purchaser's time schedule for the delivery for the following calendar month, giving details of parcel size required which shall be approximately by 1,600 metric tons. The Contractor shall immediately make shipping arrangement and confirm the above at least 7 days before the delivery month.

11. MEASUREMENT AND QUANTITY

- 11.1 The volume of the product to be delivered shall be measured at standard temperature of 15°C by Contractor's system of Contractor's assigned oil terminal as the Goods is loaded into the oil barge. The delivered volume in litres shall be shown on a Delivery Order and it shall be converted to metric ton on the basis of the actual density of the Oil in the barge at 15°C by using the latest edition of the petroleum measurement tables of the American Society for Testing Materials (ASTM). The resulting quantity shall be rounded up to the nearest third decimal place.
- 11.2 The Contractor shall provide the Purchaser with a Delivery Order in respect to each shipment of the Goods hereunder. The Delivery Order shall be countersigned by the Purchaser's representative as a receipt of the Goods. The quantity as shown on the Delivery Order shall be verified by the Purchaser.
- 11.3 Prior to commencement of unloading of the Goods at the installations of the Purchaser's power station, the Purchaser shall perform the measurement of the quantity of the Goods on board of the barge, using the probing process, in the presence of the barge's captain. The quantities must be confirmed by both parties; the quantities registered shall be those resultant from the conversion of the values obtained by probing at medium temperature of the Goods on board of the barge, to those at a temperature of 15°C based on the tables of ASTM.
- 11.4 The Purchaser shall also record the quantity of the Goods through the Purchaser's flow meter during the process of unloading from the Contractor's barge to Purchaser's oil storage tank at the power station.
- 11.5 The quantity that are loaded to the Purchaser's storage tank shall be further verified by the level meters and by using physical sounding of the storage tank.
- 11.6 The Purchaser is responsible for calibration of meters existing at the terminals of the power station, by competent entities, qualified for this purpose.
- 11.7 The flow meters for measuring the volume of the Goods during loading at Contractor's oil terminal and unloading at Contractor's barge shall be supplied and maintained by the Contractor. The meters shall be calibrated regularly and the calibration certificate shall be submitted to the Purchaser after each calibration.
- 11.8 In the event that a party has any objection against the precision of the measuring equipment of the other party, it may request another independent professional measurement and calibration institution agreed by the parties to conduct a supplemental calibration. If the result of such supplemental calibration indicates that the measuring equipment complies with the provisions of this Contract, the expenses for such supplemental calibration shall be borne by the party requesting the supplemental calibration, otherwise, such expenses shall be borne by the party which owns and/or operates the measuring equipment.

- 11.9 The quantity as shown on the Delivery Order shall be used for invoicing and payment purposes only if the Purchaser has confirmed to accept such quantity after checking the measurements from the method as stipulated on clause 11.3, 11.4 and 11.5.
- 11.10 Whenever there exist discrepancies between measurements performed by the Contractor and the Purchaser, both parties shall immediately meet to discuss through consultations the resolution of such dispute. If both parties fail to reach a mutual agreement on the matter in the dispute within 30 days from the date of such meeting, the Purchaser may submit the dispute for resolution through arbitration in accordance with the provisions of Clause 17.

12. FORCE MAJEURE

- 12.1 Neither party shall be liable for any delay or default in performing the Contract if such delay or default is caused by conditions beyond its control due to “Force Majeure” including:
- acts of God
 - war, hostilities (whether war be declared or not), invasion, act of foreign enemies, mobilization, requisition, or embargo
 - rebellion, revolution, insurrection, or military or usurped power, or civil war
 - contamination by radio-activity from any nuclear fuel, or from any nuclear waste from the combustion of nuclear fuel, radio-active toxic explosive, or other hazardous properties of any explosive nuclear assembly or nuclear component of such assembly
 - riot, commotion or disorder, unless solely restricted to employees of the Contractor or of his Subcontractors
 - acts of any national, regional, state, municipal or local government (including any agency, commission or authority thereof) taken within its legal authority
 - any strike, lock out or labour dispute (whether or not Contractor or Purchaser as the case may be are parties thereto or would be able to influence or procure the settlement thereof)
 - any other event not caused by either party and that is beyond the reasonable control or prevention of such party, and that renders

performance under the Contract impossible or extremely burdensome, and whether similar or not to the foregoing examples-

- 12.2 If any circumstance mentioned in Clause 12.1 arises, then the party affected thereby shall give immediate written notice thereof to the other party providing the fullest information as to the likely effect on the ability of the party affected to perform its obligation hereunder.
- 12.3 If as a result of force majeure Contractor is unable to meet its quantity commitment fully or partly as stated in the Contract, the Contractor shall use their reasonable endeavours to procure the goods (in accordance with our technical specification) sufficient to meet the deficiency and to sell to the Purchaser at the same price as agreed on the Contract.
- 12.4 Notwithstanding the provisions of Clause 12.3, the Purchaser shall be free to purchase the quantity of deficiency from any other sources without notice to the Contractor.
- 12.5 In the case of supply disruption of the Goods, the Contractor shall give Purchaser the same priority treatment as Contractor's other customers of a similar nature having regard to the Purchaser's responsibility as a major utility company in Macau.
- 12.6 Upon a force majeure situation being resolved or terminated, the Contractor shall immediately give the Purchaser written notice of the cessation of force majeure and restore supplies of the Goods in accordance with the agreed quantity within a reasonable period of time.
- 12.7 Under no circumstances shall the Purchaser be excused under the force majeure provisions from their obligations to make payment for all amounts due on account of the goods previously supplied hereunder.

13. LIMITATION OF LIABILITY

- 13.1 Neither Purchaser nor the Contractor shall be liable for any claim under or arising out of or for breach of this Contract unless such claim is asserted to the other party within one year from the date of occurrence of the incident giving rise to the claim or from the date of breach.
- 13.2 Neither Purchaser nor the Contractor shall be liable for any indirect and/or consequential losses suffered by the other party, including, but not limited to, loss of profits, loss of business or anticipated business benefits, business interruptions, or loss of contract, by reason of its breach of this Contract. The Contractor's liability for the indemnification of any default, negligence, breach of duty or the quality is out of specification in connection with the supply of the Goods under this Contract, however arising, shall not exceed the value of the Performance Security in any one accident and unlimited in aggregate, without prejudice of the Contractor's liability stated in Clause 20.5.

14. RIGHT TO TERMINATE

- 14.1 If either party should go into liquidation (other than voluntary liquidation for the purpose of corporate reconstruction) or if a receiver or sequestrator of the undertaking of assets (or any part thereof) of either party should be appointed or if either party should become insolvent, should enter into a deed of arrangement or a composition for the benefit of its creditors or should do or suffer any equivalent act or thing under the applicable law, the other party may, by written notice, forthwith terminate this Contract without prejudice to any right of action or claim accrued at the date of termination.
- 14.2 The Contractor shall have the right forthwith on written notice to the Purchaser to terminate this Contract or to invoke the terms of the payment guarantee hereunder and to suspend further supplies of the Goods until all amounts outstanding from Purchaser shall have been paid if the Purchaser fails to make such payment within 30 days of having been notified in writing by the Contractor of such failure.
- 14.3 The Purchaser shall have the right to terminate this Contract on giving not less than (30) days written notice to the Contractor if the Goods supplied by the Contractor do not meet the quality specifications set out in Technical Specification provided that this has been confirmed by a third party independent laboratory acceptable to the Purchaser and the Contractor.
- 14.4 Unless the provisions of Clause 12 hereof apply, the Purchaser shall have the right to terminate this Contract on giving not less than 60 days written notice to the Contractor if the Contractor fails to supply of the agreed quantity of the Goods for a continuous period of 10 days in any Contract Year.
- 14.5 The Purchaser shall have the right to terminate this Contract on giving not less than 30 days notice to the Contractor if the Contractor does not meet their obligations under Clause 12.2, 12.3, 12.4, 12.5 or 12.6, or not able to restore the normal supplies of the Goods within a period of 30 days after the date of the notice of force majeure or the effective date of supply disruption, whichever is the latter.
- 14.6 The Purchaser shall have the right to terminate this Contract on giving not less than 120 days written notice to the Contractor.
- 14.7 Save as otherwise stated herein the termination of the Contract by either party shall not prejudice any right or remedy accruing before, at or in consequence of the termination or any proceeding with respect to such right or remedy including any proceeding by way of arbitration hereunder.

15. ASSIGNMENT

Neither party may assign this Contract in whole or in part, directly or indirectly to any third party (other than an Affiliate of that party, where “Affiliate” means a legal entity that is controlled by, under common control with or controls one of the parties to the Contract, and “control” (or any variation of this expression) means ownership of more

than 50% of the shares entitling the owner to vote for appointment of directors) without the prior written consent of the other party. Subject to the foregoing, this Contract shall be binding upon and shall inure to the benefit of the legal representatives and successors of the parties hereto. Any purported assignment by either party without the said written consent by the other party shall be void and of no effect.

16. NO WAIVER

No waiver by either party of any breach of any of the terms and conditions of this Contract shall be construed as a waiver of any subsequent breach of the same or any other terms and conditions.

17. ARBITRATION

17.1 Any dispute between the parties hereto relating to the meaning or effect of this Contract or any matter arising out of the same, shall be referred to a single arbitrator mutually selected by the parties, according to the relevant rules of the “Lei n.º 19/2019”, and the arbitration proceedings shall be conducted in English and shall take place in Macau, accordingly with Macau substantial Law.

17.2 Should the parties fail to agree upon the arbitrator within 15 days of the date of notifying a dispute by a party to the other, the same shall be appointed by the Judicial Court of Macau SAR (Tribunal Judicial de Base da R.A.E.M.) upon application by either party.

17.3 The award or decision of such arbitration shall be judged according to the equity and shall be final and binding on the parties.

18. PRICES AND PAYMENTS

18.1 The Purchaser shall pay the Contract prices as defined in the price schedule as compensation in full for the supply and delivery of Goods, for all responsibilities, liabilities of the Contractor under this Contract, for all damages, losses, risks which may be connected to it, except as may be expressly provided for in this Contract.

18.2 The Contractor shall pay all taxes, duties, insurance, fuel surcharges, handling charges, CFS charges, etc. outside Macau due or to become due in connection with the supply and delivery of Goods.

18.3 Payments are made against invoices presented by the Contractor. Invoices shall be duly documented and shall be subject to the Purchaser's approval.

18.4 Approved invoices shall be paid by the Purchaser in the contractual currency of United State Dollar within 120 days after the delivery.

Non-approved invoices shall be returned to the Contractor within 10 working days after their receipt.

19. BUSINESS ETHICS

Neither Party nor their agents shall take any action on behalf of the other Party which would violate laws applicable to that party or its Affiliates, or the employees or personnel of either. All financial statements, reports, billings, and other documents rendered shall completely and accurately reflect the facts about all activities and transactions handled for the account of the Parties under this Contract. Each Party shall immediately notify the other party of any and all violations of this Clause upon becoming aware of such violation. Each Party shall be solely responsible for all legal consequence due to its violation of laws applicable to it, provided further that neither Party shall require the other Party or their employees or personnel to violate any laws applicable to either Party as a consequence of this Contract.

20. SAFETY, HEALTH, ENVIRONMENT AND QUALITY

20.1 The Contractor agrees and acknowledges that it will strictly comply with “CEM Safety, Health, Environment and Quality Requirements and Responsibility for Materials Suppliers”, other safety precaution measures, and all local laws and regulations applicable to the transportation, storage, handling, use or disposal of the Goods and shall take all reasonable efforts to ensure that its employees, agents and contractors handle the Goods with the care necessary to avoid any harm or injury to health, safety, or the environment. The Purchaser shall indemnify and hold harmless and keep the Contractor indemnified in full for any liability, damages, costs, claims, demands and expenses to any person by reason of the breach of such safety precaution measures and/or laws and regulations by any of the Purchaser, its employees, agents and contractors.

20.2 The Purchaser warrants and undertakes that at the delivery point suitable storage installation and safe facilities will be provided (including any assistance required and suitable shore facilities) for receiving delivery without risk to property or

persons, and that there will at the time of each delivery be sufficient ullage in that installation and facilities for the safe and proper reception of the quantity of the Contractor's goods ordered, and accept responsibility for any loss leakage or contamination of the Contractor's Goods deliverable under this Contract which may occur in any such installation or facilities or in any pipelines or equipment of the Purchaser. The Contractor shall have the right to inspect the above facilities at least once a year at such time agreed by the Purchaser and the Contractor. The Purchaser shall provide all necessary assistance to the Contractor for such inspection.

- 20.3 The Contractor warrants and undertakes that its installation, barge, equipment used to deliver the Goods will be provided in safe conditions for delivery and accepts responsibility occurring before the delivery point.
- 20.4 The Contractor shall at all times conduct his operation in such a manner as to avoid any risk of bodily harm or damage to the Purchaser's property or third parties. An Insurance covering these risks must be exhibited to the Purchaser before the commencement of the work.
- 20.5 Any oil spillage must be properly removed, cleaned up and make good by the Contractor at its own cost to the satisfaction of the Purchaser and comply with the law and regulation of Macau S.A.R.. In case the Contractor does not take proper action as aforesaid, the Purchaser shall have the right to terminate the Contract and the cost of remedy and making good by third party to be hired by CEM shall be born by the Contractor.

21. PENALTY

If the Contractor fails to deliver the Goods at the specified time, a penalty of 1% of the total value of the order will be applied for each day of delay. However, the total penalty will not exceed 10% of the total value of each order.

In the case of quality of the Goods being off specification, the Contractor shall be responsible for the penalty as stated on the Technical Specification.

22. REJECTION

- 22.1 If the Goods are found to be not in accordance with the Contract documents, the Purchaser shall have the right to reject the whole lot of Goods or part thereof.

22.2 The Contractor's claim for any payment connected with the rejected Goods is void by the act of rejection.

23. APPLICABLE LAWS

23.1 The provisions of this Contract shall form a self contained source of Law for the interpretation of this Contract.

23.2 The proper Law shall be the Laws of Macau Special Administrative Region of the People's Republic of China.

23.3 The Supplier shall comply with all provisions and conditions of the Law in force in Macau SAR, and shall be responsible and liable for any infringement by himself, his employees or by any sub-contractor or Contractor.

23.4 The Supplier shall ensure that all his employees and workers dedicated to perform the works possess legal working permits in accordance with the Law in force in Macau SAR.

24. CONFIDENTIALITY

Each party shall keep confidential and not disclose or otherwise make available to any third party any confidential information, advice or material of any nature that is provided or made available by the other party, including but not limited to, any written reports or other data, without the prior written consent of the other party. This Section shall not apply to any information that:

- is in or comes into the public domain, other than as a result of breach by the recipient of its obligations under this Contract,
- the recipient acquires from a third party who owes no obligations of confidentiality to the other party to this Contract in respect thereof, or
- was already known to the recipient at the time it received such information from the other party to this Contract as shown by the recipient's prior written records.

If either party is requested or required by any legal or investigative process to disclose any information that it is not permitted to disclose, that party shall provide the other

with prompt notice of each such request and the information requested so that the other party may seek to prevent disclosure or obtain a protective order. If disclosure is required and a protective order is not obtained, the party from whom disclosure is required shall disclose only such information that it is advised by its counsel to be legally required to be disclosed.

25. OFFERS, PAYMENTS, AGREEMENT AND PROMISES

The Supplier hereby represents and warrants that neither the Supplier nor any of its officers, directors, employees, representatives and/or any agent acting on behalf of the Supplier has made or will make, directly or indirectly, any offer, payment, agreement or promise to pay money or anything of value, or has authorized or will authorize the offer, gift, agreement or promise to pay money or anything of value, in either case to any person or entity unlawfully to influence or induce any act, omission or decision of CEM including, without limitation, in connection with this Contract, the negotiation, preparation, execution or performance of this Contract or the procurement process leading to the award of this Contract. Any violation to the above will lead to disqualification of proposal.



**TENDER DOCUMENTS
TECHNICAL SPECIFICATION**

PLD-MP1/25/55

General requirements

Fuel shall be a homogeneous blend of hydrocarbons from petroleum refining. (This shall not preclude incorporation of small amounts of additives intended to improve performance.) Fuel shall be free from inorganic acids and from Used Lubricating Oil. The fuel should not include any added substance or chemical waste which: jeopardizes safety or adversely affects machinery performance; which is harmful to personnel; or which contributes overall to additional air pollution.

Compliance with specifications

Suppliers shall ensure that delivered fuel complies with Maximum and Minimum limits in Attachment A.

The supplier must submit the Laboratory Test Report for the fuel oil sample taken from the tank of the final storage facility just before the delivery of fuel oil to CEM Coloane storage tank. This Test report must be submitted before fuel delivery to CEM in order to verify that the fuel oil meets the Fuel Oil Specification as listed in Attachment A. Any delivery of the fuel will not be accepted or allowed to be unloaded to CEM storage facility until the Test report is received by CEM.

Any 'Non-compliance' fuel oil that is to be rejected as stated in the Attachment B, the fuel oil cannot be delivered to CEM.

Penalty for quality deviation

If fuel is found to exceed these limits, compensation shall be payable to CEM in accordance with the Penalty for Quality Deviation (Attachment B). In cases where contradiction was found between the Laboratory Test Report submitted by the supplier and CEM Test Report, or where the extent of deviation exceeds the largest shown in the Penalty for Quality Deviation, then compensation shall be discussed on a case-by-case basis.

Compatibility between batches

Suppliers shall ensure that a batch of fuel to be supplied is compatible with a representative sample of the previous batch. Compatibility shall be assessed either by measuring TSA, or carrying out ASTM-D4740 on a 50:50 blend of samples of the two batches. Fuel shall be deemed compatible if the TSA result is less than 0.10%, or the Spot Rating is 1 or 2.

Attachment

- A. Specifications of Fuel Oil 180 cSt 0.50% Low Sulphur
- B. Penalty for Quality Deviation

ATTACHMENT A

FUEL OIL SPECIFICATION (reference by ISO 8217:2010 RME 180)

0.50% max. Sulphur Content Fuel Oil 180 cSt

SPECIFICATIONS	UNIT	STANDARD	VALUE
Density at 15°C	Kg/l	ASTM D1298	0.991 (Max.)
Viscosity KINM. at 50°C	cSt	ASTM D445	180 (Max.)
Gross Calorific Value	MJ/kg	ASTM D4868	41.84 (Min.)
Sulphur	% wt.	ASTM D4294/IP242	0.50 (Max.)
Water by Distillation	% vol.	ASTM D95	0.5 (Max.)
Flash Point P. M. C. C.	°C	ASTM D93	60 (Min.)
Pour Point	°C	ASTM D97	30 (Max.)
Vanadium	ppm	IP 501 or IP470	150 (Max.)
Sodium	ppm	A. A. S. or ICP	50 (Max.)
Aluminium + Silicon	ppm	IP 501 or IP 377	50 (Max.)
Ash	% wt.	ASTM D482	0.1 (Max.)
Conradson Carbon Residue	% wt.	ASTM D189 or IP 398	15 (Max.)
Total Sediment aged	% wt.	ASTM D4870 or IP 375/IP 390	0.10 (Max.)
Calculated Carbon Aromaticity Index (CCAI)		CCAI = $d-81-141\log\log(VK+0.85)$ where d=density in kg/m ³ VK=viscosity in mm ² /sec at 50°C	Report only
Hydrogen Sulfide	ppm	IP 399	2.00 (Max.)
Acid Number	mgKOH/g	ASTM D664	2.5 (Max)
<u>Used Lubricating Oil (ULO)</u>	The fuel shall be free of ULO. A fuel shall be considered to contain ULO when either one of the following conditions is met:		
Zinc	ppm	IP 501 or IP 470	Ca > 30 and Zn > 15 or Ca > 30 and P > 15
Phosphorus	ppm	IP 501 or IP 470	
Calcium	ppm	IP 501 or IP 470	

ATTACHMENT B

PENALTY FOR DELIVERY QUALITY DEVIATION

(for 0.50% max. Sulphur Fuel Oil 180 cSt)

In the event that any of the following components of quality in any delivery deviate from the Specifications of the Oil, the ex Seller's assigned oil terminal price referred to Attachment A shall be adjusted as follows:

Gross Calorific Value

If the gross calorific value of the Oil 180 supplied as disclosed in the Laboratory Test Report is less than 41.84 MJ/kg, then the price shall be reduced in accordance with the following formula:

Reduction (U.S.D. per metric ton) = $[(41.84 - G) / 41.84] \times \text{Purchase Order Price}$

Where G = The gross calorific value as shown in the Laboratory Test Report.

Water

% volume			Rate of Reduction
0.51	to	0.60	0.5%
0.61	to	0.70	0.8%
0.71	to	0.80	1.0%
Over 0.81			3.0%

Sulphur

% volume			Rate of Reduction
0.51	to	0.60	2.0%
0.61	to	0.70	5.0%
Over 0.70			Product rejected

Viscosity

CSt			Rate of Reduction
181	to	190	3.0%
191	to	200	4.0%
201	to	210	5.0%
211	to	220	6.0%
Over 220			Product Rejected

Ash

% weight	Rate of Reduction
0.11 to 0.12	3%
0.13 to 0.15	4%
Over 0.15	Subject to negotiation case by case

Aluminium + Silicon

Aluminium + Silicon content greater than 50mg/kg will be rejected.

Pour Point

If the Pour Point of the Oil 180 is higher than 30°C, the price shall be reduced by 1.5% for each 3°C above 30°C. Pour Points greater than 42°C shall be subject to negotiation case by case.

Hydrogen Sulfide

Fuel with Hydrogen Sulfide above 2mg/kg in the liquid phase may be rejected subject to be discussed on a case-by-case basis.

CCAI

Supplier has to report the value of CCAI.

Acid Number

Acid number greater than 2.5 shall be subject to a reduction on the price. The compensation for overshoot in Acid Number is to be discussed on a case-by-case basis but never less than 2.5% of price reduction.

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Part 1 - SITE REGULATION

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1. INTRODUCTION AND OBJECTIVES

1.1 Introduction

The present Regulation and subsequent revisions form a set of organization rules to be accomplished by the Contractor or his subcontractors or suppliers that will work at CEM Installations and compromise themselves to accept these rules.

This Regulation applies to all CEM Installations. The Contractor and his subcontractors and suppliers are obliged to take notice of it and to accomplish and enforce his staff and suppliers to comply with it.

1.2 Site Regulation Objectives

This Regulation is intended to fix the general conditions of the Site's organization and to keep its rules functioning, considering, not only to safeguard disciplinary rules, human relationship and the order, but also to ensure the raise of productivity within the scheduled working programs, especially with the fact that the Site is going to be integrated into a full production installation.

1.3 Definitions

The meanings of the words and expressions applied to this Regulation hereafter, are defined as follows, unless the context implies another meaning.

CEM Employees – staff working for GED and other departments working permanently or temporary within GED premises.

GED Premises – Space correspondent to Macau Power Station, Coloane A and B Power Plants.

Site – Area under the CEM's responsibility, limited and/or fenced and signalized, including the areas where the Contractor's works will be executed, where they have their site covered or uncovered as well as the accesses to the working areas or to Contractor's site Installations.

CEM Installations – All the areas where different equipment, production units, common and auxiliaries systems are kept for the production utility of CEM. Access to these areas is not permitted to the contractor's staff without prior approval of CEM.

Site and Working areas – A portion of the Employer's areas that have been given, through written authorization of CEM, to the Contractor to execute civil works, erections and/or tests in accordance with the Contract.

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Contractor Site Installations – Reserved area by the employer, for the Contractor to construct his Site Installations and sheds for storage of materials, to perform the fabrications and to park movable equipment.

Accesses – Corridors defined in advance and duly signalized for entrance. People and materials are guided to the Contractor's Site Installations as well as to the working areas.

Power Plant Operation In Charge – Representative of CEM in particular installation (CCA, CCB and CMC).

Project Manager/Employer Representative – Representative of CEM for project can belong to GED or any other CEM Department/Office.

Consultant – company contracted by employer to provide engineering and consultant services and act in his name for analysis, approval of design, erection supervision, commissioning and testing the equipment and installations supplied by the contractor.

Employer – CEM – Companhia de Electricidade de Macau, SARL, represented in his relationship with the Contractor, by his Project Manager/Employer Representative for the subjects related with the scope of supply and normal operation implications.

Project Team – Staff nominated by Project Manager/Employee Representative for interfacing with the contractor. They have to solve the problems of the contractor that may arise or direct those problems to the appropriate superior during the project and/or construction.

Works supervision – CEM employees acting in the name of CEM, assigned to follow-up the works related with the specific supply at site.

Contractor – The Contractor is nominated when a supply contract is signed between CEM and that company which will have direct involvement at site thereafter. The Contractor is responsible, in the presence of CEM, for all activities of his subcontractors, suppliers and his staff. In this document whenever referred as "Contractor" shall be understood as referring the Contractor as main contractor, subcontractors and/or suppliers or sub suppliers or anyone who is working for or supplying services under the contract scope of supply.

Contractor Manager – Representative of Contractor and his subcontractors and suppliers and who will be the interlocutor near Project Manager/Employer Representative.

1.4 Revision of Site Regulation

This Regulation can be revised or complemented, during the works in accordance with the Employer's decision.

Whenever that happens, the ER will advise by writing to all Contractor Managers.

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2. SITE INSTALLATIONS AND COMMON SERVICES

2.1 Land, Sanitary Installations, Baths

The Employer will consider to provide to the Contractor, the area for him to install his Site offices, stores, workshop and dressing rooms.

The staff of the Contractor and his subcontractors will not be allowed to use the sanitary installations belonging to the existing Power Plant.

2.2 Accesses

Coloane Power Plant already has one access road that can allow access to the Power Plant A and Power Plant B.

The Contractor, unless authorized by the Employer, can construct complementary accesses to his construction area but shall not, in any case, create difficulties to the other Contractors.

It is the Contractor's responsibility to construct specific access for works execution and for circulation of materials and equipment, the Contractor shall inform the Employer in advance of their needs.

According to the scope of supply of the Contractor, once the specific utilization of the access is finished, the Contractor shall restore the Site to its original condition.

Accesses to the Site and to the working areas shall always be kept free from any obstruction and in good conditions.

The existing access to the Pier where the combustibles for the existing Power Plant are discharged and the surrounding area shall always be kept in good conditions, free from any obstruction. Any work that has to be executed and belongs to the scope of supply but can prejudice this condition shall be approved in advance by the ER.

2.3 First Aid Installation

The Contractor shall give assistance and support to his staff and the staff of the subcontractors or suppliers. The Employer if possible and according to his availability in emergency situation will have his Installations available to assist any Contractor's staff.

Before starting the works in the Site, the Contractor shall make evidence to the Employer, through his Installation layout plan where the First Aid Services will be erected. The

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Contractor shall clearly demonstrate to the Employer the furniture, equipment and materials he has acquired for the First Aid Service work and the qualified medical or pharmaceutical assistance for the Service.

2.4 Potable and Service Water

The Employer shall indicate one point at the service water tap to where the Contractor can install water meter for counting his water consumption. The Contractor and the Employer will monthly take the readings about consumption to be paid by the Contractor.

The Employer will not provide potable water other than the one supplied by local public service.

According to the scope of supply, the Contractor shall be responsible for the installation, maintenance and substitution of the water meter when damaged or malfunctioning. If the meter has not presented correct readings or stopped working, the consumption will be paid by the highest of the last twelve months.

The water network that the Contractor installs for fulfillment of the Contract is under his responsibility and included in the scope of supply. The Employer shall approve this water network.

It is forbidden for the Contractor or his subcontractors to use water from the existing fire-fighting system, unless for fire-fighting.

The Contractor is not allowed to use water for washing cars as well as to discharge contaminated water to the floor or to the sea without treatment, or otherwise shall have it removed from the Site.

Any penalty applied to the Employer by official authority as a result of any discharge of contaminated water will be passed to the Contractor whatsoever the approach caused by his staff or the staff of his subcontractors or suppliers.

2.5 Site Electricity Supply

The Employer will provide one electric supply point for site transformer at 400/230V a.c. or 11kV a.c., to the Contractor for erection or works at Site or to his subcontractors. The Contractor shall indicate in advance on his Installation layout plan the power needed.

The Employer will supply Electricity: 400/230V a.c., 50 Hz and the power shall be as stated in Conditions of Contract. The service quality for power supply will depend on the correct usage of the Contractor and in accordance with the actual service provided by CEM to his

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Customers. Power supply will be charged at the price of tariff “A” in force in CEM connection point within the Site, to be indicated by the ER.

According to the scope of supply, it is the responsibility of the Contractor to erect and install the site grid. The Employer will install, at every supply point, electric meters and by the end of each month readings will be taken and will be submitted to the Contractor for payment according to Contract conditions.

If the Contractor needs uninterruptible power supply, he shall provide the equipment and installations necessary for that condition on his own.

2.6 Drainage

The Contractor is responsible for water drainage network inside his Site Installations and to keep this system working properly. The water drainage network shall be approved by the Employer prior to starting the construction.

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3. CONTRACTOR'S SITE INSTALLATIONS

3.1 Measures to be taken before Erection of the Contractor's Site Installations

Before commencement of the work, each Contractor or subcontractor shall inform the ER about his needs in what concern CEM facilities he intends to use, like water, power supply as referred in § 2.4 and § 2.5 and ask information about:

- The area expected to be reserved for his Site Installations;
- The location of connecting points for electricity and water.

The Contractor shall submit his and his subcontractors' Installation layout plan, with drawings of electric power grid, water and drainage systems for the Employer's approval. Fire fighting system shall be clearly indicated as well as the equipment to be installed or used therein.

After approval, the Contractor shall integrate the documents into his site plan and deliver them to the Employer in two complete sets before starting the construction.

3.2 General Conditions

The Contractor's Site Installations will be jointed in areas appointed by the Employer.

The area occupied by each Contractor shall be maintained in clean and tidy conditions during the construction period and made good on completion of the works.

The Contractor's Site Installations shall preferably be metallic container type. The Employer, if requested and considered it justifiable, will accept prefabricated constructions.

The Contractor shall, whenever necessary, consider suitable storage areas to be delimited and signalized for keeping materials, equipment and dangerous residues.

The Contractor shall install all fire fighting system to protect his Installations and avoid affecting the other Contractors if any fire arises in his Installations.

It is strictly forbidden to install any type of living rooms or dormitory for the Contractor's staff.

The Contractor shall reserve enough space in his Site Installations for sanitariums, baths and kitchen where meals can be prepared and taken.

The staff of the Contractor and subcontractors will not be allowed to eat in the erected site areas except in this kitchen.

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3.3 Telephones, Fax and Radio Communications

The Contractor shall, at his own cost, have the telephones and fax installed for his use.

Radio communications can only be used after Local Authorities' permission. Before asking permission to use radio frequencies, the Contractor should verify with the Employer if the intended radio frequencies to be used will not affect the Employer's equipment functioning.

If permission has been granted for the use of radio, the Contractor shall inform the code, the numbers of devices and radio frequencies thereof to the Employer.

3.4 Electric Grid

The installation of network and electric cable protection ducts shall be submitted for approval by the Employer. In view of this, the Contractor shall assure protection of his Installations and safety of people according to the local Law.

When all technical rules are totally complied and upon the approval of the Employer, power will be supplied.

After electricity is supplied, the Contractor will be responsible for maintaining the installation as approved.

It is forbidden to let consumers, electric distribution panels and boards to be overloaded when they became dangerous. Distribution panels/boards overloaded shall have warning signs.

3.5 Compressed Air

The Contractor shall have his own installation provided with compressed air for his use.

Only approved or certified pressurized reservoirs are permitted to be installed and put in service within the Site. The Contractor shall submit the design of compressed air distribution system he intends to install for erection purpose. The air compressor system shall be hydraulically tested according to the standards before operation.

3.6 Installations Inspection and Supervision

3.6.1 Contractor's Responsibilities

The Contractor is responsible for:

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- Maintaining his Installations in orderly and safe conditions;
- Housekeeping his Site Installations and working areas or any place they have ever stayed;
- Storing erection materials and equipment in good order;
- Keeping materials, tools and equipment needed to perform his Contract against robbery;
- His staff's behavior and the prejudices caused by them or by his subcontractor's staff, not only to the Employer but also to any other entities;
- Keeping his electric, water, compressed air, telephone, drainage grids in good and safe conditions;
- Maintaining the usage conditions of the means for fire-fighting, namely portable extinguishers under validity;
- Fulfilling local legislations in what concern Health and Safety Regulation, Environmental Protection, Administrative Regulation No. 17/2004 on Prohibition of Illegal Work and other applicable regulations

3.6.2 Inspection of Installations

The Employer reserves the right to proceed with the inspection of the Contractor's Site Installations at any time and demand the fulfillment of the Contractor's obligations under the Contract signed with him for CEM project, particularly with health, safety and working conditions.

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4. CONTRACTOR'S STAFF AT SITE

4.1 Organization and Staff

Before commencement of the works, each Contractor shall send to the Employer his organization chart, his Manager's applications, the lists of staff and equipment to be used at Site in accordance with the procedures as referred in Health and Safety Regulation.

For the works or services included in the scope of supply, the Contractor shall hire:

- a) Experienced and skilled personnel that are competent for making works with the best possible quality and for achieving the appropriate work planning;
- b) Specialized and non-specialized manpower to perform the works;

The ER will have the right of not approving or requesting the Contractor to remove from the Site any workers that, according to his sound judgment have the acts defaults. They may be incompetent or may have neglected performing the works that can be considered as prejudicial to the normal work developments and these behaviors can create problems to Site management. No matter what the reason is, any person thereupon is considered shall immediately, after notification to the Contractor by the Employer, be removed from the Site and if required, be substituted by another one.

Any worker so dismissed for any reason will not be allowed to be employed by other Contractors or subcontractors on Site.

The decision to remove such worker will be presented in writing to the Contractor by the ER without prejudicing the referred worker to be immediately removed.

4.2 List of Personnel Movement

When there is any change to the personnel in service, the Contractor shall notify the Employer who will proceed with the updating the list of Registration of Contractor in GED premises.

When there is a change to the Contractor Manager or Representative, prior notice in writing shall be given to the Employer for approval.

4.3 Insurance for Workers

The Contractor shall effect and maintain insurance and keep the Employer indemnified in accordance with the conditions stated in Part 2 – Health and Safety Manual.

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5. Control the Movement of People, Vehicles and Materials/Equipment at the CEM Power Stations for Services Suppliers

5.1 Contractor Registration

- 5.1.1 For the contractors working over 3 days in power station, he/she must register a “Contractor ID Card” and complete the training of “Contractor Induction Training”;
- 5.1.2 To apply for Contractor ID Card, please contact the ER and submit the documents of ID copy, Photo and copy of Occupational Safety Card; the ER will schedule a “Contractor Induction Training” for you. Only when you pass the training, Contractor ID Card will be issued to you;
- 5.1.3 For the contractors working less than 3 days in CEM premises, registration of “Contractor ID Card” may not be necessary. He/she will be treated as a visitor and must complete the training of “Visitor Induction Training” at the gatehouse or by the ER;
- 5.1.4 For the contractors who would like to access power station by vehicle, please apply for a “Contractor Parking Permit”. Quota of FOUR(4) vehicles (including cars or motorcycles) is allocated to each contractor. To apply for “Contractor Parking Permit”, please contact the ER and submit the copy of “LIVRETE DO VEÍCULO”;
- 5.1.5 The validity of “Contractors ID Card” shall last for a maximum period of one year or less complying with the contract period;
- 5.1.6 Yearly refresher training of “Contractor Induction Training” or “Visitor Induction Training” is a must;

5.2 Accessing

5.2.1 With Contractor ID Card:

- 5.2.1.1 Show your ID at the Gatehouse. After confirmation, security will give you your Contractor ID Card;
- 5.2.1.2 Always carry your Contractor ID Card and be prominent to the others;
- 5.2.1.3 Contractor is only allowed working at the defined area which is stated at the Contractor ID Card;
- 5.2.1.4 Return your Contractor ID Card to gatehouse when leaving power station;

5.2.2 Without Contractor ID Card:

- 5.2.2.1 For the contractors who do not need to apply for a Contractor ID Card, will be treated as a visitor.

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- 5.2.2.2 Register yourself at the gatehouse by showing your ID and informing security your responsible CEM person, a “Visitor ID Card” and “Visitor Form” will be issued to you.
- 5.2.2.3 Always carry your Visitor ID Card and be prominent to others;
- 5.2.2.4 When you are leaving power station, please return “Visitor ID Card” and “Visitor Form” to the gatehouse with the signature of your CEM contact person on the “Visitor Form”;

5.2.3 General Rule

- 5.2.3.1 The Employer can, at all time for safety or exploitation reasons, limit or restrict staff to enter a specific area without advice.
- 5.2.3.2 The Employer can suspend the access permit to any person who is not complying with the rules of this Regulation.
- 5.2.3.3 It is not allowed, without prior authorization of the Employer, for the Contractor’s staff to be present beyond normal working hours.
- 5.2.3.4 Staff in service beyond normal working hours and on Saturdays, Sundays and Holidays shall be authorized by the Employer. The Contractor Manager shall send a list of the staff staying beyond normal hours and specify the works to be performed, the workplace and the overtime forecasted.

5.3 Vehicle in Power Station

5.3.1 With Contractor Parking Permit

- 5.3.1.1 When accessing power station, authorized Vehicles should stop at the main gate and show the “Contractor Parking Permit”;
- 5.3.1.2 Always place the “Contractor Parking Permit” at a prominent area, like rear mirror or front glasses
- 5.3.1.3 After completed the project works, all the “Contractor Parking Permit” cards shall be returned by the contractor to gatehouse for registration cancellation.;

5.3.2 Without Contractor Parking Permit

- 5.3.2.1 When accessing power station, stop at the main gate and register your vehicle; a “Visitor Parking Permit” will be issued to you;
- 5.3.2.2 Always place the “Visitor Parking Permit” at a prominent area, like rear mirror or front glasses;
- 5.3.2.3 Return the “Visitor Parking Permit” to the gatehouse when leaving power station;

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5.3.3 General Rule

- 5.3.3.1 Parking permits must be clearly shown at the front glass;
- 5.3.3.2 Vehicles must be parked at the designated parking lots, like contractors vehicles should be parked at Contractor Parking Area, all kinds of motorcycles should be parked at the Motorcycle Parking Areas;
- 5.3.3.3 Normally overnight parking is not allowed inside CEM power stations if out of his/her working hours. Any special request for overnight parking, the vehicle owner shall obtain the special approval from GED Senior Manager.
- 5.3.3.4 Drivers must strictly follow the road direction and traffic sign;
- 5.3.3.5 The speed limit for the vehicles inside the Power Plant has been limited to:
 - 30 km/hour for cars;
 - 20 km/hour for trucks and buses;
 - 10 km/hour for vehicles reversing;
- 5.3.3.6 Except authorized, vehicles circulation is prohibited inside the CEM Power Station;
- 5.3.3.7 Parking at the areas which may block the fire doors, is strictly prohibited;
- 5.3.3.8 Except authorized, vehicle washing is prohibited;
- 5.3.3.9 Any vehicle, when entering or leaving the CEM Power Station, may be subject to normal checking by Security Guards at the main gate (e.g. request for opening the boot/trunk);
- 5.3.3.10 CEM reserves the right to control the traffic in power station premises and prohibit any vehicles access to the power station;
- 5.3.3.11 CEM reserves the right to amend the allocation of parking lots without prior notice;
- 5.3.3.12 Permit holders have to take the responsibility for any violation of the parking rules no matter if they are the drivers when it happens. If the vehicles are resold, exchanged or disposed, the permit holders must report to the GED/BMG/CS at once.
- 5.3.3.13 For any parking violation, a warning notification will be issued and a photo captured by Security. For those who repeated infringement violation, CEM reserves the right to suspend the parking rights of the permit holders or even terminate their parking;
- 5.3.3.14 The Contractor shall give support to avoid or free from any obstruction for ambulance or other vehicles to access to the scene of accident or to remove from the Site any

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injured person. If needed in emergency case, CEM may request any vehicle from the Contractor that is available, to quickly remove any injured person to the Hospital

5.3.3.15 GED reserves the right to remove the vehicles under the following situations:

- a) Deserted vehicles;
- b) Vehicles without valid parking permits;
- c) Vehicles without valid car plates;
- d) Vehicles which have been parked against the parking rule;

5.3.3.16 Permit holders are responsible for the removal and detainment fee;

5.3.3.17 Handling of Traffic Accidents

- a) CEM only provides the areas for the parking and does not take any responsibility for any traffic accidents in CEM premises, as well as the lost caused by thefts;
- b) Any person who is involved directly or indirectly in a traffic accident in CEM premises must stop the vehicle and report to the Security Gatehouse at once (Tel: 83935299/ 83935320). The personal information and the vehicle plate may be marked down for record if needed;
- c) If the parties who are involved in a traffic accident cannot come to a compromise, they have to settle the problem according to the civil lawsuit process;
- d) The related permit holders have to bear all cost of loss or damage incurred by accidents occurring in CEM premises;
- e) The damages caused by any vehicle on roads, equipment and cars belonging to the Employer, shall immediately be reported in order to define the way for repairing. The Contractor shall be liable for the costs of repair.

5.3.3.18 For any enquiry, or any suggestions/ objections about the warning notification received, please contact GED/SAE at 8393 5641 or by email: benjamin.wong@cem-macau.com within 10 working days from the date that the warning notification is issued;

5.4 Movement of Materials/Equipment at the CEM Power Station

5.4.1 Into Power Station

5.4.1.1 When delivering materials, tools, equipment, etc., into the power station by trucks, vehicles or private vehicles of any type inclusive should have the relevant delivery notes of the transported cargo and should stop at the main gate;

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5.4.2 Out from Power Station

- 5.4.2.1 Materials, machine, tools or any equipment etc., to be carried out from the CEM power station by trucks, vehicles or private vehicles of any type inclusive, should be accompanied by a "Pass Bill"; and itemized in the "Pass Bill" with signature of authorized personnel of CEM;
- 5.4.2.2 Submit "Pass Bill" to the gatehouse on your way out;
- 5.4.2.3 Security will check/verify if the items to be carried out match to the items listed at "Pass Bill";
- 5.4.2.4 No materials/goods can be taken away from the CEM Power Station, unless the interested parties prove evidence that those goods are their belongings. Carrying of any materials/goods into/out of the CEM Power Station, shall comply with the above-mentioned rules.

5.4.3 Others

- 5.4.3.1 If for any special reason should any material arrive at Site beyond normal working hours, the Contractor shall notify CEM Project Manager by writing together with a copy of the list of materials for entering or exiting.
- 5.4.3.2 The Security Guard will check the entering and exiting materials according to the procedures stated in Health and Safety Regulation.

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6. WORKING TIMETABLE

6.1 Legislation

The timetables and working hours to be followed at Site shall conform to the MSAR Laws.

6.2 Normal Working Hours

The normal working hours shall be fixed by the Employer and will be informed to all Contractors.

The normal working timetable will be applied to all staff independent of his nationality.

6.3 Special Working Timetables

All special timetables at Site shall be requested for approval by writing to the ER. The authorization will only be valid for one month and it can be prolonged by further application for the respective renovation to be carried out.

If it is necessary to have overtime in normal days or during holidays and weekends, permission shall be obtained from the ER till 14:00 of that day.

6.4 Holidays

The Contractor at Site, shall follow all public holidays, weekends and holidays of recognized customs declared by Law.

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7. STORAGE OF MATERIALS

7.1 Equipment and Materials at Working Areas and Stores

Storage of materials and tools will only be authorized inside the Contractor's Installations.

If for any special reason should the discharge or storage of materials be done outside the Contractor's Installations, prior approval from the Employer is required.

The placing of containers tools boxes and welding equipment at working areas shall have the approval of the Employer.

If materials or equipment are found laying outside the authorized areas, the Employer will be obliged to remove them to the appropriate place and this action will be made at the expense and risk of the Contractor.

7.2 Inspection of the Stores

The Employer can, at any time, inspect the Stores of the Contractor.

If the storing situations have been detected to contravene the rules during the investigation, the Employer will order immediate removal from the Site all materials not well stored at the Contractor's cost and risk.

7.3 Site Custom Release

If for any reason should the materials and equipment supplied for the Power Plant be custom released at Site, the Contractor shall fulfill all the procedures to assure the integrity of the boxes.

Any missing materials detected by the competent authority will be at the Contractor's cost and risk and he will not be obliged to apply for any delay of Contract thereof.

7.4 Interdictions

It is forbidden for the Contractor to keep at Site equipment, tools, operational equipment and materials that will not be used for works execution except if authorized in writing by the ER.

The Contractor is not allowed to remove any equipment or materials from the Site without the Employer's written permission.

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8. DISCIPLINE

Each Contractor shall be responsible for his staff's discipline and shall cooperate with the Project Team to maintain it in all areas of the Site. The breaches of rules shall be notified by writing to the ER who will take all necessary measures to solve the problem.

If the proposed measures cannot be accomplished, the Employer will present a written notification to the Contractor. If the Contractor does not solve the problem, the Employer will retain part of next payment to the Contractor until the situation is handled.

8.1 Site Surveillance

Site Surveillance belongs to the Employer's responsibility and will be performed by a specialized company. Any recommendation given by the referred company's staff shall deem as making by the Employer.

The Employer will not be liable for any damages or robbery at Site or any other prejudices to the Contractor or his subcontractors but all adverse situations shall be reported in order to take necessary measures to improve safety.

8.2 Alcohol and Drugs

It is forbidden to install bars or similar to sell or distribute any alcohol beverages at Site.

The Contractor's staff shall follow the internal rules about the subject matter.

The Contractor is not permitted to provide any alcohol beverages or drugs. His subcontractors, representatives of other companies and staff are also not permitted for any importation, sales or other means of supply.

Independently of any decision taken by the Employer on a case by case basis, the Contractor is responsible for his staff's behavior.

Any refusal to follow CEM rules in order to confirm any suspicion of being alcoholic or under drug effect is sufficient for CEM to apply to the Contractor to remove the worker from the Site and for his substitution.

8.3 Guns and Munitions

The Contractor shall restrict the possession and use of any type of guns or munitions. He will neither allow nor accept these to be maintained inside his Installations by anybody in service or under his responsibility.

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8.4 Contractor's Responsibilities

The Contractor shall take all precautions to avoid any illegal behavior of his staff.

8.5 Disputes Resolutions

Any dispute that may arise shall be solved in accordance with the Conditions of Contract clause 20 – Disputes.

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9. VISITS, PHOTOGRAPHY AND VIDEO RECORDING

9.1 Visits Permission

Any visit to the Site shall be authorized by the ER.

9.2 Photography and Video Recording

No photographs or video recording will be allowed without the prior approval of ER. Any equipment for those purposes will not be permitted for entering the Site. If authorization has been given by the ER, the Contractor can only take photos or videos with his own apparatus, only for the equipment and installations belonging to his own scope of supply.

9.3 Interdictions

It is strictly forbidden for the staff of the Contractor or his subcontractors to supply to outsiders any information, films or photographs related with the works in execution or any part of the actual installation. The Employer will restrict the entrance of any people who are found to be taking pictures or making videos without permission.

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10. SITE MEETINGS

10.1 Information

The Employer permits political, syndicated, religious or cultural information to be stucked or distributed only inside the Contractor's Site Installations.

10.2 Meetings

The Employer allows meetings that have been authorized by law to be held only inside the Contractor's Site Installations.

10.3 Interdictions

It is forbidden to sell and distribute any news, journals, brochures, etc. that are not expressly authorized as well as to held any staff meeting outside the Contractor's Installations.

Part 2 – Health and Safety Manual

11. DUTIES TO BE FULFILLED BY THE CONTRACTING FIRM

RESPONSIBILITY DECLARATION (APPENDIX 1)

The Contractor is obliged to send, at least 10 days before commencement of the works, a Responsibility Declaration (Appendix 1) duly signed and stamped.

The following shall be sent together with the Declaration:

- 1 - List of personnel to be working in CEM Installations. Whenever there's any alteration to the listed personnel nominated for service, the Contractor shall notify the Project Manager who acts as CEM's representative in writing;
- 2 - Updated copy of Insurance Policies as referred in Appendix 3 and the receipt of insurance maintained on behalf of the Contractor's workers as referred in 1;
- 3 - Name and other details of the Supervisor/Chief/Foreman for the works/services appointed by the Contractor;
- 4 - Nomination of the Health and Safety Supervisor by the Contractor;

Note: Can be the same Supervisor as referred in 3;

- 5 - List of equipment/tools/machines to be provided/to be used in the works;
- 6 - List of individual safety equipment and signaling equipment to be used in the works;

The Contractor shall anticipate the Individual Personal Protective Equipment (PPE) adequate for the job and to be supplied to all his workers in CEM Installations. In Appendix 2 is a list of the most common use Individual Personal Protective Equipment that shall be provided.

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12. DUTIES OF THE WORKERS OF THE CONTRACTORS

12.1 Foreman of the Works

12.1.1 Responsibility

The Contractor's Representative nominated to be in charge of the works is the first responsible person, in the presence of CEM, to fulfill in force the rules of this Regulation, in what concern the individual behavior of the workers as well as the equipment and materials.

12.1.2 Alteration to the Contract

If, for the sake of emergency or any other urgent reasons, appears the need to alter the terms of the contract (changes in the working timetables of the workers or in the respective works), the Contractor's Representative shall inform CEM's representative in advance to make the necessary alterations.

12.2 Health and Safety Supervisor

Besides the fulfillment of the rules/procedures of this Regulation, the Contractor is obliged to fulfill and enforce his workers to comply with the Rules of Health and Safety in CEM, as well as the Macau legislation – General Regulation of Health and Safety applicable to Construction Industry.

The Health and Safety Supervisor on Site shall obtain from CEM EHS Engineer (Environmental, Health and Safety Engineer), all indications related with the procedures to be followed in order to take proper measures to improve the safety of the workers and other people, installations as well as the equipment of CEM.

He shall identify all workplaces and put warnings and protections including fencing the site properly. He shall take care of the overall safety of the Site where works are executed.

He shall always keep one First Aid Box available at hand. In case of any medical needs, the Contractor's workers are entitled to use the medical services of CEM subject to the condition that the Contractor reimburses CEM for all costs incurred.

12.3 General Duties of the Workers of the Contractors

12.3.1 Individual Safety Equipment

All the workers are obliged to comply with the general rules of Individual Health and Safety, namely, in what concern the use of PPE as referred in Appendix 2.

The negligence of observing these rules will allow CEM to have the right to stop entrusting the works or part thereof to the Contractor, and to ask the Contractor to remove the worker from the Site and/or to be substituted by another one who fulfills the Health and Safety Manual in force in the Site.

13. SAFETY

13.1 Rules for Fire Prevention

All workers belonging to the Contractor or his subcontractors must keep the rules for Fire Prevention, taking into account the following:

13.1.1 Smoking Areas

Smoking is only allowed at the designated “Smoking Area” located at different outdoor areas inside the power plant.

In areas marked with warning label “Non-Smoking”, it is prohibit to smoke or to make fire. In general areas with inflammable or explosive products, engine rooms/generation facilities, workshops, all indoor areas of offices, non-ventilated areas and all areas where people can access or stay without proper ventilation are designated as “Non-Smoking” areas in the plant.

The cigarettes and matches shall be put inside the ashtrays and never on floor.

13.1.2 Welding

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Welding or any other type of works that implies high temperature can only be initiated after conveying to the CEM's representative and the related control room.

In the situations where there exists the risk of fire and a watchman is mandatory to be present, an on-site pre-work risk assessment and the related fire prevention control measures must be implemented before starting the works, the Contractor is obliged to inform CEM's representative the time when the works will start and finish.

The radiographic to the welding will only be allowed after the Employer's approval and the radiographic shall be executed after all people working in that area have been removed and the area insulated.

13.1.3 Fires

It is strictly forbidden to make fire (open-air fire) at any place inside CEM Power Plants.

Only in special cases after the Employer's approval and some safety conditions fulfilled, it will be permitted to burn waste products.

13.1.4 Fire Fighting Materials/Equipment

- All access places for fire fighting equipment (water intakes, hoses cabinets, telephones, etc.) shall always be free from impediment in order to facilitate their utilization rapidly.
- Except for fire fighting, it is forbidden to use water hose nozzles or hydrants. Authorization from the CEM EHS Engineer is required in advance for any other usage apart from the aforementioned.

13.1.5 Location and Function of Fire Fighting Materials/Equipment

All the workers of the Contractor shall know the place where the fire fighting equipment (portable extinguishers, hoses, etc.) are located on site as well as how to operate them.

13.1.6 Procedures

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In case of fire, the Contractor's worker who discovers that shall alert immediately any responsible on Site at the moment in order for fire fighting to be started promptly. The relevant CEM control room shall be alerted also

The Health & Safety Supervisor of the Contractor or subcontractors shall be involved in fire fighting and shall be informed of all available means of fire fighting equipment in advance.

13.1.7 Fire Extinguishers

The utilization of any extinguisher belonging to CEM shall be conveyed to the relevant control room of CEM for the necessary replacement to be proceeded.

For the extinguishers belonging to the Contractor, he shall substitute them as soon as possible in order to return to safety conditions.

13.2 Rules for Excavations or Grooves – Precautions

Before starting any excavation or opening of trenches on the ground or on the walls of the Site, the Foreman of the Contractor is obliged to implement the traffic control and safety measures Handbook issued from DSAT and further check with CEM's representative if the working area has any other particular condition that may avoid free access, fencing the site, namely the existence of any process line, water, air, steam, flammables, etc., or any electric or telephone cable exists in the location.

If the above is not executed, the Contractor shall be responsible for the damage or accident to CEM's property or third parties and shall bear all costs incurred.

13.2.1 Excavations

The Contractor shall plank and brace all excavations to be used by workers for erection purposes in order to avoid any land sliding that may put workers under risk.

Any excavation with more than 1.2m deep shall be planked and secured.

13.2.2 Scaffoldings

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The Contractor shall verify if scaffoldings to be used for services are secured and blocked, the wood planks are fully & securely fixed, toe boards, guard rails, backside protections against fall are correctly installed and the access to the scaffoldings is well constructed in order to allow safe access to the scaffoldings.

For scaffoldings higher than 3 meters, they shall securely be fixed to the buildings, supporter or structures in order to avoid them to bend and fall down.

Metal scaffolding must be earthed and with locking pins/devices installed properly.

Contractor's Representative or Contractor's Health & Safety Supervisor shall inspect before using and give permission to use all scaffoldings and shall make evidence to CEM's Safety Engineer or Project Manager that had inspected the scaffolding and gave permission to use. This inspection record by fulfilling the government form 13 of law 44/91/M shall be available for checking at any time.

13.2.3 Safety Belts

The Contractor shall verify if his workers are using safety belts when working at height.

CEM may stop the works if the workers have been verified to be performing in a wrong way with lack of safety.

The Contractor will be responsible for that and no compensation or indemnity can be asked for delay, and penalties will be in force if any delay in contract dates arises resulting from the conditions referred above.

13.2.4 Illumination

Workings at night shall be authorized in advance by CEM.

The Contractor shall provide sufficient lights for the working areas and accesses in order to guarantee safe working conditions.

CEM will avoid works if he verifies that the illumination level is not suited for doing the jobs in safety conditions.

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The same conditions as referred in clause 13.2.3 will apply and the Contractor will be responsible for the outcome as a result of not fulfilling safety conditions.

13.2.5 Electrical Equipment

All electrical equipment to be used at works shall be earthed connect and protected with fuses or circuit breakers design for that specific device.

All parts under tension shall be protected against accidental contact, rainwater ingress and of any other situation or condition that may let to lowering the safety level of working conditions.

13.3 Cleanliness of Working Area

13.3.1 Removal of Daily Trash

The Contractor shall proceed with the removal of daily trash or debris at the end of the day.

For housekeeping before leaving, the Site Regulation shall be followed.

13.3.2 Disposal of Materials

All materials, namely lube oils, diesel oils, wastes, resins, PVC, metals, etc., shall be kept cleaned or cleared both inside and outside the Site to ensure easy circulation in the corridors.

13.3.3 Inflammable Products

The wastes that are dirty or embedded in lube oils or other inflammable products shall not be abandoned at the workplace or nearby and even worst near heat sources.

When emptying the drums with inflammable liquids, they shall be kept isolated, cleaned and cleared at the designated places.

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13.3.4 Isolation of Dangerous Products/Materials

Products that are inflammable, corrosive under high temperature, toxic, suffocating, irritating and contaminating shall be kept isolated from one another as well as outside the workplaces or any passages. Chemical label shall be posted on the drum/container properly and secondary containment device shall be equipped at storage area.

Explosive products will be permitted to enter into CEM Installations only after the EHS Engineer's approval.

Storage shall be made at the appropriate Store or outside CEM Site, in the place designated by CEM's representative.

13.4 Discharged Liquids

13.4.1 Operation

It is strictly forbidden to operate any valve, pushbutton or maneuvering them to any people/workers who don't belong to CEM.

13.4.2 Emptying of Liquids

It is always necessary to request CEM's representative for emptying any tanks. It is forbidden to empty or to let any type of dangerous or contaminated fluid to be discharged to the soil and to the sea.

Only in the presence of this representative or other delegated staff that the liquids can be proceeded for emptying.

13.4.3 Accidental Discharged

If, by accident, the worker of the Contractor finds any discharge at his workplace, he shall alert immediately the closest CEM's representative/ control room to coordinate and follow the procedure to return to its previous condition.

13.5 Working Close To The Water

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Life jacket not being worn whenever carrying out the works close to the water and/ or on the workboat.

13.6 Natural Gas Safety Requirement

The Gas Facilities at CCB have potential risks of gas leaks and are defined as Natural Gas Controlled Areas (NGCA) and Natural Gas Restricted Access Area (NGRAA).

- Natural Gas Controlled Area (NGCA) is a designated area where there is high risk of natural gas leakage.
- Natural Gas Restricted Access Area (NGRAA) is a designated area where access is restricted for vehicles and personnel that without obtaining the approval from CCB control room.

All Personnel working in the power station not limited to Contractors and Visitors shall attend appropriate levels of Natural Gas safety training as mentioned below to enhance their awareness on the presence of Natural Gas.

- To Work
 - Must complete and pass Natural Gas Safety Training Level 3;
 - Strictly follow the Natural Gas Safety Requirements implemented in CEM;
- To Visit
 - Duly permitted by the Power Station Management;
 - Have to attend Visitors Induction Training;
 - Must be escorted by a competent staff,

13.7 Lockout/Tagout Process

The contractor shall follow up the Lockout Tagout Process that is implemented in CEM.

Lockout/Tagout Process is to provide a standard process to protect workers performing service, maintenance or other associated activities who are exposed to unexpected energy feeding, startup of machines or equipment or the release of stored energies; and to establish minimum requirements for control and implementation of Lockout/Tagout Process to shut down machines and/or equipment or installations, to isolate energy sources and to prevent the release of potentially hazardous energy sources in accordance with appropriate Safety Measures.

13.7.1 Contract Work Lockout/Tagout

Whenever a Contractor that is engaged in activities that are covered by the scope and application of this Lockout/Tagout Process, the project/contract manager in charge of the project/contract shall request the Contractor to appoint a competent Contractor Work Responsible and shall ensure that all Contractor's personnel fully understand and comply with the requirements of this Work

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Instruction. The project/contract manager shall be responsible for issuing the Lockout/Tagout Request/Maintenance Order/ Lockout/Tagout Request.

13.7.1.1 The Project/Contract Manager or CEM Representative shall:

- Grant the issuing of Maintenance Order and Lockout/Tagout Request, whenever works/tests are carried out by Contractor;
- Coordinate the works/tests with the Lockout/Tagout Responsible;
- Inform Lockout/Tagout Responsible about the person of Contractor's Responsible whenever is the case;
- To return the Lockout/Tagout Request of the works completed to the Lockout/Tagout Responsible.

13.7.1.2 The Contractor's Work Responsible shall;

- Inform Lockout/Tagout Responsible in due time when a specific work shall be carried out and Work Permit must be available for exchange;
- Execute the temporary transference of the responsibility over the installation/equipment in order to perform the maintenance/repair by swapping the Lockout/Tagout Request with the pertinent Work Permit issued by the Lockout/Tagout Responsible;
- Before starts the work, confirm that the Safety Measures are completed and the installation or equipment is safe to work on;
- Confirm that all requested Safety Measures are put in place;
- Perform a Pre-Work Risk Assessment and implement further Safety Measures that may outcome from this Pre-Work Risk Assessment;
- Brief Workers/Work Crew on the sequence of work/test and highlight them the eventual hazards and necessary Safety Measures to implement;
- During the work execution he assumes full responsibility for all the workmen on his team and for the area where the work or test occurs;
- On completion of work the Work Responsible must check that tools and equipment and everyone on his team has vacated the working area to prevent unexpected accident during energizing, start-up, or release of stored energy of the equipment;
- Verify that the equipment is left in the same operating condition as normal or previously received, before signing and returning the Work Permit to Lockout/Tagout Responsible or Lockout/Tagout Agent.

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14. HEALTH

14.1 Staff Health Conditions

The Contractor shall verify before sending any staff to work at CEM's Installations, that their health are in good conditions and that they will not infect contaminated diseases to other staff.

The Contractor shall make evidence, whenever requested by CEM or any other official entities that his staff have got their medical certifications updated and that they are allowed to work.

The Contractor shall evacuate, as soon as possible from the CEM's Installations, any staff who show symptoms of getting sick, having fever, convulsions or nerves attack resulting from any diseases.

The Contractor shall verify that any staff working at height is healthy and there does not exist in his medical history, any nerves attack that may affect his equilibrium, stability and put him or other staff in risk.

14.2 First Aid

The Contractor shall install temporarily, in CEM's working place, first aid medical box to assist any staff that may need help and/or assistance.

CEM's representative will check from time to time if the first aid box is in good condition.

If the Contractor does not provide any first aid box for his staff, CEM will buy one and discount from his bill the cost of this equipment or otherwise request the Contractor to supply it. When this is not observed, the official entities will be contacted to handle the subject and the Contractor will be put under penalty.

The number of first aider on site shall be obliged to local requirements of law 44/91/M.

As the importance of the Contract and the numbers of staff working at Site can affect the public image of CEM, works may be suspended until the Contractor supplies the required medical materials.

15. Incident/ Accident Handling

In case of any emergency situation occurred, the contractor shall call CEM's representative and/or the relevant control room immediately.

If hearing the evacuation announcement broadcasting, the contractor workers shall immediately stop the works in a safety way, power off the electrical devices and follow up the instruction of area evacuation coordinator to escape and gather at the defined Safe Assembly Point.

16. PENALTIES

If and when the Contractor is not complying with the Rules and Procedures of this Regulation or any responsibilities by-law, CEM can deem for penalties, this can mean a simple warning to the Contractor's Site Representative or to the extent of forbidding the Contractor to the Site any more, without prejudicing the right of CEM to apply for indemnities according to the Law.

The Contractor will be liable for the costs of works suspension resulting from the negligence of observing the general rules of Safety.

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Site Regulation & Health and Safety Manual**

APPENDIX

RESPONSIBILITY DECLARATION

Contract No.: _____

(a)

.....
is committed to observe and abide strictly by the Rules and Procedures Manual n°
from which have taken knowledge as well as to accomplishing the established rules of “General
Regulation of Health and Safety applicable to Construction Industry” and other laws in force, and for
which accomplishment assumes total RESPONSIBILITY.

Annex:

- 1 – List of personnel to be working in CEM Site;
- 2 – Name and other details of the Supervisor/Chief/Foreman for the works/services within the scope of contract;
- 3 – Nomination of the Health and Safety Supervisor for the works;
- 4 – List of equipment/tools/machines to be provided/to be used;
- 5 – List of individual safety equipment and signaling equipment to be used;
- 6 – Updated copy of Work Accident Insurance policy and the receipt of insurance maintained on behalf of the Contractor’s workers as referred in 1;

....., of of 20.....

Contractor

(signature and Company chop)

(a) – Name of Company/Contractor

|

APPENDIX

INDIVIDUAL PERSONAL PROTECTIVE EQUIPMENT

Head	Helmet	Falling of objects, shock, burnings and electrocutions
	Cap or Hairnet	Scalp (caused by the action of dragging the hair) dusts, humidity
Eyes	Safety Goggles or Visor	Projection of corrosive liquid particles, Radiation
Ears	Earmuffs	Deafness, nervous diseases
Respiratory Systems	Anti-gas Mask	Various poisonings
	Air Apparatus	Suffocation
Hands	Gloves	Cut, shock, burnings, electricity, Allergies, humidity
Feet	Safety Shoes	Burnings, falling of objects
	Rubber Boots	Slipping
General	Safety Belt	Falling from high places
Body	Life Jacket	Drowning

NOTE: According to law of 44/91/M, the contractor has duties to provide adequate means of protection to their workers, including personal protective equipment (PPE)

APPENDIX

INSURANCE POLICIES FOR CCA and CCB PROJECTS

The Contractor shall make evidence that he fulfils the Conditions of Contract, clause 10 – Liabilities (indicated in Contract) and Insurance and namely the following insurance are maintained in force covering and not limited to:

- a) The Contractor's all risk and Third Party liability covering but not limited to:
 - full replacement costs
 - loss of and/or damages to property
 - free from cancellation conditions
- b) Employees' compensations in the measure and extension not covered by a) and to comply with „Decreto-Lei“ 40/95/M dated August 14th (including its amendments).
- c) Third party's liability insurance against liability for death and injury to any person with limit not less than that defined in the Contract for any one accident.
- d) From the accomplishment of the Contract or from any action of his staff, servants and agents whatsoever.
- e) Property damages covering damages to third party (CEM or any other Contractors or subcontractors or else) on materials, equipment, tools, vehicles, buildings and infrastructures.
- f) The Contractor's equipment and other items brought to the Site.

All proposed conditions, liabilities and limits for each insurance as well as the principal coverages assumed by the different insurance shall be clearly defined.

It is agreed and clearly understood that the costs of premiums and the deductibles for insurance required by this Safety Regulation shall be borne by the Contractor.

Health and Safety Manual For CEM Contractors

20 May 2018
Version: 05

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- A.3 Role and Responsibilities

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- B.2 Health and Safety Management Plan
- B.3 Safety Audit

Part C Safe Work Practice

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Part A

Overview of the Safety Management System

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A.3.5	Breach of Safety Obligations

A.1 Introduction

CEM (The Owner) sets standards to Contractors on all matters associated with the project including safety and health on site. Contractors shall comply with and ensure their Subcontractors follow the safety requirements of the Project and the Owners instruction on site safety.

The Owner considers that safety and a safe working environment are crucial for the success of the Project. Securing safety and health at work on a construction site requires full commitment and co-operation of everybody concerned.

This 'Health and Safety Manual' defines the duties and responsibilities on site safety of all Contractors engaged by the Owner. Contractors shall ensure their employees and Sub-contractors comply with this Health and Safety Manual. This Manual recommends the ways and means to carry out work safely and effectively in order to achieve the objective of ensuring the safety and health on site. It outlines items such as safety organization, communication, monitoring, equipment, facilities, accident reporting and safety audit.

Site safety must be a concern shared by the Owner, the Contractors, the Sub-Contractors and their employees. Every person is required to co-operate with other workers to take reasonable care for the safety and health of not only himself, but also of other persons who may be affected by his acts or omissions at work.

To encourage workers to take responsibility for their personal safety, the relevant employer should take disciplinary actions against workers who violate the safety requirements under this Health and Safety Manual or the statutory safety requirements. Such disciplinary actions include stop work order and immediate removal from site of non-compliant workers.

Any worker with poor site safety performance such as repeated breaches of the safety requirements or serious breaches leading to serious site accidents shall be removed from site immediately. Such worker shall under no circumstances be employed again on the Project.

A.1.1 Structure of the Safety Manual

Part A of the Manual provides an outline of the site health and safety management system. Major processes that the Contractors should perform are identified and an overview of CEM's Safety Management System as applied is given.

Part B of this Manual details each element of the management system. A description is given of the roles and responsibilities, required actions and the documentation required for the related processes.

Part C of this Manual describes the preferred methodology or safe working practice to be adopted when carrying out tasks for the contract.

Part D of this Manual provides samples of competency form, contractor's monthly safety report, method statement & risk assessment.

A.1.2 References

A.1.2.1 This Safety Manual should be read in conjunction with:

- a) Macau laws and regulations on Safety and Health at work;
- b) Codes of Practice on construction safety and health issued by Labor Department of the Macau Special Administrative Region;
- c) The road work traffic control and safety measures Handbook (道路工程施工交通管制與安全設施手冊) issued from DSAT;
- d) "Road Traffic sign, marking and Grid line - General guidance" 2016 version 2" 道路交通標誌、標記及標線一般工作指引(2016 年第二版)" from DSAT;
- e) The safety requirements specified in the Contract.

A.1.2.2 The Owner and his representative are empowered under this Health and Safety Manual to inspect and impose compliance, either verbally or written on safety and health on site. The Contractors, the Sub contractor and their workers shall comply with all such reasonably practicable safety and health directions.

A.1.3 Purpose of the Manual

The Health and Safety Manual is prepared to provide guidance for the Owner and Contractors on the safety and health standards and preferred work practices to be used on site.

A.1.4 Scope of the Manual

This Health and Safety Manual provides relevant information and policies to assist the Contractor to ensure that his staff works within a safety-conscious and safety-regulated environment.

The Contractor is fully responsible for the safety and health of the Works, his personnel, subcontractors' personnel, the general public and all persons directly or indirectly associated with the Works or in the vicinity of the Site.

The Contractor shall comply with the requirements of the Safety Manual where the standards set out shall be regarded as the minimum to be achieved. Compliance with the set out in this manual shall not relieve the Contractor of any of his duties or his responsibilities under the Contract.

A.1.5 Responsibility for the Manual

This Safety Manual reflects the minimum safety requirements of the Project.

All Contractors are reminded of their obligations to observe the latest statutory regulations, best industry standards and guidance on construction safety and health. They should not solely rely on the information provided in the Manual.

A.1.6 Definitions

In this Health and Safety Manual, unless the context otherwise requires:-

“Contract” means the contract entered into between the Owner and the Contractors for the Project.

“Contractors” means Main Contractors and Sub- Contractors entered into contract with the Owner for the Project.

“The Owner” means Companhia de Electricidade de Macau - CEM, S.A

“Works” means the work or services to be constructed, completed, maintained and/or supplied in accordance with the Contract.

Words importing the singular only also include the plural and vice versa where the context requires.

A.2 Highlights of the Safety Management Program

A.2.1 Safety and Health Policy

It is the policy of the Owner to make safety and health a top priority over all others in any circumstances. The Owner is committed to implementing and maintaining a high standard safety and health system to maintain a safe working environment by eliminating or controlling all hazards posing an unacceptable or undesirable risk.

Safety goals and targets have been set for Contractors as follows:

- A.2.1.1 To ensure that the Project is constructed and commissioned in accordance with good safety practice.
- A.2.1.2 To encourage an awareness of safety and health on site, and to create a positive safety culture amongst the Contractors.
- A.2.1.3 To reduce risks on site, everybody should aim at:
 - a) Zero accidents;
 - b) Zero dangerous occurrences;
 - c) Incident free environment.

A.2.2 Planning

Planning is the process of determining in advance what should be accomplished. The Contractor is required to define, document and endorse the safety and health objectives identified. At this stage, the Contractor shall prepare Contractor's Safety Plan, Method Statements, Risk Assessments and Emergency Plans for the Owner's endorsement.

A.2.3 Implementation

With a view to achieving the objectives set out above, the Owner shall:

- A.2.3.1 Secure commitments to safe working practices by all Contractors involved in the project.
- A.2.3.2 Develop contract provisions that require Contractors to prepare, implement and monitor safety plans, and ensure that all Sub-contractors are also obliged to comply with the same.
- A.2.3.3 Ensure that various outputs from the planning stage are properly implemented and maintained, regular safety meetings between relevant parties from the Owner and Contractors should be held. The main objective of these meetings is to monitor site safety performance.
- A.2.3.4 Promote and maintain safety awareness on site.
- A.2.3.5 Oversee the safety performance of the Contractors to ensure their compliance with safety and health requirements under the Contract, this Manual and the safety legislation.

A.2.4 Measuring and Reviewing

Maintaining the safety system in an efficient and effective state is vital for the site safety performance. The Owner is entitled to measure and review whether the safety system is working well or needs improvement.

This process covers checking activities such as:

- a) Monitoring and checking the safety performance of Contractors and subcontractors via monthly reporting;
- b) Conducting regular site safety inspections to verify site safety conditions; achieving the objectives of the safety policy;
- c) Checking whether the safety and health arrangements in place are effective in obtaining the objectives of the safety policy;
- d) Accident reporting in the form of accident and incident investigation, determining the immediate causes of sub-standard performance or accident and identifying the underlying causes by the Contractor;
- e) Supervising rectification of non-compliance or sub-standard performance.

A.2.5 Elements of A Safety Plan

It is possible to eliminate or minimize work hazards by proper planning and design of the methods of construction, sequences of activities, coordination, etc. A safety plan must be submitted by all Contractors, within seven (7) days after the confirmation of the Contract or one month before the commencement of work but depending on which circumstance occur first, to the Owner for review and endorsement. Likewise, selected Sub-contractors shall submit to the Contractors a safety plan. The safety plan should state the ways and means to carry out work safely and effectively in order to achieve the objective of ensuring the safety and health on site.

The plan shall include the following elements:

- A.2.5.1 A safety policy which states the commitment of the Contractors to safety and health at work.
- A.2.5.2 A Structure to assure the implementation of the commitment to safety performance.

- A.2.5.3 A program on training to equip site personnel with the knowledge to work safely and without risk to health.
- A.2.5.4 In-house safety rules to provide instruction for achieving safety management objectives.
- A.2.5.5 A program of inspections to identify hazardous conditions and for the rectification of any such conditions at regular intervals or as appropriate.
- A.2.5.6 A program to identify hazardous exposure or the risk of such exposure to the workers and to provide suitable personal protective equipment as a last resort where engineering control methods are not feasible. Contractors are also responsible for developing a strategy for accident control and elimination of the hazards before exposing the workers to the potentially adverse working environment.
- A.2.5.7 Risk assessment to identify potential safety hazards and health hazards for the Contract. The Contractor should include details of the risk assessment methodology in the safety plan for review.
- A.2.5.8 Investigation method for accidents or incidents to find out the cause of any accident or incident and to develop prompt arrangement to prevent recurrence.
- A.2.5.9 Emergency preparedness to develop, communicate and execute plans prescribing the effective management of emergency situations.
- A.2.5.10 Safety Committee.
- A.2.5.11 Evaluation of job related hazards or potential hazards and development of safety procedures.
- A.2.5.12 Promotion, development and maintenance of safety and health awareness in a workplace.
- A.2.5.13 A program for accident control and elimination of hazards before exposing workers to any adverse work environment.
- A.2.5.14 A program to protect workers from occupational health hazards.
- A.2.5.15 Measures for governing the Subcontractors' compliance with the Contractor's

safety plan.

- A.2.5.16 The Contractor's disciplinary procedures with respect to safety and health related matters.
- A.2.5.17 A checking program to secure conformity of safety performance and compliance of the Contractor's Safety Plan.

A.2.6 Selection of Labor

- A.2.6.1 The Contractors in control of their premises shall take all reasonable and necessary measures in the selection of competent workers directly or indirectly employed for the Works.
- A.2.6.2 The Owner requires the Contractors to complete a copy of "Certificate of Competency" attached in the Appendix for each newly employed worker where it indicates his/her competency of undertaking the task and the Safety Induction Training has been given by the Contractor before commencement of his/her task. Compliance of this practice shall not relieve the Contractors from any statutory duties or responsibilities under the Contract.
- A.2.6.3 The Contractors shall forward the completed "Certificate of Competency" bearing the Contractors' company chop to the Owner for the worker's entry registration. The Owner will not proceed with the entry registration for workers without the "Certificate of Competency".

A.2.7 Site Safety Inspection

The Owner or his representative shall conduct formal weekly site inspections or as appropriate. For large projects and contracts considered to have a high hazard potential, or to be high profile, the Owner may formally inspect more often (e.g. twice per week or even daily).

The following types of contract are considered to be high risk or high profile:

- Any contract where there has been an injury or dangerous occurrence or fatality;
- Any contract involving frequent work at height;
- Any contract involving frequent hot work;
- Any contract involving work in close proximity to the public.

The Owner will notify the Contractors of the schedule of the regular workplace inspections and this will enable the Contractors to arrange for appropriate

representatives to attend the planned site safety inspections and to take all necessary follow-up action immediately. Additional to the regular workplace inspections, the Owner or his representative may carry out ad hoc safety inspections.

A.2.8 Monthly Site Safety Meetings

All Contractors shall attend the monthly site safety meetings or otherwise arranged. The objectives of the meetings are to:

- Monitor the adequacy of the Contractors' Safety Plans.
- Review the Contractors' training programs relating to the construction activities.
- Discuss the forthcoming construction activities and safety precautions.
- Review accident statistics and trends so as to identify unsafe practices and conditions, and to ensure the implementation of appropriate corrective actions.
- Promote safety and health activities on site.
- Oversee the conduct of safety audits and inspections, and subsequent correction actions.
- Present and discuss topical safety and health issues.

The Contractors should prepare the above safety information and submit the Contractors' Monthly Safety Reports (sample as shown in Appendix) to the Owner prior to the meeting.

A.2.9 Contractor's Monthly Reporting

Contractors are required to produce and submit the following information to the Owner not later than 5 days after the end of the month covered. The information required includes:

- Summary of major tasks to be carried out in the current month and coming two months.
- Summary of accident, accident trend and statistics, investigation report and preventive measures taken.
- Safety and Health related offence / notice (if any)
- Summary of safety training and safety program for next month
- Summary of safety officers/ Safety supervisors/ first aiders/ safety representatives etc.
- Safety audit (if any)
- Risk assessment / method statement

Safety Promotion

- Summary of construction plant and lifting gear
- Summary of deficiencies in Weekly Safety Inspections

- Review Safety Plan and Emergency Procedures
- Site safety complaints (if any)

A.2.10 Risk Assessment

Potentially hazardous or unfavorable site conditions which will likely affect the safety of the workplace should be considered in the planning and design of the Project. After the identification of the hazardous exposure or the risk of such exposure to the workers, the Contractors should find out whether planned or existing safety precautions are sufficient to keep the risk under control and meet legal requirements. If the findings are negative, the Contractors should adopt engineering methods and safe systems of work to control the risk. Personal protective equipment should be regarded as the last resort.

Prior to the commencement of any work that is considered by the Owner to be high risk and/or high profile, Contractors shall produce risk assessments and the relevant method statement.

As a guideline, the following works are considered to be high risk or high profile and therefore risk assessment is required:

- Working at height
- Entry into confined space
- Use of hazardous substances
- Use of flammable substances
- Lifting operation
- Excavation
- Hot work
- Electrical installation and alterations
- Mechanical machinery erection, alterations and dismantling
- Erection, loading, unloading and dismantling of temporary works
- Exposure to excessive noise levels
- Demolition

Additional to the above-said list, the Owner may require risk assessment and method statement for other activities that are considered to be high risk or high profile.

A.2.11 Safety Auditing

An audit is a systematic examination to determine whether activities and related results conform to planned arrangements, and whether these arrangements are implemented effectively and are suitable for achieving the Owner's safety standards.

- A.2.11.1 Contractors shall conduct internal safety audits at an interval of not less than once during the contractual period. The scope of the audit covers the adequacy and effectiveness of the safety plan against statutory regulations and safety requirements under the Contract from the Owner.

A copy of the audit report will be forwarded to the Owner. The result of the audit will be discussed in the site safety meeting for reviewing the adequacy and effectiveness of the Contractor's safety management system.

- A.2.11.2 The Owner will as appropriate perform safety audits on the effectiveness, efficiency and reliability of the Contractor's safety management system and the result of the audit will be discussed in the site safety meeting for continual improvement. The Owner may also conduct a joint safety audits with the contractor

A.2.12 Documents, Records and Control

All safety records related to the contract activities should be properly maintained and kept on site for inspection.

Safety records should cover the following information, but not limited to:

- Safety plan
- Competent persons
- All examination reports and test certificates for plant and equipment
- Records of safety training
- Records of safety inspection and audits
- Monthly safety meeting minutes
- Method statement and risk assessment
- Emergency plan and drills
- Accident / incident investigation report and statistics
- Permits-to-work
- PPE records
- Safe working procedures
- Safety improvement notices
- Health assessment checklist and preventive measures
- Fire prevention checklist and precaution actions
- Photographs

- Others

A.3 Roles and Responsibilities

A.3.1 Safety Obligations of Contractors and Employees

A.3.1.1 General Duties of Contractors to their Direct or Indirect Employees

Contractors have a duty to ensure the safety, health and welfare at work of their employees, particularly by:

- Providing and maintaining machinery, equipment etc. and systems of work that are safe and without risks to health;
- Arranging safe and healthy systems of use, handling, storage and transport of machinery, equipment or appliances and solid, liquid or gaseous natural or artificial substances;
- Providing necessary and adequate information, instruction, training and supervision on safety and health at work to strengthen the employees' safety knowledge;
- Maintaining any workplace under their control in a safe and healthy condition and; providing and maintaining safe means of access to and from the workplace;
- Providing and maintaining a safe and healthy working environment and have adequate facilities and arrangement for the welfare of employees whilst at work.

A.3.1.2 General Duties of Employees at Work

Employees' duties are:

- To make best endeavours to secure the safety and health of himself and others who may be affected by his actions or omissions at work;
- To co-operate with the employer or anyone else where it is necessary to comply with their statutory and contractual duties.
- To report any area that is not safe or not healthy to his immediate supervisor or Safety Officer.

A.3.2 Contractors Responsibilities

- The Contractors are responsible for complying with all statutory regulations, contractual requirements and general duties on construction safety and health.

- (b) The Contractors are responsible for providing comprehensive safety plans for the review of the Owner and for subsequent implementation of measures detailed in the safety plans.
- (c) The Contractors are responsible for ensuring his employees and Subcontractors to comply with the safety plan.
- (d) The Contractors shall provide competent and sufficient number of first aiders and full-time safety officers/ safety supervisors to carry out their safety and health duties on site throughout the Contract.
- (e) The Contractors should examine the safety plan and the risk assessments of construction activities to evaluate and control risk so as to avoid harm.
- (f) The Contractors are responsible for tackling the causes of risks at source, or if this is not possible, reducing and controlling the effects of risks by means aimed at protecting anyone at work who might be affected by the risks.
- (g) The Contractors must comply with the directions of the Owner or his representatives in relation to safety and health matters on site.
- (h) The Contractors are responsible for the provision of adequate safety personnel to carry out regular safety inspections, safety promotion, and safety checks, and to keep records of all such activities for inspection.
- (i) The Contractors are responsible for providing safety induction training to their new comers and appropriate safety training to all workers and supervisors on site and for keeping records of all such activities for inspection.
- (j) The Contractors are responsible for appointing competent workers and persons of all trades to carry out his Works.
 - i. Contractors are required to ensure their workers or persons directly or indirectly employed for his Works are competent to carry out their duties and to ensure the safety operation on the Site. Such as:
 - Competent worker and person to carry out operation and/or inspection of lifting appliances, gears and hoists;
 - Competent worker and person to carry out erection, alteration, dismantling and inspection of plant and machinery;
 - Competent worker and person to carry out erection, alteration, dismantling and inspection of scaffolds;
 - Competent worker and person to carry out operation and inspection of excavations;

- Competent worker and person to carry out hot work;
 - Competent person to regularly inspect and maintain electrical appliance.
 - Competent person to take up the duty of first aider and regularly inspect the content of first aid box;
 - Competent person to inspect air compressor;
 - Competent person to carry out risk assessment for confined space operations and competent worker to carry out such operations;
 - Competent worker and person to carry out installation, alteration, dismantling and inspection of electrical power supply;
 - Competent person to carry out banksman duties by giving signals to lifting operator, vehicle driver, excavation operator etc.;
 - Others subject to the Owners request.
- ii. The Contractors shall appoint a proven competent person to provide specific safety training to workers who fail to submit recognized certificates for such specific tasks.
- iii. The Contractors shall appoint competent worker or person with substantial training on safety at work and practical experience.
- iv. The Contractors shall complete for each newly employed person or competent worker / person a 'Certificate of Competency' form shown in Appendix. The Contractor should send a copy of the 'Certificate of Competency' form to the Owner for processing the worker's site entry registration.
- (k) The Contractors are responsible for organizing site safety committees.
- (l) The Contractors are responsible for reporting dangerous occurrences and accidents.
- (m) In case the Contractor's Safety Plan is not available for submission to the Owner within the specified period or has not fulfilled the Owner's requirements, the Contractor shall enforce all the safety and health rules and requirements stipulated on the Health and Safety Management Plan of the Owner.
- (n) For construction worksite registration, within 1 week after started the works, according to legislation 44/91/M, the Contractor shall register their works as contraction worksite by filling the Form 1 and submit to Macau Labor Department. A copy of the record shall be submitted to the Owner.

A.3.3 Supplier's Personnel Responsibility

If the supplier's personnel have to enter into or stay on the Site (or both) to perform the supplier's obligations, the supplier shall ensure that all of his personnel:

- (a) Conform and comply with all the safety regulations and requirements imposed on the Site;
- (b) Leave that the Site in safe, clean and tidy state;
- (c) Complete the safety induction training held by the respective Contractors before commencing work at the Site.
- (d) Equip with any tools and equipment in good and safe working conditions in compliance with the relevant statutory regulations, or manufacturer's standards and any Owner standards relating to safety and health.
- (e) Ensure that any dangerous substances and/or hazardous materials brought onto the site are stored safely in compliance with the relevant statutory regulations, or manufacturer's standards and any Owner standards relating to safety and health.

A.3.4 The Owner's standards, awareness responsibilities and inspective powers

It is a concern of the Owner to ensure the safety and health at work of the site personnel and others affected by the construction operations. For such purpose the Owner may:

- A.3.4.1 Instruct Contractors to comply with their contractual obligations.
- A.3.4.2 Develop and maintain reasonable arrangements for monitoring Contractors' compliance with safety and health requirements.
- A.3.4.3 Promote interest in and enthusiasm for safety and health matters throughout the Project.
- A.3.4.4 Co-ordinate with the contractors to minimize conflicts and problems. Where an interaction problem exists, the Owner should take a positive role in ensuring that the general principles of prevention and protection are applied.
- A.3.4.5 Communicate and share information with Contractors to secure their understanding and compliance with the safety and health requirements.

A.3.4.6 Report on a regular basis the safety performance of the Project and Contractors.

A.3.5 Breach of Safety Obligations

A.3.5.1 Contractors

The Contractors in control of the premises have the primary responsibility to provide and maintain a safe working condition and environment to the workers whilst at work. The Contractors who fail to comply with the general duties or safety requirements willfully and without reasonable excuse commit safety non-compliance and are liable to administrative charges in accordance with the list of applicable safety non-compliance. The Contractors will be instructed to immediately suspend the unsafe practice by the Owner.

A.3.5.2 Persons Employed

A person directly or indirectly associated with the Project who seriously or repeatedly fails to comply with the general duties or safety requirements commits safety non-compliance and will be subject to disciplinary actions such as to be removed from site without re-employment opportunity on the Project.

Part B

Project Safety Plan

Chapter	Title
B.1	Project Details
B.2	Health and Safety Management Plan
B.2.1	Safety Organization
B.2.2	Contractor's Site Health & Safety (HS) Personnel
B.2.3	Safety Training
B.2.4	Records and Evaluation
B.2.5	In-house Arrangements and Rules
B.2.6	Safety Inspections
B.2.7	Personal Protective Equipment (PPE)
B.2.8	Accident / Incident Investigation
B.2.9	Emergency Preparedness
B.2.10	Evaluation and Control of Contractors
B.2.11	Safety Committees
B.2.12	Job Hazard Analysis
B.2.13	Safety Promotion
B.2.14	Health Assurance Program
B.2.15	Process Control Program
B.3	Safety Audit
B.3.1	Purpose
B.3.2	Intervals

B.1 Project Details

Project Title:

Description and Scope of Works:

B.2 Health and Safety Management Plan

B.2.1 Safety Organization

Managing safety and health is an integral function of management. It is therefore important that this is reflected in the individual duties and responsibilities of every level of management within the organization. Likewise, it is important to ensure that the avoidance of accidents and the provision and maintenance of safe and healthy workplaces is a common objective throughout the organization, from directors to operatives. To this end, it should be made clear that the safety and health duties and responsibilities delegated to individuals are no less than important than the duties they may have in performing any other function.

B.2.2 Contractor's Site Health & Safety (HS) Personnel

- 1) The Contractor shall appoint a minimum of one full time Safety Officer/ Safety Supervisor for 100 persons or above to carry out the work at site for a specific contract or project. The Contractor shall appoint part-time Safety Supervisors to visit the sites on daily basis when any site activities are having more than 20 workers on site.
- 2) The Contractor shall appoint a full time site supervisor on each site successfully completion of the relevant site supervisor course or safety supervisor course conducted by Macau Labor Department.
- 3) The Contractor shall appoint a job leader for each excavation pit for small worksites, such as cable trenching works, the number of workers may be limited to 3-4 workers at each excavation pit, but the work consists of several pits for circuit cut-in. The job leaders are under the supervision of the site supervisor within a short travelling distance. The training of Job leaders is totally rest with respective contractors, and the Owner may cross-check on the course materials and the quality by random.
- 4) Safety Officer/ Safety Supervisor shall hold a valid Occupational Health and Safety Certificate, like obtained Professional degree or diploma in Occupational Safety & Health or the Construction Safety Supervisor Certificate or equivalent.
- 5) Prior to his/ her appointment, the Contractor shall submit the HS personnel's resume with details his/ her experiences for the Owner's approval.
- 6) The Owner shall require the replacement of the appointed HS personnel if the performance of the HS personnel is not up to the Owner's expectation.

- 7) All HS personnel shall be identified clearly on site with a unique colour safety helmet.

Roles and Responsibilities

Contractor's Project Manager

- 1) Is responsible for the management of safety and health matters relating to the works contracts managed by the Owner.
- 2) Delegates specific responsibilities to the project management staff for the day-to-day management of safety and health affairs.
- 3) Establishes and maintains a communication channel between himself/ herself and the Safety officer.
- 4) Is responsible for the provision of support and resources required to maintain safe and healthy conditions for site activities.
- 5) Co-ordinates activities between contractors sub contractors and any other individual contractors who may be working on the site.
- 6) Ensures that non-compliance with the Safety and Health Policy and procedures is a disciplinary matter.
- 7) Reprimands staff members failing to do their safety duties to his satisfaction.
- 8) Is responsible for the effective implementation of the Safety Management System and the achievement of its objectives.
- 9) Ensures that Contractors allocate adequate resources to comply with their Safety Plans, the Owner's contractual provisions and statutory regulations regarding safety and health.
- 10) Checks over working methods and precautions with site management before work starts.
- 11) Ensures that work, once starts, is carried out as planned and that relevant safety requirements are observed on site.
- 12) Advises senior management levels on matters regarding safety and health that require their attention or resolution.
- 13) Participates in Site Safety Meetings.
- 14) Supervises and monitors the performance of safety personnel.
- 15) Is accountable for implementation and monitoring the Safety Management System.

Contractor's Safety Officer / Safety Supervisor

- 1) Assists in the implementation of the Safety Management System.
- 2) Identification of hazards and evaluation of risk at work on site.

- 3) Checks over working methods and precautions with site management and Contractors before work starts.
- 4) Advises on the development of the Safety Plan, the laying down of safety rules and appropriate measures for ensuring co-operation between Contractors.
- 5) Conducts site inspections to check safety performance and follow up corrective actions.
- 6) Investigates occupational accidents and incidents, and assess remedial measures to prevent recurrence.
- 7) Reports to the Project Manager on the implementation and progress of the Safety Plan.
- 9) Supervises his sub-ordinates to carry out day-to-day activities in safety and health respect.
- 10) Attends safety meetings as scheduled.
- 11) Ensures that work, once starts, is carried out as planned and that relevant safety requirements are observed on site.
- 12) Assists to resolve and follow-up with Contractor's on safety and health matters by observing local legislation (44/91/M Construction Health and Safety Regulation).
- 13) Monitors the Contractor's safety performance and report the safety position to his seniors.

B.2.3 Safety Training

Training needs are likely to be greatest on recruitment. All newly employed personnel to the Site shall receive basic induction training by respective Contractors on safety and health, including safety at work, arrangement of first aid, fire and evacuation. The induction training record forms an essential part of processing the site entry registration for newly employed personnel. Training may be required even though a worker already holds sufficient experience. The Owner strongly believes that changes in a workers work environment may cause his/ her to be exposed to new or increased risks, requiring further training. The need for further training should be considered when there is a change in the work environment or systems of work in use. A significant change is likely to need a review and re-assessment of risks, which may indicate additional training needs.

Safety-training program must cover the following aspects:

a) **Safety Induction Course**

Contractors are required to conduct Safety Induction Course for every employee before

they begin work on the project. The content of the course should include, but not limited to, the following subjects:

- Health and Safety Policy
- General Duties of Employees
- In-house Rules
- Procedures for Reporting Injuries
- Fire Emergency Procedures
- Use of Fire Extinguishers
- Working at Height including the exercise of the use of safety harness and fall arrester.
- Other hazardous works with their corresponding safety measures.
- Use of Personal Protective Equipment
- Permit to Work System(s)
- Foreseeable Hazards of the Site
- General Environmental Protection Rules on Construction Sites
- Site Layout and Welfare facilities.

b) Tool-Box Talks (TBT)

This type of training is to provide small group discussions about on-site safety issues between the Contractors' site supervisors and their workers in a 15-30 minutes training sessions during tea breaks. It is recommended to conduct a subject twice a week.

c) Specific Job Safety Training Courses

Contractors are required to prepare a safety training program in line with the project progress. The training should specify the hazards associated with the specific work and the precautionary measures recommended. The content of the training should be based on the relevant method statements and risk assessments.

These training are provided for the workers engaged in hazardous tasks, include but not limited to the following:

- Erection, alteration and dismantling of formwork;
- Working at height;
- Excavation works;
- Entry into confined spaces;
- Handling with dangerous substances;
- Manual lifting operation;
- Gas flame cutting and arc welding;

- Mechanical plant and machinery lifting operation.

d) Occupational Safety Card Training Courses

This safety training course is being organized by the Macau Labor Department, which intends to enforce attendance at these courses by anyone who will be assigned to work on a construction site. The Macau SAR Government has made this safety training a statutory requirement.

The training will provide attendees with fundamental knowledge of local safety legislation and safe practices at workplaces.

This safety awareness-enhancing scheme is considered to be within the Owner Health and Safety Standards.

B.2.4 Records and Evaluation

Contractors should establish an evaluation procedure to assess the effectiveness of the training program so as to make the training more meaningful and effective.

Contractors are required to have specific forms to record the attendance at safety training sessions. Contractors are responsible for maintaining and keeping the training records of all employees on site. A format for records is to be agreed with the Owner.

All the training records should be ready for checking when required by the Owner, who should be invited to participate in these training courses to evaluate the effectiveness.

B.2.5 In- House Arrangements and Rules

B.2.5.1 Contractors' Safety Plans

Contractors are required to compile their own safety plans for their tasks and areas of work. The safety plans should be submitted to the Owner for comments and endorsement.

B.2.5.2 Contractors' Method Statements

Contractors are required to prepare method statements for all work involving a high risk of accidents. The method statements should detail clearly every step in the work procedures (please refer to the sample as per attached in the Appendix). This will enable the Owner to monitor the sequences of work.

B.2.5.3 Contractors' Risk Assessments

- B.2.5.3.1 Risk Assessment is the evaluation of the chance that a hazard will cause harm, its potential severity, the identification of relevant factors and the establishment of measures to control or eliminate the risk.
- B.2.5.3.2 Before carrying out any high-risk work, Contractors and the parties concerned are required to prepare a method statement, stating the sequences of the work process.
- B.2.5.3.3 The risk assessment should be carried out by experienced and competent persons (i.e. engineers, site supervisors and safety personnel etc.) so as to make the assessment as comprehensive and accurate as possible.
- B.2.5.3.4 The assessment team should determine the rating of the risks by assessing the frequency and consequences of the risks.
- B.2.5.3.5 The risk assessment should also identify the necessary precautions to be taken, and formulate clear instructions on the risk assessment sheet for the personnel supervising and undertaking the work.
- B.2.5.3.6 The risk assessment should be approved and endorsed by Contractors' senior project management personnel and then distributed to the parties concerned.
- B.2.5.3.7 All the risk assessments should be continuously reviewed and up-dated where the process or working procedures have been changed.
- B.2.5.3.8 The risk assessments should be used by the Contractors' Safety Officers/ Safety Supervisors, as training materials on courses to be conducted for workers who will be engaged in the work.
- B.2.5.3.9 Copies of risk assessments should be submitted to the Owner for reference prior to the commencement of the work (please refer to the sample as per attached in the Appendix).
- B.2.5.3.10 Contractors' In-house Rules
- B.2.5.3.11 In order to effectively control those malpractices, which may lead to injuries in the workplace, it is necessary for Contractors to stipulate

specific in-house safety rules to ensure compliance with the required safety standards.

- B.2.5.3.12 The stipulation of in-house safety rules is additional to the legal requirements. These rules are more specific and are designed to pinpoint the safety issues arising from actual activities.
- B.2.5.3.13 Contractors are required to stipulate, but not be limited to, the following specialized work rules:
- General Safety Rules on Site
 - Safety Rules for Operation of Bench Circular Saws
 - Safety Rules for Use of Gas Cylinders
 - Safety Rules for Electrical Welding
 - Safety Rules for Use of Abrasive Wheels
 - Safety Rules for Gas Welding and Cutting
 - Safety Rules for Use of Drilling Machines
 - Safety Rules for Working at Heights
 - Safety Rules for Operations on Suspended Working Platforms -Permit-to-Work Systems. These systems are designed to eliminate the risks and hazards involved in confined spaces, hot work and excavation etc.
 - Safety Rules for Entry into Confined Spaces
 - Safety Rules for Lifting Operations
 - Safety Rules for Operating Mechanical Plant and Machinery
 - Safety Rules for Construction, Maintenance and Dismantling Temporary Works
- B.2.5.3.14 Safety Rules should be displayed at prominent places where potentially hazardous activities are carried out. This is to draw these to the attention of the persons involved and to make them aware of the safe practice.
- B.2.5.3.15 Contractors' safety personnel are responsible for monitoring compliance with in-house rules.
- B.2.5.3.16 CEM's Administrative Charges for Breach of Safety Obligations. An administrative charge system has been set up to strengthen the control of compliance with safety requirements by Contractors. The "Administrative Charges for Safety Non-compliance" is available on our website (<https://www.cem-macau.com/en/about-cem/procurement/download-area/>)

B.2.6 Safety Inspections

- B.2.6.1 Contractors Safety Personnel are required to carry out a daily site safety inspection and record safety defects on a diary.
- B.2.6.2 The Owner will prepare a schedule for safety inspections of all aspects of the Contractors' work. A Joint Site Safety Inspection with individual Contractors will be carried out once a week or as mutually agreed. Large contracts and contracts considered to have a high hazard potential or to be high profile, may be inspected more often. This is to identify potential hazards involved in their workplaces. The observed safety defects will be recorded on the inspection report.
- B.2.6.3 The Owner will issue a Safety Improvement Notice (SIN) or the like in writing to the Contractor concerned for any unsafe practices observed. The Contractor is required to carry out corrective action accordingly.
- B.2.6.4 The Contractor is required to reply the Owner in writing within the stated time-frame to show the corrective action taken.
- B.2.6.5 If there is no response within the agreed time frame to the safety defects or the rectifying action stated in writing, the Contractor may be charged according to the items stated in the Administrative Charges for Safety Non-compliance list.
- B.2.6.6 If the Contractor still neglects to carry out the rectifying action after being charged or further reminder either by written or verbal, the Owner will correct the unsafe condition by employing another party. The cost incurred will be charged to the account of the said Contractor. No claims of whatsoever nature in this respect shall be allowed.
- B.2.6.7 Inspection of Plant and Equipment
 - B.2.6.7.1 Contractors' competent person or safety personnel are required to check and keep a copy of the validity of test and examination certificates of the plant and equipment required by relevant safety legislation once they have been brought onto the site. The record should be made available for inspection.
 - B.2.6.7.2 Contractor is required to inform the Owner regarding the erection, alteration, dismantling, repair and maintenance of heavy plant and machinery such as tower crane, mobile crane, crawler crane, material/passenger hoist, jump lift and etc.

- B.2.6.7.3 The Contractor in control of the premises has the primary responsibility to correct or remove all substandard equipment or facilities e.g. lifting gears, electrical items etc. from the Site; otherwise, the Owner will correct the unsafe condition by all effective means including removal or discarding the item at the Contractor's expense. No claims of whatsoever nature in this respect shall be allowed.
- B.2.6.7.4 When scaffolding or falsework is erected, a competent person should be nominated to conduct periodical inspections at least every 14 days or follow the safety clause as stipulated in the Contract / Owner requirements or immediately after alteration or adverse weather of these temporary structures to ensure its stability and in a safe working condition. The inspection results should be written on prescribed Form 13 and a copy should be displayed at the prominent position of the scaffolds or falsework.
- B.2.6.7.5 Adequate preventive measures for protection of falling objects of any scaffold that may endanger to any site personnel should be provided and maintained such as installation of catch fan, installation of safety net, etc.

B.2.7 Personal Protective Equipment (PPE)

- B.2.7.1 The Contractor shall provide, maintain and enforce the usage of appropriate PPE for all the personnel on site at all times.
- B.2.7.2 Contractor should take all practicable measures to ensure his direct and indirect employees put on safety helmet while they are on site. **The safety helmet must include 4-points chin strap as an integral part which is conforming to approved standard [referring to clause B.2.7.12].***
- B.2.7.3 Contractor should require their site personnel to sign for the receipt of PPE issued to them, replenish and replace the expired PPE for them.
- B.2.7.4 Contractor should provide training on the proper use, storage, and maintenance of each type of PPE for their site personnel.
- B.2.7.5 Contractor is responsible for providing appropriate PPE for the use of their site personnel. The Contractor should keep sufficient stock of the suitable types of PPE on the work-site for his direct and indirect employees.
- B.2.7.6 Visual inspection of PPE should be carried out frequently by the users themselves. It is the responsibility of the users to maintain this equipment in good condition. If any damage is found, they should ask for a replacement from their employers or Contractors.

B.2.7.7 Contractor's security guards at the main entrance to the site will give safety helmets to visitors before entering into the Site.

B.2.7.8 All the site personnel must abide by current legislation and in-house safety requirements for the required PPE on construction sites:

a) Safety Helmet

Personnel engaged in all activities within the site area must wear suitable safety helmets. The whole site is regarded as a hard hat area and *the wearing of safety helmet is therefore mandatory.*

b) Eye Protection

When carrying out tasks, which may cause injuries to eyes, suitable eye protectors must be worn.

c) Hearing Protection

Suitable ear muffs or earplugs must be worn when the sound level is at or above 85 dB (A).

d) Respiratory Protection

When grinding, cleaning, spraying, mixing or working with any material, which causes dust, fumes or vapors likely to be injurious to health, suitable respirators must be worn.

e) Fall Arrest Equipment

Where persons are exposed to risk of falling from height more than 2 meters and under a situation where the provision of suitable working platforms is impracticable, they must wear safety harnesses and these must be securely attached to suitable anchor points. When there are no suitable anchor points, a fall-arrestor, which must be fitted to the deployed independent lifeline, must be used for the anchorage of the safety harnesses.

f) Safety Shoes

All personnel engaged in all activities within the site area must wear suitable safety shoes. *The wearing of safety shoes is therefore mandatory. The wearing of sandals and canvas, sports shoes on the work-site areas is strictly prohibited.*

g) High Visibility Vest/ Clothes

All personnel engaged in all activities within the site area must put on suitable high visibility vest/ clothes.

B.2.7.9 The Owner may issue suitable PPE to the site workers who are exposed to the imminent danger of injury. The worker either directly or indirectly employed by the Contractor will be required to sign a receipt to confirm he has received the equipment. The Owner will then counter-charge to the Contractor of the costs of such PPE.

B.2.7.10 The Owner may impose the administrative charges to the Contractors concerned if their site personnel either directly or indirectly employed are found not using the PPE which have been issued to them.

B.2.7.11 It is forbidden to bring and use sub-standard PPE onto the Site. Any sub-standard PPE will be immediately forfeited without any means of compensation. The following should be implemented to prevent the use of PPE on site by workers.

B.2.7.11.1 Contractor's safety personnel should carry out regular inspections to check the whether worker's PPE meet the international standard.

B.2.7.11.2 Training should be provided for subcontractors to remind them not to buy PPE which is below the international standard.

B.2.7.12 Standards (for reference only)

Item	Personal Protective Equipment	Approved Type/Relevant Safety Standard
1	Safety Helmet	Relevant Safety Standard
		1. BS EN397
		2. AS 1801-1981
		3. DIN EN397
		4. ANSI Z89.1-1986
		5. CSA Z94.1
		6. NF-S72-202
		7. EN 397:1995
		8. JIS T8131-1990

		9. GB 2812-89
2	Eye Protection	Approved Type <ol style="list-style-type: none"> 1. BS2092 – Industrial Eye Protectors for general purposes. 2. BS1542 – Equipment for Eye and Neck Protection against Radiation arising during Welding and similar operations. 3. BS-679 – Filters for use during Welding and similar industrial operations. 4. BS1729 – Green Protective Spectacles and Screens for Steelwork operations. 5. AS1337 – Industrial Eye Protectors. 6. AS1338 – Protective Filters against Optical Radiation in Welding and allied operations. 7. ANSI Z87.1 – 1986 – American National Standard Practice for Occupational and Education Eye and Face Protection. 8. German Industrial Standard Specification DIN 58210 and DIN 58211 – Protective Goggles.

3	Hearing Protection	<p>Approved Type</p> <ol style="list-style-type: none"> 3M 1100 / 3M 1110 Ear Plug 3M 1200 Ear Plug 3M 1210 Ear Plug 3M 1220 Ear Plug 3M 1230 Ear Plug 3M 1400 Ear Plug 3M 1410 Ear Plug 3M 1420 Ear Plug 3M 1450 Hard Hat Mounted Ear Muff AO1720 Ear Muff AO1776 Cap Mounted Ear Muff AO Hear-Guard Ear Plug AO Quiet Tips Ear Plug AO Sound Out Ear Cap Bilsom 202 Ear Plug Bilsom 202S/202L Ear Plug Other national safety standards.
4	Respiratory Protection	<p>Relevant Safety Standard</p> <ol style="list-style-type: none"> EN136 EN137 EN139 EN140 EN141 EN142 EN143 EN145 EN146 EN149 EN405 EN12941 EN12942 NIOSH 42 CFR Part 84 ASTM F210-01 NFPA 1981 JIS T8151 JIS T8152 JIS T8153 JIS T8157 JIS T8160 JIS T8115 CAN/CSA Z94.4 CSA Z180.1

5	Safety Harness	Relevant Safety Standard <ol style="list-style-type: none"> 1. BS EN 361 (Full Body Harness) or other national safety standards. 2. BS 3367 (Safety Lines) or other national safety standards. 3. BS En 353 (Guided Type Fall Arresters) or other national safety standards. 4. BS En 360 (Retractable Type Fall Arresters) or other national safety Standards. 5. BS En 335 (Energy Absorbing Devices) or other national safety standards. 6. BS 1397 or other national safety standards.
6	Safety Shoes	Relevant Safety Standard <ol style="list-style-type: none"> 1. BS EN 345 2. BS En 346 3. BS EN 347 or other national safety standards.
7.	Gloves	Relevant Safety Standard <ol style="list-style-type: none"> 1. EN374-1 2. EN374-2 EN374-3 3. EN 388 EN 407 4. EN 420 5. ASTM D4679 6. ASTM D3578-01 7. ASTM D6319-00 8. ASTM D5250-00 9. JIS T8113 10. JIS T8114 11. JIS T8116 12. AS/NZS 2161.2 13. AS/NZS 2161.3 AS/NZS 2161.4 14. AS/NZS 2161.5 AS/NZS 2161.7 15. AS/NZS 2161.8

B.2.8 Accident / Incident Investigation

B.2.8.1 Objective

- (a) To ensure all accidents/incidents are reported speedily, so appropriate action(s) can be taken to minimize impact.
- (b) To conduct investigation so as identify the causes of the accident.
- (c) To implement improvement / preventive measures to avoid similar occurrence in the future.
- (d) To be used in critical task analysis and training need analysis in order to improve process control and training quality in future.

B.2.8.2 Definition of Reportable Accident

An accident is classified as a reportable accident if:

- (a) It has led to fatality; or
- (b) The victim is in critical condition; or
- (c) The media or any third party have arrived on site or have telephoned to ask for information concerning the accident; or
- (d) It will arouse public interest / concern in view of the damage / inconvenience that has been caused or its potential harm to workers and / or the public; or
- (e) All work injuries causing at least one day of absence from work after the day of the accident.

B.2.8.3 Definition of Serious Incident

- (a) Any fracture, other than to the fingers, thumbs or toes; or
- (b) Any amputation; or
- (c) Dislocation of the shoulder, hip, knee or spine; or
- (d) Loss of sight (whether temporary or permanent); or

- (e) A chemical or hot metal burnt to the eye or any penetrating injury to the eye; or
- (f) Any injury caused by an electric shock or electrical burn (including any electrical burn caused by arcing to arcing products) leading to unconsciousness or requiring resuscitation or admittance to hospital for more than 24 hours.

B.2.8.4 Definition of Dangerous Occurrence

A Dangerous Occurrence (D.O.) is defined as follows:

- (a) The disintegration of a revolving vessel, wheel, grindstone or grinding wheel that is operated by mechanical power.
- (b) The collapse or failure of a lifting appliance (except the breakage of chain or rope slings) ("lifting appliance" includes crane, derrick, winch and hoist.)
- (c) An explosion or fire that – causes damage to the structure of any workplace, or to any plant or substance at a workplace; and prevents the continuation of ordinary work at the workplace.
- (d) An electrical short circuit or electrical failure of electrical plant that – Is followed by, or associated with, an explosion or fire; or Causes structural damage to the plant, Being a short circuit, failure, explosion, fire or damage that stops the operation of the plant or prevents it from being used.
- (e) An explosion of a receiver or container used for the storage at a pressure greater than atmospheric pressure of any gas or gases (including air) or any liquid or solid resulting from the compression of gases.
- (f) A total or partial collapse of a roof, wall, floor, structure or foundation of premises where a workplace is located.
- (g) A total or partial collapse of any overburden, face tip or embankment within a quarry.
- (h) The overturning of, or a collision with any object by a bulldozer, dumper, excavator, grader, lorry or shovel loader;

B.2.8.5 Reporting of Incident or Accident or Dangerous Occurrence

- B.2.8.5.1 In the event of an incident / accident / serious accident / dangerous occurrence that occurs on the work-site, the concerned Contractor must immediately notify the Owner, who will join and assist the Contractor investigate the event.
- B.2.8.5.2 In the event of any bodily injury involved, concerned Contractors shall immediately report the accident to the local Labor Affairs Bureau in writing, The Owner, local police.
- B.2.8.5.3 A preliminary written report of the accident/ incident shall be followed within 24 hours to the Owner's office.
- B.2.8.5.4 A comprehensive written report of the accident/ incident shall be submitted to the Owner **within seven (7) working days**. The comprehensive report shall enclose location, date and time of the accident, nature and brief account of accident, details of injured / killed person(s), relevant sketches and/ or photographs and names of eye witnesses. The submission shall include a copy of the investigation report into the cause(s) of the accident, together with recommendations and action plan for preventing recurrence.
- B.2.8.5.5 The Owner will review the comprehensive written report and the effectiveness of the site safety management system of the Contractor.
- B.2.8.5.6 In the event of a serious accident/ incident or dangerous occurrence, the Owner will call for an ad hoc meeting with the presence of Contractor's project management and the Owner relevant personnel.

B.2.8.6 Accident Investigation Procedure

Every accident that occurs must be thoroughly investigated to determine causes and to implement corrective action to prevent recurrence. The major tasks are as follows:

- a) Dangerous occurrences and accidents which result in death, serious injury or serious damage must be investigated immediately to find out the cause of the occurrence/ accidents. The measures can then be formulated for prevention of any recurrence;
- b) Near misses and minor accidents should also be recorded and investigated promptly as they signify the inadequacies of the safety management; and

- c) Investigation should be conducted in an open and positive atmosphere that encourages the witnesses to express freely. The prime objective is to ascertain the facts with a view to prevent future and possibly more serious occurrences.

Reporting & Follow-up Action

- The Contractor shall report on the findings and immediate preventive measures to the Owner .
- CEM will circulate the relevant causes and the remedial action recommended to other Contractors on site and internally for as lesson learnt purpose;

B.2.8.7 Remedial Actions and Follow-up Actions

All remedial / follow-up actions as listed out on the investigation report are to be carried out to the full by Contractor's assigned personnel, checked for completion by a member of middle management and finally, cross checked by Contractor's Safety Officer for adequacy.

The personnel responsible for remedial action(s) will complete such action within time given on the follow-up checklist.

The Owner will ensure compliance by carrying out follow-up inspection. The Owner will also review the up-dated situation with the Contractor before the expiry of any deadline given in the follow-up checklist.

The Contractor and respective Safety Officer review uncompleted follow-up actions periodically to ensure full compliance. They are also responsible for the coordination among various areas or working parties to ensure smooth implementation of remedial works. The progress of remedial action will be discussed with all committee members over the Site Safety Committee Meeting.

Result of accident statistics, lesson learnt, recommendations or any other matters deemed relevant, will be communicated by contractor within the site by means of safety notice board, newsletters, monthly report, training and all other channels.

Contractor shall provide refresh safety training to the injured and/or involved personnel upon his/her return to work.

Contractor shall keep track of the health situation of the injured and report to the Owner accordingly.

B.2.8.8 Contractors are required to prepare accident statistics summaries on a monthly basis to analyze the accident trend on the project. The data used for analysis should include:

- Work trades
- Types of accidents
- Incident Frequency Rate (IFR)
- Incident Severity Rate (ISR)
- Days of incapability (absence days).
- Worked Hours
- Name of involved sub/ contractors

B.2.9 Emergency Preparedness

B.2.9.1 Emergency is hereby defined as fire breakout, collapse of temporary structure/ plant and machinery, explosion, serious bodily injury, serious damage to utility service equipment, leakage of harmful chemical substances, tropical cyclones and heavy rainstorm.

B.2.9.2 Emergency situation means a situation occurred on site requiring emergency assistance of government services such as firefighting services, police, ambulance etc., this situation include:

- a. An accident which results in death or serious injury;
- b. A fire breaking out which requires fire fight services to effect control;
- c. A flood that causes or threatens life on site;
- d. Leakage of dangerous goods or chemicals and gases;
- e. Any other accident / incident which creates a dangerous situation.

B.2.9.3 Emergency Coordinator

The Contractor should appoint his Project Manager as the emergency team leader and his Site Manager as the emergency coordinator. Their names and contact numbers should be clearly posted on the prominent places of the site.

Contractors should ensure their emergency coordinators are suitably trained to undertake their role effectively.

B.2.9.4 Emergency Response Team

All Contractors shall organize an individual emergency team to deal with the emergency procedures within their area of operation against fire / typhoon/ heavy rainstorm/ serious accidents.

All Contractors shall appoint an emergency team (if not the same as the day-time's) to deal with the emergency at night and/ or after normal working hours.

The core members of each Emergency Response Team(s) would comprise of the following and shall be well-communicated to the Owner and all interested parties:

- Site Manager or Site Agent (Emergency Coordinator)
- Assistant Site Manager
- Site Supervisor
- Safety Officer/ Safety Supervisor
- First Aider

B.2.9.5 Emergency Procedures

B.2.9.5.1 Fire Evacuation Procedures

On hearing a fire alarm

- immediately check the working area for signs of fire.
- Alert your colleagues and be prepared to evacuate.

Action in case of fire

- Keep calm.
- Try to put out the fire by using fire extinguishers or fire hoses.
- If unsuccessful, leave the premises.
- Alert other site personnel.
- Dial 999 to call the Fire Services Department.
- Switch off all non-essential electrical appliances, except lighting.

B.2.9.5.2 Tropical Cyclones and Heavy Rainstorms

- When typhoon signal No. 1 is hoisted, all emergency crews will be alerted who will standby to undertake the precautionary measures identified on the checklists.
- When typhoon signal No. 3 or a heavy rainstorm warning is hoisted, Contractors' emergency teams should take the following actions:
 - Secure loose materials and equipment using ropes.

- Secure site offices, site huts, hoarding using wire ropes.
 - Secure scaffolding, false work and temporary structures with adequate bracing, securely tied and removal of unnecessary loading..
 - Inspect and clean open channels, catch pits and drains to ensure efficient run off.
 - Place adequate de-watering equipment at excavated areas to avoid flooding
 - Provide extra protection to outdoor power distribution boards to prevent damage.
- When typhoon signal No. 8 is expected to be hoisted in the coming hours, Contractor shall take all reasonable and necessary measures to eliminate any foreseeable dangers incurred and carry out pre-event safety inspection with the Owner representatives. Contractors' emergency teams should further confirm the completion of the above actions and:
 - Move shift-loading machines to flat and upper areas.
 - Lower piling rigs and crane jibs to horizontal levels.
 - Release brakes of turntable of tower cranes to allow jibs to rotate freely.
 - For the sake of site personnel safety, evacuate all site personnel from the work-site immediately except members of the emergency teams.
 - Arrange the emergency team members to be present on site for duty.
 - When typhoon signal No.8 is hoisted, the Site will be closed and no construction activities should be observed.

B.2.9.5.3 Casualty Events

In order to enable site personnel to deal with a casualty efficiently, the following sequences are recommended to be included into Contractors' procedures for dealing with a casualty.

- Notify the respective Contractor's Site Agent immediately after seeing a casualty.
- Notify the first-aider to offer immediate treatment.
- Evacuate site personnel to a safe place if the scene is also dangerous to others.
- Call the relevant Government Departments or parties for assistance if the event involves other handling procedures.
- Notify the safety supervisor and the Owner to investigate the event.
- Assign a member of the site personnel to wait at the site entrance to direct the relevant vehicles and persons to the scene.
- Keep the incident scenes unchanged as far as possible, take photos and record all the relevant information for subsequent investigation.
- Assign a staff member to accompany the injured person to hospital and to notify his/her relatives. The staff member should keep in touch with the site agent regarding the latest situation of the injured person.

B.2.9.6 Post-event Follow-up Action

- | | |
|-----------|--|
| B.2.9.6.1 | Upon the lowering of tropical cyclone warning No. 8 or following a black rainstorm warning, before the site re-opens, all emergency teams will carry out a thorough inspection within their area of operation and preparing reports, detailing damage to any permanent or temporary structures, plant, scaffolding, ladders or access that may adversely affect safety. All safety officers should ensure that arrangements are made for the affected areas to be made before re-opening those parts of the sites. |
| B.2.9.6.2 | All Safety Officers/ Safety Supervisors should implement steady monitoring to ensure that the follow up action to be taken effectively. |
| B.2.9.6.3 | The Contractors' inspection reports will be forwarded to the Owner for reference on the same day |
| B.2.9.6.4 | The contractor will, taking account of the degree of damage caused by the event, coordinate with the Owner to decide the arrangements necessary to recover any losses from the work schedule. |
| B.2.9.6.5 | If structural damage is identified, an independent surveyor will be called to carry out a detailed survey of the affected areas. No work is allowed to proceed in these areas until the remedial action required by the independent surveyor has been completed. |

- B.2.9.6.6 The Contractor will make his own decision to restart normal work if the damage is slight. He will arrange repair or replacement of any damaged items, ensuring that a safe working environment is reinstated.

B.2.9.7 Lightning Attack

If lightning attack is observed on site, the outdoor construction personnel should observe the following safety precautions:

- **Do Not** use plugged in electrical appliances;
- **Do Not** use landline telephones;
- **Do Not** use mobile phones;
- **Do Not** use/ touch aerials;
- **Do Not** handle flammable materials in open containers;
- **Do Not** touch metal pipes or ducts;
- **Do Not** touch water pipes;
- **Avoid** standing or walking in large accumulations of groundwater;
- **Stay** inside your vehicle if there is no shelter available; and
- **Avoid** standing close to or under the highest object in the area.

“No worker is allowed to work outside”

B.2.9.8 Strong Monsoon, Foggy or Low Visibility Weather

- In the event of strong monsoon or low visibility, Contractors shall prepare for facing such adverse weather and therefore, respective safety procedures shall be developed and implemented to ensure the working environment is safe, in particular the lifting operation at high levels, working at edge , etc.

B.2.9.9 First Aid Equipment

- B.2.9.9.1 The first aid box will contain a first aid guide, sterilized unmediated dressings of various sizes, waterproof adhesive would dressings of assorted sizes, triangular bandages, zinc oxide

adhesive plaster, cotton wool pressure bandage, safety pins and eye baths and all the items shall be in sufficient amount. A list of items inside the first aid box shall be available to be checked, reviewed and refilled by the responsible.

- B.2.9.9.2 Adequate number of first aid boxes will be provided by the Contractors at their work locations.
- B.2.9.9.3 The contents of the first-aid box must be sufficient for its intended purpose.
- B.2.9.9.4 Each first aid box will be placed in a clearly identifiable and accessible location.
- B.2.9.9.5 Boxes will be constructed to protect contents from dampness, dust or other contamination and be clearly marked with red or green cross.
- B.2.9.9.6 First aid boxes and kits will be inspected by the First Aider once a week to ensure they are kept fully stocked.

B.2.10 Evaluations and Control of Contractors

B.2.10.1 Contractors Pre Start Kick-off Meeting

- (a) Prior to the commencement of work or as soon as possible upon the Contractor on site, the Owner will together with site management hold ‘Contractors Pre Start Kick-off Meeting’ with Contractor in-charge for the discussion of the safety issues.
- (b) The Contractor is required to appoint a competent representative for ensuring compliance of statutory regulations, contractual requirements and The Owner’s safety procedures. The representative is also responsible for coordination with the Owner and other Contractors in respect of safety matters and attends safety meetings.
- (c) All Contractors will be required to conform to the requirements of The Owner’s Health and Safety Manual that may be amended from time to time.

B.2.10.2 Control of Contractors

B.2.10.2.1 General Safety Requirements in Contracts

All contracts for Main Contractors and Selected Sub-contractors will

include a section relating to general safety requirements in the contracts.

B.2.10.2.2 Monthly Safety Performance Assessment

Monthly “Contractor Safety Performance Assessment” will be conducted by the Owner against a checklist, which includes but not limited to:

- Total administrative charges of the month for infringement of safety requirements;
- Number of accident / incident of the month;
- Number of written safety improvement notice/ correspondence.
- Safety promotion exercises such as safety morning briefing, display of safety notice/ poster, safety campaign, etc.

Project Manager of the Owner, will interview the Contractor in-charge due to unacceptable safety performance.

B.2.10.3 Monitoring on Accident Rate, Non-compliance and Prosecution

The Contractor Safety Officer will prepare monthly accident statistic of his responsible construction zone(s). Safety Manager will monitor the accident rate and accident severity of Contractor and report to the Project Manager of the Owner with summary report for disciplinary action when necessary.

The Owner will prepare monthly non-compliance of safety requirements and prosecution of his responsible construction site. Safety Manager will monitor the accident rate and accident severity of Contractor and report to the Project Manager of the Owner with summary report for disciplinary action when necessary.

B.2.10.4 Disciplinary

Contractors, subcontractors and individuals are subject to Site disciplinary systems. Disciplinary actions will be imposed according to the listed non-compliance of safety requirements. Money from the disciplinary system will only be used for promoting safety and health.

B.2.10.5 Method Statement proposed by Contractor

For high-risk work, Contractor shall submit his method statement with the relevant Job Hazard Analysis or risk assessment to bring the attention of his line management as well as the Owner project management prior to commencement of work. The method statement (please refer to the sample as per attached in the Appendix) and safety measures taken shall be communicated to all personnel involved.

The Contractor shall address all comments on the method statement arising from the Owner's review. The Contractor shall fully comply with the method statement approved by the Owner project management. If there is any intention to change the method of work, the Contractor shall seek approval from the Owner.

B.2.10.6 Enforcement of Safety Preventive and Compliance System

The Owner will implement a preventive and compliance system to Contractors on non-compliance to safety rule or statutory safety regulations or contractual safety requirement.

The aim of the system is to deter unsafe practices and to promote Contractors commitment on safety obligations on the Site.

Implementation

All Contractors have the prime consideration to ensure that all construction activities shall be conducted in such a manner as to eliminate or minimize or control risks to persons and property. In situations involving imminent danger, the Contractor has the primary responsibility to stop work until the unsafe conditions have been eliminated, or to remove any person disregarding safety from the Site.

If such breaches persist thereafter, the Owner may exercise its right to suspend any unsafe work until imminent hazard is eliminated, or remove any person disregarding safety from the Site. No claims of whatsoever nature in this respect shall be allowed.

The Owner will impose preventive and compliance actions in the following 6 different steps by issuing a written correspondence to the offending Contractor:

- (1) Stop the work by Authorized Owner's Representatives/ Safety Inspectors immediately to suspend the works at site if the following imminent danger situation/ unsafe practice is identified:
 - Unsafe Confined Space Practice;
 - Unsafe working platform or work at height;
 - Unsafe Hot Work Practice;
 - Unsafe Lifting/ Loading Practice;
 - Unsafe Electric Equipment/ Cable.
- (2) Verbal/written notice – First Time
- (3) Penalty letter – Second Time
- (4) Suspension of Work

- (5) Holding up payment to contractor in question
- (6) Termination of Contract

B.2.11 Safety Committees

The Site Safety Committees form a communication channel among The Owner, Contractors and Subcontractors. The safety representatives of Contractors and subcontractors take this opportunity to reflect situations to the Owner. Any safety problems will be raised for discussion during the meetings.

B.2.11.1 Contractors' Safety Committee

- B.2.11.1.1 Contractors should establish a safety committee with their sub-contractors. The safety committees are recommended to hold meetings at least once a month or as appropriate to discuss safety issues with regard to their work.
- B.2.11.1.2 The safety committee meetings will act as a two-way communication channel for Contractors to announce their safety strategies to and receive safety comments from their sub-contractors to improve the safety standards at their work stations.
- B.2.11.1.3 The committee oversees all aspects of safety, including monitoring the implementation of safety plan, safety process design, safety promotion, review of accident / incident cases and safety training.
- B.2.11.1.4 Contractor prepares a meeting agenda in advance and invites the Owner to participate in the meetings.
- B.2.11.1.5 Contractor shall forward a copy of the meeting minutes to The Owner's Project Manager for record.

B.2.11.2 The Owner Safety Committee

The Owner will hold monthly or as appropriate Site Safety Committee Meetings with Contractors throughout the duration of works contracts, with the following objectives:

- (a) To monitor the adequacy of the Contractor's Safety Plan.
- (b) To review emergency procedures.
- (c) To review accident trend and statistics so as to identify unsafe practices and

conditions, and to ensure the implementation of suitable correction actions.

- (d) To review risk assessment / method statement submitted by Contractors.
- (e) To discuss Contractors' Monthly Safety Reports.
- (f) To promote safety and health activities.
- (g) To present and discuss topical safety issues.

The Composition of The Owner's Site Safety Committee will be:

- Project Manager of the Owner (Chairperson)
- Safety Officer of the Owner
- Contractors' Project Managers / Site Managers
- Contractors' safety personnel

Minutes of the Site Safety Committee Meetings will be distributed to all attendees within ten working days of the meeting. One copy of the minutes will be posted at a prominent place on the Site.

B.2.12 Job Hazard Analysis

As an integral part of the Project accident prevention program, the Owner will exercise arrangements to ensure that all critical activities are subject to a formal assessment of risk prior to the commencement of individual operations. The control measures will be evaluated and monitored by the Contractors and the Owner.

Arrangements for identification of potential hazards and assessment of safety and health risks associated with Works should be carried out by trained Contractor's safety personnel and competent persons involved in the work activity for the development of safe working procedures and method statements to ensure the satisfactory elimination, reduction or control of such risks before work starts.

A Job Hazard Analysis should:

1. Ensure that all relevant risks or hazards are addressed;
2. Address what actually happens in the work place or during the work activity;
3. Ensure that all groups of workers and others who might be affected are considered;
4. Identify groups of workers who might be particularly at risk;
5. Take account of existing control measures in place and the extent to which they control the risks.
6. Be used to develop safety rules, instruction and guideline that will be displayed in the workplace and used as a training material.

7. Be regularly reviewed to ensure that the risk control measures contained therein are suitable and relevant to the Works being undertaken;
8. Be recorded in writing and communicated to those supervising and carrying out the Works.
9. Be signed by Contractor's Project Manager or his authorized representative, Safety Officer, Engineer if any and other suitable personnel.

Classification of Risk

Severity Classification

Severity Factor	Severity Class	Description
1	Trivial	First aid. Does not result in one or more days off work Minor equipment or operational damage
2	Minor	Results in one or more days off work Damage requiring outside help or minor delay
3	Serious	Requires hospitalisation Damage preventing operations
4	Critical	Life threatening Major equipment or operational damage
5	Catastrophic	Fatalities Severe structural and/or environmental damage

Probability Classification

Probability Factor	Probability Class	Description
1	Highly Unlikely	May occur only in exceptional circumstances
2	Unlikely	Could occur at some time
3	Moderate	Might occur at some time
4	Likely	Will probably occur in most circumstances
5	Very Likely	Is expected to occur in most circumstances

Risk Ranking Matrix

Probability Severity	1	2	3	4	5
1	2	3	4	5	6
2	3	4	5	6	7
3	4	5	6	7	8
4	5	6	7	8	9
5	6	7	8	9	10

Risk Classification

Risk Class	Explanation
Low Risk (≤ 5)	These risks are considered acceptable. No additional controls are required unless they can be implemented at very low cost (in terms of time, money and effort).
Moderate Risk (6-7)	Hazardous non-routine tasks or routine tasks with high loss potential. Additional control measures should be implemented to reduce risk in a pre-defined period of time, as far as practical with consideration to cost and operational impacts.
Significant Risk (≥ 8)	Potentially disastrous or catastrophic operations. Activity cannot start or must be stopped until effective control measures lowering the risk to at least moderate level are implemented.

Hierarchy of controls

	Type of controls	Explanation and examples
1	Elimination	This is to <i>eliminate the hazard at its source</i> . Getting rid of a hazardous job, tool, process, machine or substance is perhaps the best way of protecting workers. For example, a salvage firm might decide to stop buying and cutting up scrapped bulk fuel tanks due to explosion hazards.
2	Substitution	This is to seek for proper <i>substitution</i> that is less hazardous. Sometimes doing the same work in a less hazardous way is possible. For example, a hazardous chemical can be replaced with a less hazardous one. Controls must protect workers from any new hazards that are created.

3	Engineering control	<p>There are different types of engineering control that can be applied.</p> <p>Examples may be, but not limited to:</p> <p><i>Redesign</i> - Jobs and processes can be reworked to make them safer. For example, containers can be made easier to hold and lift.</p> <p><i>Isolation</i> - If a hazard cannot be eliminated or replaced, it can sometimes be isolated, contained or otherwise kept away from workers. For example, an insulated and air-conditioned control room can protect operators from a toxic chemical.</p> <p><i>Automation</i> - Dangerous processes can be automated or mechanized. For example, automatic machines can handle some type of hazardous operations in a plant.</p> <p><i>Barriers</i> - A hazard can be blocked before it reaches workers. For example, special curtains can prevent eye injuries from welding arc radiation. Proper equipment guarding will protect workers from contacting moving parts.</p> <p><i>Absorption</i> - Baffles can block or absorb noise. Usually, further control keeps hazard away from workers, the more effective it is.</p> <p><i>Dilution</i> - Some hazards can be diluted or dissipated. For example, ventilation systems can dilute toxic gases before they reach operators.</p>
4	Administrative Controls	<p>There are different types of administrative control that can be applied.</p> <p>Examples may be, but not limited to:</p> <p><i>Procedures and work instructions</i> - Workers can be required to follow standardized safety practices as guidance to ensure that they follow the safety rules and precautions. Procedures and WI must be periodically reviewed and updated.</p> <p><i>Supervision and training</i> – Initial training on safe work procedures and refresher training should be organized. Appropriate supervision to assist workers in identifying possible hazards and evaluating work procedures.</p> <p><i>Job rotations</i> and other procedures can reduce the time that workers are exposed to a hazard. For example, workers can be rotated through jobs requiring repetitive tendon and muscle movements to prevent cumulative trauma injuries. Noisy processes can be scheduled when no one is in the workplace.</p> <p><i>Housekeeping, repair and maintenance programs</i> - Housekeeping includes cleaning, waste disposal and spill cleanup. Tools, equipment and machinery are less likely to cause injury if they are kept clean and well maintained.</p> <p><i>Hygiene</i> - Hygiene practices can reduce the risk of toxic materials being absorbed by workers or carried home to their families.</p>
5	Personal Protective Equipment	<p><i>Personal protective equipment (PPE)</i> is used when other controls measures are not feasible and where additional protection is needed. Workers should be able to use and maintain PPE properly.</p>

B.2.13 Safety Promotion

Safety promotion is a positive and constructive approach to raise safety awareness and developing a safety and health culture amongst all persons on the Site. The methods of promotion that are also applicable to all Contractors at their own expenses include:

- (a) The display of the company safety policy, accident statistics, safety signs and posters and the showing of safety videos and films.

- (b) Procedure for the selection of appropriate safety promotion items for displaying on site,
- (c) The conduct of talks, campaigns and distribution of safety bulletins or newsletters drawing attention to particular safety issues and emergency procedures, and
- (d) Procedure to recognize and commend those site personnel, teams, sub-contractors or Contractors with good safety performance.

B.2.13.1 Safety Banners and Posters

Safety banners and posters issued by the Labor Affairs Bureau Macao SAR or other appropriate sources shall be displayed as appropriate so as to enhance the safety awareness persons working on site.

B.2.13.2 Safety Notice Board

A safety notice board for the purpose of display safety information such as Contractor's safety policy (if applicable), emergency contacts and procedures, general safety rules, training program and so on, should be provided on site in a prominent location where the workers can see. The items displayed on the board will be maintained and reviewed at least once a month by the Contractor's safety personnel.

B.2.14 Health Assurance Program

B.2.14.1 Welfare Facilities for Workers

The Contractors arrange to provide welfare facilities for workers employed on the Works, irrespective of whether they are in the employment of the Contractor or his sub-contractors. The Contractor maintains the welfare facilities provided on the Site throughout the Contract, and removes the facilities and reinstates the areas after removal of the facility to upon completion of the Works where necessary.

The sufficiency of provision for the welfare facilities will be monitored and reviewed in the Contractor's Safety Committee meetings and/or the Owner's Site Safety Committee meetings. The Contractors replenish the insufficiency of provision to meet the Owner's requirements and will not be entitled to claim the cost of such replenishment.

B.2.14.2 Welfare Amenity Facilities

Contractors shall provide sufficient and suitable amenities for workers include

arrangement for sanitation, washing facilities and storage of personal belongings such as clothing, safety helmets and etc.

(a) Storage Compartments

The Contractor provides storage compartments for use by workers. The storage compartment should be placed at a location close to the main site entrance to facilitate workers to obtain / place their personal protective equipment such as safety helmet, reflective vest, eye protectors, safety harness etc. when they enter or leave the Site.

(b) Drinking Water Facilities

The Contractors shall ensure the supply of drinking water available for workers working on the Site throughout the Contract. The Contractors are responsible for maintaining the drinking water facilities in clean and hygienic condition.

(c) Toilet Facilities

The Contractors must provide sufficient male and female toilet facilities for workers working on the Site throughout the Contract.

The Contractors must maintain the toilet facilities in clean and hygienic condition.

(d) Hand-wash Facilities

The Contractors must provide sufficient hand-wash facilities in the form of water points and sinks for workers working on the Site. The discharge from hand-wash facilities shall be collected to prevent spillage on the floor.

(e) Rubbish Bins

The Contractors must provide sufficient and suitable rubbish bins with covers at strategic locations on the Site for collection and disposal of general wastes generated by workers throughout the Contract. The rubbish bins should be provided in pairs, one for aluminum cans and plastic bottles and the other for general refuses. The locations for the rubbish bins in pairs should be placed at convenient locations close to the workers' workplace to facilitate use.

The Contractors must maintain the cleanliness of rubbish bins, and arrange collection and disposal of general waste inside the rubbish bins regularly, but in any case shall be *not less than once in every two days*.

B.2.14.3 Noise Control Practice on Site

- (a) Contractor's Safety Officer/ Safety Supervisor will undertake regular noise level surveys of respective area or activities suspected of generating excessive noise levels at least in the beginning period of the works. A purpose of the survey is to identify which of the Contractor's employees or others are so exposed to the excessive noise. The surveys will be conducted when conditions of noise of the workplace change, like in cases of modification of the existing noise emissions sources or the installation of the new equipment, by using a calibrated industrial grade noise level meter. The results of the surveys will be recorded in a specific noise assessment form and reviewed in the monthly safety meeting.
- (b) Protective hearing gear should be provided to workers exposing to noise level of 85dBA or more. To minimize the noise nuisance generated by construction works, it is important to use equipment, which has been effectively silenced. Wherever possible, the quietest alternative should be used.
- (c) In addition, it should be ensured that the equipment in use is the type most suitable for the job. The site supervisor should take necessary precaution and ensure that the operations of all plant and work will not annoy any nearby noise sensitive receiver.

B.2.14.4 Prevention of Stagnant Water and Anti-mosquito Measures

In order to avoid infection diseases through mosquito bite e.g. dengue fever, Japanese Encephalitis, Contractors should implement effective measures to prevent accumulation of stagnant water within the Site to eliminate breeding of mosquitoes.

B.2.14.4.1 In carrying out prevention and control work against mosquito breeding, assigned staff should, as far as possible, remove all the potential breeding places that could be eliminated. The following can be noted as controls by environmental improvement;

- To tidy up premises/drainages/facilities and check for any accumulation of water at these places;
- To remove all unnecessary water collection and eliminate the sources;
- To change at least every week the water in flower vases and

saucers of potted plants to prevent breeding of mosquitoes. The use of saucers should be avoided whenever possible;

- To properly cover all containers that holds water to prevent mosquitoes from accessing the water;
- To properly dispose of articles that are able to contain water such as cans and tires;
- To make large holes on tires used as anti-bumping measure in garage to prevent water trapping;
- To remove rain water in excavations and pits and/or to fill up with sand as appropriate.

B.2.14.4.2 Killing of Mosquito Larvae

Pesticide/Chemical should only be used for killing of mosquito in its breeding place or preventing its breeding only if the breeding sources or potential breeding grounds are inaccessible or could not be eliminated for the time being.

B.2.14.4.3 Further Control Measures

- a. The Contractors identify the potential stagnant water areas on the Site, and to cooperate with the Owner's site supervisory staff that may point out from time to time locations on the Site, which may become potential mosquito breeding grounds, and to take prompt rectification action on such notification.
- b. Contractor's Safety Officers should include the above checking mosquito control and potential stagnant water areas into the checklist for weekly safety walks, and take prompt rectification action.
- c. The Contractor should include as a standard agenda item on "effective control of mosquitoes and removal of stagnant water: in Site Safety Committee meetings to be reviewed the effort on mosquito control.
- d. The Contractor's Safety Officer develops and provides toolbox talk training to raise the awareness of dengue fever and mosquito control on site.

B.2.14.5 Rodent Prevention

- Contractors are required to provide litter bins with lids to prevent rodents from gaining access to these rubbish collection points.
- Rubbish should be removed regularly but *not less than once in every 2 days* to

ensure the workplace is kept in a tidy condition.

- Rodenticide should be laid to kill mice at rest areas.
- Warning notices to draw workers' attention should be displayed whenever rodenticide is laid.

B.2.14.6 Use and Control of Substances Hazardous to Health

B.2.14.6.1 The Contractor's Safety Officer should carry out health risk assessment to identify the potential hazards associated with the hazardous substances and the necessary actions to be taken such as monitoring the exposure level, providing training, supervision and personal protective equipment or even making substitution where necessary. The suitability of the working environment should also be assessed.

B.2.14.6.2 The Contractor's Safety Officer should review the health risk assessment every 3 months.

B.2.14.6.3 The Contractor's Safety Officer should carry out health risk assessment with the provision of the Material Safety Data Sheet (MSDS). THE MSDS should contain the following items :

- The Contractor's Safety Officer should carry out health risk assessment with the provision of the Material Safety Data Sheet (MSDS). THE MSDS should contain the following items :
 - The chemical identification / name used on the label.
- Physical and chemical characteristics of the hazardous chemical, boiling point, melting point, specific gravity, appearance and odour.
- Composition of substances: chemical names of constituents, proportions, impurities.
- Risks: chemical hazards, physical hazards, short and, on and term effects.
- Primary route of entry into the body: inhalation, skin contact, ingestion, and injection.
- Labeling, storage and package.
- Any generally applicable control measures other than PPE.
- Recommended PPE.

- Any special precautions for safe handling and use.
- Emergency and first aid procedures.
- Legal requirements.
- Sources of information and the preparation date of MSDS.
- The name, address and telephone number of the chemical manufacturer or supplier.

B.2.14.6.4 Workers involved in using hazardous substances should be trained in advance by the contractor, about the potential hazards, emergency procedures and precautionary measures.

B.2.14.6.5 Appropriate personal protective clothing as specified in the health risk assessment sheet should be provided to workers exposed to substances hazardous to health.

B.2.14.7 Controls

- (a) All dangerous goods and hazardous substances must be declared to the Owner by the user before bringing into the site.
- (b) Hazardous substances assessment form will be used to identify level of potential harm and proposed control measures for all hazardous substances to be imported to site.
- (c) MSDS must be produced together with notice in advance.
- (d) A dangerous goods and hazardous material register will be maintained to trace and control quantity consumption of such material.
- (e) Emergency procedures should be established to deal with accidents such as spillage and accidental contact with substance.
- (f) First aid facilities should include those, which can serve this project.
- (g) Workers must be trained on health and hygiene frequently to ensure proper knowledge has been communicated. Sufficient information for all kinds of health and hygiene problems that may be encountered on this site must be included.

B.2.15 Process Control Program

B.2.15.1 This element aims at identifying construction safety and health risks and properly planning the work process to control those risks. An effective process

control program requires a systematic approach to evaluating the whole work process.

B.2.15.2 Using this approach, the process design and technology, operational and maintenance activities and procedures, training programs, and other elements that impact on the process are all considered in the evaluation.

B.2.15.3 **Part C** of this Manual stipulates preferred safe work practices for some of the main processes. The methodologies therein are not intended to be exhaustive and will be reviewed and updated from time to time. *The methodologies shall be regarded as the minimum to be achieved and shall not relieve the Contractor of any of his contractual duties or responsibilities.*

B.2.15.4 Effective Safe System at Work or Permit-To-Work Systems should be launched for high-risk construction activities such as crane overlapping operations, work in confined spaces, hot work, etc. The Owner may require Contractors to exercise such systems for other activities that are considered to be high-risk or high-profile.

B.2.15.5 Contractors involved in the process operations should ensure site personnel understand and strictly follow a high standard of safety and health practice by establishing appropriate work instructions, implementing monitoring programs and conducting periodic inspection and auditing.

B.2.15.6 The Contractor in control of the premises has the primary responsibility to correct or remove all substandard equipment or facilities e.g. lifting gear, electrical items, etc. from the Site; otherwise, the Owner *will correct the unsafe condition by all effective means including removal or discarding the item at the Contractor's expense. No claims of whatsoever nature in this respect shall be allowed.*

B.3 Safety Audit

B.3.1 Purpose

To determine whether or not the Contractor's and the Owner's safety management system:

- Conform to the planned arrangements in safety and health respects;

- Have been properly implemented and maintained; and
- Are effective in achieving the safety objectives.

B.3.2 Intervals

- B.3.2.1 Contractors shall conduct a regular Internal Safety Audit at least once during the contractual period and a copy of the report including score sheet shall be submitted to the Owner within twenty-eight (28) days after the completion of the internal safety audit.
- B.3.2.2 In case the safety performance of a Selected Subcontractor(s) is not satisfactory to the Main Contractor, the Main Contractor has the right to request the concerned Subcontractor (s) to carry out an Internal Safety Audit to measure his compliance of safety requirements. A copy of the report including score sheet shall be made available to the Owner within twenty-eight (28) days after the completion of the audit.
- B.3.2.3 If a fatality or serious accident or dangerous occurrence occurs, the Owner has the right to conduct an Independent Safety Audit by an outside safety consultant to assess the effectiveness of the site safety management of the concerned Contractor or Subcontractor at his own expense.
- B.3.2.4 The Owner will regularly conduct safety audits on the effectiveness, efficiency and reliability of Contractor's safety management system and the result will be discussed in site safety meeting.
- B.3.2.5 Upon the Owner's request, Contractor with unsatisfactory safety performance is required to carry out independent safety audit, at his own expense.

Part C

Safe Work Practice

The Contractor shall compliance the following safety works practices during the relevant maintenance works or activities on site and ensure the effective safety measures are taken place.

C.1 Process Control Program

C.1.1 Piling

- The Contractor's Safety Officer and Site Manager shall ensure that adjoining structures that may be affected by pile driving work are adequately supported. The secure and adequate temporary supports shall be provided and examined by competent person.
- The Site Manager shall ensure that:
 - Suitable PPE are provided to protect the rig operators signal-man and workers from falling objects, noise, etc.
 - The pilling crew is fully instructed on their work.
- The Site Manager shall inspect the pilling rig prior to starting work. Defects shall be immediately rectified before work may commence.
- All persons not involved in the supervision or operation of the piling rig and equipment or are not handling the piles are not permitted to access the piling area.
- Where piling rig or crane is to be driven on soft ground, suitable footing shall be provided such as steel plate or hardcore.
- When the piling rigs are not in use, the hammer shall be choked or lowered to the ground.
- The Safety Officer shall ensure that the noise due to piling operations does not exceed the levels 85 dBA. In case it exceeds the noise levels, the Safety Officer shall inform the Project Manager to ensure appropriate safety measures in place or re-planning of activities is undertaken to reduce noise levels.
- Warning signs and barricades are put up to prevent unauthorized entry into the pile zone.
- All piling machines will be inspected daily by a designated person before start of work and every defect will be immediately corrected before boring operation commences.
- Piling machines in good and safe condition will be operated only by competent and authorized person.
- The operator of every piling machine will be protected from falling objects by a substantial covering.
- Each member of the piling crew will be properly instructed in the work he is to do and the operation will be in the charge of a designated person, who will personally direct the work and give the operating signals.
- The preparation of the metal casings and reinforcement cages will be done at a safe distance from the boring operation. During the hoisting of metal casing/reinforcement cages, all persons not actually engaged in operating the equipment and handling the metal casing/reinforcement cages will be kept out of the area.
- Proper working platforms will be provided for workers hacking the piles.
- Pile hole must be securely covered with sound material.

C.1.2 Floor and wall openings and stairways

- Floor Openings
 - All floor openings, corners, breaks and edges through or from which a person is liable to fall a distance of more than 2 meters, must be securely covered or provided with guard-rails of adequate strength to a height between 900 mm and 1150 mm.
 - Covers for holes must be securely fixed and clearly marked.
 - Guard-rails and toe-boards can only be removed for the passage of materials or persons if it is the only means of access but they must be replaced as soon as possible.
- Wall openings
 - All openings in walls, lift shaft etc. should be barricaded with toe-boards.
 - Warning signs should be posted near all wall openings, lift shafts etc. to warn persons working in the vicinity.
- Stairs
 - Adequate lighting should be provided to all stairways.
 - Handrails or rope railing must be provided to all stairs in order to prevent persons from falling more than 2 meters.
 - Stairs must be treated if they become slippery, with grit or a suitable non-slip coating.

C.1.3 Electricity

- All electrical equipment should be inspected monthly by competent electrician and the results entered into the identified form before it is taken into use, to ensure that it is suitable for its proposed use.
- Display the name and contact telephone number of registered electrician on the main switch box.
- The wiring, switchgears and distribution boards should be properly fixed above ground and inaccessible to the general public.
- The sheath of all portable electric cable shall be heavy-duty type or otherwise adequately protected against mechanical damage if laid on ground. They shall be hung overhead as far as possible.
- When relevant, electrical cables should be adequately suspended to avoid them from lying on ground.
- Electrical conductors and equipment should only be installed and repaired by competent electricians.
- No work should be done on live conductors or equipment.
- Before any work is begun on conductors or equipment that does not have to remain live:
 - The current should be switched off.
 - Adequate precautions should be taken to prevent the current from being switched on again.
 - The conductors or the equipment should be tested to ascertain that they are dead.

- The conductors and equipment should be earthed.
- In the vicinity of live parts there should be adequate protection against accidental contact.
- After work has been done on conductors and equipment, the current should only be switched on again on the orders of a competent person.
- Procedures for electric shock handling and resuscitation should be posted on site.
- Generator should be earthed and exhaust fumes discharged in a direction not to cause harm.
- Examination by competent electrician should be made for the electrical equipment routine inspection.

C.1.4 Cranes

- All crane operators must be trained and with proven experience.
- All cranes and lifting gear must possess valid test certificates issued by a competent examiner.
- A safety latch must be in place on crane hooks.
- Outriggers of cranes will be fully extended and rested on a flat and solid surface with a piece of “sleeper” in between before lifting operation.
- Suitable grillages will be used to support the legs of outriggers if the ground is in any way suspected.
- A shackle or a ring will be used to connect multiple slings to the hook of the crane, so as to let the weight of the object to be lifted be equally distributed along the slings.
- A tag line will be tied to the object to be lifted to direct it into the position and prevent it from spinning.
- A trained person will be appointed to give signals to crane operators and carry out lifting operations.
- Automatic safe load indicator must be in good operation condition and examined by competent examiner.
- Crane must be fitted with lights on the boom and jib head.
- Effective anti-collision device and permit-to-work system will be imposed for tower cranes overlapping situations.
- Sufficient and effective communication means must be provided to crane operator(s) and banksman.
- Crane must be safely positioned and Contractor shall carry out a regular check for the crane sitting safely.

C.1.5 Lifting Gear & Appliances

- All lifting gear and appliances must possess valid test certificates issued by a competent

examiner.

- All lifting gear and appliances will be marked with their safe working load.
- Lifting gear will be inspected every time before being put into use, ensuring that they are not damaged.
- Never use any unidentified lifting gear for lifting operations.
- Lifting operators and signalers shall be properly trained.

C.1.6 Portable Electric Tools

- Check that the electricity supply and the tool are of appropriate rating with the plug and socket.
- Before using a portable electric tool check to see if it is properly earthed, unless it is an approved type that does not require earthing.
- Before using an electric tool, make sure that the casing is undamaged. If it is damaged, don't use the tool.
- Make sure that all cables, plugs or connectors are of appropriate ratings suitable for the tools and are sound properly wired up.
- Ensure that switches are working smoothly and freely before connecting to the supply.
- Make sure that the power cable is long enough to reach your working place without straining it, and of sufficient size to prevent overloading and excessive volt drop.
- Keep power cables off the floor. They may get damaged or trip somebody.
- Never stand on a damp or wet surface when using electrical equipment, and keep the equipment clean and dry.
- Never connect a portable electric tool to a lighting socket.
- Never use worn, blunt or damaged bits or other accessories. **Disconnect tools when not in use**
- Electric power tools should be regularly inspected and maintained by a competent electrician or a competent person on a monthly basis and the results recorded.

C.1.7 Housekeeping

- The layout of material storage area, site offices, parking areas, etc. shall be planned in advance so as to afford safe access about the site for pedestrians, vehicles, and equipment.
- Keep working area free of unnecessary obstruction, place tools, materials, and equipment so that they do not cause hazards, and clean the work site every day when the daily work is finished. Small tools, nuts, bolts and fittings shall be kept in suitable containers. To prevent tripping hazards, electricity cables and welding hoses shall be placed out of walkways.
- Timber with protruding nails shall not be permitted anywhere on work site where it would cause a hazard.

C.1.8 Works in Confined Space

- The Safety Officer shall identify and evaluate hazards in the confined space
- The Safety Officer shall make sure the competence of the workers and attendant and they shall be trained on the relevant Safety Training Course for Certified Workers of Confined Spaces Operation or Confined Space Work Safety and Confined Space Risk Assessment with Practice Training Courses by Macau Labour Department.
- The Safety Officer shall take all practical steps to remove the hazards identified. Where the removal of such hazards is not possible, testing of the confined space shall be undertaken.
- The Oxygen level should be between 19.5% and 23.5%, level of flammable gas shall be within 10% of lower explosive limit and level of toxic substances shall be within the stipulated limits as per the Factories (Permissible Exposure Level of Toxic Substances) Order.
- Blowers/fans where required shall be installed to remove the toxic, flammable or oxygen-displacing gases and provide the confined space with ready supply of air throughout the operations.
- The Safety Officer shall ensure that effective steps have been taken to ensure that the conditions in the confined space are suitable for works.
- The Safety Officer shall then apply for a permit to work in confined space that shall be approved by the Site Manager.
- The Site Manager shall make arrangements to disengage affected service lines in the confined space.
- Upon verification that the site is safe to commence work, the Site Manager will issue the permit to commence work.
- The Safety Officer shall identify and issue the suitable PPE (e.g. respirator, safety harness) to the workers.
- The Safety Officer shall arrange briefing on the rescue/emergency operation, the use of PPE and the safe work practice in the confined space.
- Warning signs shall be prominently displayed in the vicinity of the confined space work.
- The Safety Officer shall keep track of the identity and number of persons entering the confined space area.
- The Safety Officer shall appoint an attendant to be stationed outside the confined space. The attendant shall not be assigned other duties but to serve as a standby for rescue operation.
- The attendant shall be in constant contact (whether visual or speech) with the workers inside. In the event of emergency, the attendant shall immediately seek assistance and notify the Safety Officer.
- The workers shall observe the following rules while working in the confined spaces:
 - No smoking.
 - Do not use defective electrical tools.
 - No consumption of food or drinks.

- No smoking.
 - Maintain communication with the attendant.
 - No resting in confined space.
 - Observe instructions stated in the permit-to-work.
 - Wear appropriate PPE.
 - Check the escape route.
- The Safety Officer shall ensure that emergency procedures and equipment are on standby at all times.
 - The attendant shall be alert to detect difficulties encountered by the workers and seek assistance and notify the Safety Officer for emergency operation.
 - The attendant shall not enter the confined space until help arrives, and then only with proper protective equipment.

C.1.9 Fire Extinguishers

Fire extinguisher shall be placed as prescribed in applicable safety regulation. Fire extinguishers of an approved type and size shall be placed for use wherever flammable liquids are stored, transported or handled. They will be inspected and certified by local authorities regularly.

C.1.10 Ladders

- Ladder is solely used for access and egress, not for working station.
- Before use of the ladder, make sure the ladder is in good condition and free from defects.
- The ladder should be properly secured near the top or it should be footed near the bottom.
- Using the right length ladder for the job.
- Remember always face the ladder when climbing or descending.
- Defective ladders should be removed from service immediately and properly repair or destroy are required.
- Never lash two ladders together to make it longer.
- Ensure that the ladder rises at least 1 meter above the landing, unless there is suitable handhold at the place of landing.
- Ensure that no overhead power lines are in the vicinity when handling and using ladders.
- Never use a ladder that has been painted so that defects cannot be seen.
- Do not reach over sideways more than you can safely reach.

C.1.11 Overhead and underground services

- If any overhead and underground services will be involved for site activities, the following safe system of work should be applied:

- Check the Utilities drawings to see if any overhead power lines or underground services in the vicinity of works. If drawing not available, consult concerned utility company for assistance.
- Erect warning notice to distinguish the restriction.
- Identify and mark warning notice onto the underground cables or utility services to prevent accidentally damaged of such items.
- Before excavation or work locates the position of the cables, hand digging trial holes should be carried out.
- When site problems arise due to presence of utility services, contact their representative for diversion or temporary isolation.
- The location of all mains and services must be identified before carrying out any works involving breaking out or excavation etc. Particular attention must be paid to electricity cables, both underground and overhead, and also to gas mains. In addition, it is advisable to verify the given location of any main with trial holes before commencing other excavation works in the locality.
- Give instructions to the workers who will actually carry out the work in the vicinity of the overhead power lines or underground services.
- Safety supervisors should carry out closely inspection to ensure that the workers do above the instructions given.
- Competent person should be appointed in writing for detection of the buried underground utilities in advance before carrying out any excavation works. The cable detection report must be submitted to the Owner before works commencement.

C.1.12 Compressed Air Tools

- All receivers/compressors must be thoroughly examined by a competent examiner and hold valid certificates.
- Compressors

The compressor itself should always be under the supervision of a competent person who should be responsible for ensuring that the guards for the V-belt and pulley drive are in place and also for the regular inspection of the necessary hose and couplings.

- A check must also be made that the oil feed to the air line is properly topped up. Compressors require adequate ventilation and special provision therefore needs to be made when compressors have to be sited in confined spaces.
- Air receivers must be marked with their safe working pressure and distinguishing number. They must also be fitted with a safety valve, pressure gauge, drain Air receivers must be cleaned and thoroughly examined regularly.

C.1.13 Hand Tools

- The handles of the hand tools should be regularly checked for splits or cracks and

wedged where necessary to keep them tight. They should be of good quality plastic or well-seasonal ash or hickory, of smooth finish and firmly fixed.

- Any chisels or punches with mushroomed heads should be grounded.
- Make sure all cutting edges, teeth, etc., are adequately sheathed or suitably protected.
- Grease, moisture and dirt should be regularly cleaned off. Any moving and adjustable parts should be lightly oiled to protect against corrosion and to prevent wear and misalignment.
- Cutting edges should be kept sharp to permit accurate working and to avoid the hazards arising from unnecessary pressure.
- Tools should be regularly checked. They should be thoroughly examined before storage and, if worn or damaged, they should be properly repaired or discarded.
- All metal tools are conductors of electricity. Where work takes place on, or near electrical apparatus, only properly insulated and where appropriate, earth continuity should be tested at regular interval by a competent person. Switch off current if possible.
- Appropriate personal protective equipment such as eye protection, ear protectors and dust mask etc., are to be worn when circumstances require their use.

C.1.14 Protection Against Lightning

- If any lightning attack is observed on site, no worker is allowed to work outside.
- It is desirable to erect a lightning rod and earthing to protect the open site during electrical storms. The lightning rod should be:
 - Designed by a competent person specialist to protect the whole work-site.
 - Higher than any extensions of crane booms.
 - Placed out of range of plant operation.

C.1.15 Cartridge Operated Power Tools

- Worker using tool must be properly trained.
- Check immediately that the tool is not loaded.
- Always load the gun with the barrel pointing in a safe position – away from yourself, and others.
- Never walk around the site with a loaded gun.
- Hold the tool to a right angle to the job when firing.
- Never place your hand over the barrel.
- The tool must not be fired in a place where flammable vapours or dust may create the risk of explosion.
- Stocks of cartridges must be stored in a damp proof and flame proof box or cupboard, which can be securely locked.
- Always be aware of the possibility of the pin being fired through the material into which

it is being fixed. Carry out test first, to find the correct strength of cartridge. When such tests are being out, make sure that no one is allowed behind the material into which the pin is being fixed.

- Carry out routine maintenance and the replacement of worn parts that are interchangeable. However, all major repairs must be done by the manufacturer.
- Always wear head protection, eye protection and ear protection when using the tool.

C.1.16 Work at Height

- All working platforms and scaffolds shall be well designed and constructed by suitable and sound material of sufficient strength and properly maintained.
- All scaffolds shall be constructed, or substantially added to, altered or dismantled, by worker who are trained and experienced and under the supervision of a competent person.
- All scaffolds and working platform shall be inspected by competent person before use, after alteration, or exposure to weather conditions likely to affect its stability.
- All scaffolds and working platform shall be inspected by competent person at an interval every 14 days or follow the safety clause as stipulated in the Contract / Construction Manager requirements or immediately after alteration or adverse weather of these temporary structures to ensure its stability and in a safe working condition.
- Any open edges from which a person is liable to fall a vertical distance of more than 2 meters shall be protected by suitable fencing barriers of a height of between 900 and 1,150 mm.
- Intermediate guardrail at the height between 450mm and 600mm should be installed at any place on work on a working platform, gangway, run, or stairway.
- Toe-board or other similar barrier of not less than 200mm high should be installed at the edges of any place on work on a working platform, gangway, run, or stairway.
- Platforms, gangways or runs from any of which a person is liable to fall a vertical distance of more than 2 meters shall either be closely boarded, planked or plated.
- Every board or plank forming of a working platform shall be of sound construction, adequate strength and free from patent defect. Each board or plank shall be not less than 200 mm in width and not less than 25 mm in thickness or not less than 150 mm in width when the board or plank exceeds 50 mm in thickness.
- Every board or plank shall rest securely and evenly on its supports. No board or plank shall project beyond its support to a distance exceeding 150 mm unless it is sufficiently secured to prevent tipping.
- Any working platform from which a person is liable to fall a distance of more than 2 meters is at least 400 mm wide.

Any gangway or run from any part of which a person is liable to fall a distance of more than 2 meters shall be at least 400 mm wide if it is used for the passage of persons only. Its width shall be extended to at least 650 mm wide if it used for the passage of materials.

- Workers working at height where erection of fencing barriers are impracticable shall be provided with suitable safety belts or harnesses and suitable and sufficient safe anchorage points or life line system for securing the safety of the workers. Safety netting shall also be used appropriate.
- Every person shall ensure no objects, including hand tools, timbers, scraps, material or the like, will or likely to fall from height.
- If it is impracticable to provide adequate guard rail or platform access conforming to the requirements listed, then safety nets can be erected or approved type safety belts can be used to prevent injury due to fall of persons.
- Safety nets can be temporarily removed for the access of persons or movement of materials for the purpose of the work but shall be replaced as soon as possible.
- If safety belts are used, suitable and sufficient anchorage fittings are to be provided.
- The safety nets and safety belts shall be properly maintained.

C.1.17 Protection against Falling Objects

- Adequate effective protection such as nylon mesh and catch-fans shall be provided to the entire building face against fall objects.
- Regular inspection should be carried out by appointed person to such protection measures.
- Procedure for erecting mesh and fans :
 - All nylon ties wire cables and other materials used in the scaffold shall be free of patent defects and of the required strength for their intended purposed to prevent falling objects.
 - Safety nets comprising of nylon mesh of minimum 15 core threads with grids not more than 12mm or similar shall be provided to cover the entire face of building. The safety nets to be tautly fixed with reasonable laps (450mm).

Catch fans at intervals of reasonable floors (First 10 m and every 20 m) are to be provided. The catch fan is to given a minimum horizontal coverage of 1500mm and to consist of galvanized metal sheeting 0.8mm (minimum) thick; otherwise, the design of catch fan must be approved by relevant consultant.

 - Dust sheets, tarpaulins, boards, etc. shall be provided where necessary to protect against the spread of dust and other nuisances to adjacent building and public.
 - A Permit-to-Work for precaution against falling object may be required upon the Construction Manager's request.
- Procedure for Dismantling of nylon mesh and fans.
 - Check the scaffolding is safe and secure prior to dismantling commencing.
 - Check all ties and tapes are properly fixed at joints.
 - Clear all debris and waste material.
 - Do not drop any objects.
 - Fence off the ground and display warning signs to alert persons not to come near

the affected area.

- In the course of the construction, alteration and dismantling of nylon mesh and fans workers must wear protective equipment.

C.1.18 Protection of Public

- No unauthorized entry is allowed on site.
- The site entry shall be provided with gate and security guard to control the trespassing by persons and vehicles.
- The flashing warning light shall be installed at the entrance of the gate.
- Sufficient warnings and notices and signs shall be displayed at the entrance of the site to alert the public.
- Authorized visitors shall be provided with protective clothing including safety helmet and shall be accompanied by site representative whilst on site.
- If applicable, adequately protected pedestrian crossing or walkways must be constructed for use of the general public. These pedestrians crossing or walking must be clearly indicated.
- Cables, hoses that run across footpath or pavement must be adequately covered with timber nailed in position and ramps provided on both sides.
Warning sign to the effect that the walkway is uneven must be displayed at conspicuous places to draw the attention of the pedestrians using the walkway.
- Where appropriate, adequately lighting lamp must be provided at hoarding and barriers. Light bulbs must be adequately protected from breakage and should be replaced once damaged.
- Where appropriate, the voltage for lighting is suggested to reduce to low voltage and all electrical fittings must be adequately bonded to earth.
- Where it is necessary for loads to be swing across pavement, walkway of other public thoroughfare banksmen must be available to stop the approach of the public during the operation.
- Banksmen must be available to stop and direct the pedestrians and traffic to permit vehicle entering or going out of the site.

C.1.19 Flammable Liquids and Gases General

- Naked flames, welding and heating troches or smoking materials should be prohibited in any area where highly flammable liquids are present.
- Any spillage should be soaked up by dry earth, sand or properly absorbents.
- Drip trays should be used to catch any spillage.
- Adequate ventilation shall be ensured at highly flammable liquid storage areas.
- Adequate fire extinguisher shall be readily available where flammable liquids or gases

are present.

- “NO-SMOKING” sign shall be displayed.
- No exceed quantities of flammable liquids or gases shall be stocked.
- No flammable liquids or gases shall be allowed in confined space.
- Inspection and maintenance are required on weekly basis.

- Acetylene Gas Bottles Handling
 - Always handle cylinders with care and do not throw them or bump them heavily.
 - Do not rest material on cylinders, especially when welding or cutting.
 - Always keep cylinders in an upright position.
 - Store cylinders (full or empty) in a cool place not in the sun or near a hot surface or anything giving off heat.
 - Always open cylinder valves very slowly.
 - Always close the cylinder valve when the job is complete.
 - Keep regulators, tubes and blowpipes in perfect condition.
 - Use a regulator with gauges fitted and they are in proper working order.
 - Ensure suitable flash back arrestors are installed on regulator so as to prevent accident caused by backfire.
 - Correct type of fire extinguishers shall be available at work site when hot work in progress.
 - Compressed gas cylinder shall only be lifted by lifting cage or by trolley.
 - If an acetylene cylinder is heated accidentally or becomes hot through severe flashback or other cause, action should be taken promptly in the following manner:
 - ◁ Shut the cylinder valve.
 - ◁ Clear all personnel from the area.
 - ◁ Cool the cylinder with a copious supply of water from a fire hydrant.
 - ◁ The person directing the fire hose should be protected by some suitable shelter.
 - ◁ Continue cooling the cylinder with copious quantities of water until it is quite cool. This may be determined by removing the cooling water at intervals and watching whether the water on the cylinder dries off, or whether the cylinder remains wet.
 - ◁ Notify the supplier and emergency crew if necessary.

C.1.20 Roadwork

- All roadwork shall minimize the inconvenience and potential hazard to all road users.
- All persons working on or near the carriageway shall wear high visibility reflective jackets.

- Sufficient numbers of lighting; signing and guarding shall be prepared and placed.
- If it is applicable, valid road permit shall be obtained and copies shall be available on site.
- Where the length of control ex. 15 M but not ex. 30M shall use portable light or GO/ STOP signs.
- Where the length of control exceeds 30 M shall use portable traffic light signals.
- Interlocked guarding shall be provided where necessary for protection of pedestrians.
- Flasher lamps shall be placed to the height of 1.2 M.
- Automatic reversing warning indicators should be fitted on all road working vehicles and machines.
- Workers should be instructed of the use of thermoplastic substances and bituminous materials supplied and used in hot form.

C.1.21 Health and Safety in Office

- All sites offices, depot and stores shall be provided with adequate lighting and ventilation.
- All electricity installations shall be in charge of a licensed electrician and inspected at regular intervals.
- Properly signed safe access from site entrance to site office shall be provided.
- All steps, stairs and floors in the office shall be maintained in good condition and free from tripping hazard.
- Adequate signed fire-fighting equipment; fire exit signs and emergency escape route shall be provided.
- Planned fire drill and evacuation shall be practiced in connection with emergency program.

C.1.22 Excavation

- Site manager shall obtain all utility drawings from utility companies, consider suitable work methods and the work.
- Before excavation begins on any site, the stability of the ground should be assessed and verified.
- Before work begins on any excavation, the position of all underground services such as sewers, gas pipe, water pipe and electric cables that may cause danger during the work must be identified.
- Trial holes shall be done whenever necessary.
- Gas, water, electrical and other public utility should be shut off or disconnected if

necessary to prevent danger.

- If underground pipes, conductor etc. cannot be removed or disconnected, they should be fenced, hung up or otherwise protected.
- Excavations should be examined by a competent person at a regular interval to ensure the soil stability.
- Sides of excavation should be thoroughly inspected by a competent person:
 - After an interruption in work of more than one day;
 - After an unexpected fall of ground;
 - After substantial damage to supports;
 - After heavy rain or storm
- Safe means of access and egress should be provided to every place where persons are employed in excavations.
- No person, plant and equipment should work on loose ground if the slope is too steep to ensure a safe foothold.
- No ground should be undermined without adequate support.
- When loose masses or large boulders and rocks are encountered they should be removed as soon as practicable from above; and workers should leave and kept out of the danger zone until it is safe to return.
- Where persons are working at different levels, adequate means should be provided to prevent persons below from being struck by tools or other objects falling from above.
- As far as practicable, excavation should be kept free from water and effectively protected with tarpaulin.
- When internal combustion engines are operated in an excavation, steps should be taken to avoid the accumulation of dangerous gases by providing exhaust scrubbers, improved ventilation or other effective means.
- Suitable barriers should be erected as closed as practicable to the edge of the excavation. These barriers should be provided such that they may not fall into the excavation causing danger to the person below.
- No load, plant or equipment should be placed or moved near the edge of any excavation where it would be likely to cause a collapse of the size of the excavation and thereby endanger any person.
- Ladder should extend from the bottom of the excavation to at least 1 meter above the ground with suitable landings.
- All struts, braces and walling in excavations should be adequately secured so as to prevent their accident displacement
- Temporary sheet piling installed for the construction of a retaining wall should not be removed until the wall has attained its full strength.
- It must ensure no person is working below when filling of material by machine.

C.1.23 Manual Handling

- Mechanized method shall be planned for material handling tasks as far as possible.
- Project Safety Officer or competent person appointed shall conduct manual handling assessments. This includes if 10 or more employees are normally employed at a workplace at any time to undertake manual handling operations, safety officer will be appointed as competent person for carrying out the manual handling assessment and monitor the carrying out of preventive and protective measures.
- The weight to be lifted must be within the lifting capacity of the individual worker.
- Ensure the lifting and lowering areas are clear of tripping hazards and likewise check the route over which the load is to be carried.
- One person should give directions during lifting, carrying and loading in team lifting.
- The feet shall be positioned about a hip's width apart, one foot slightly in front of the other to maintain a comfortable balance of the body.
- The back should be straight from hips to shoulder.
- Arms should be close to body and well tucked in to provide maximum support the load.
- The load should be tilted with hands not fingers.
- The load should be lift by straightening the legs so that the body and load move upwards in unison
- All movement should be smooth and natural. Jerking, twisting and straining movements should be avoided.

C.1.24 Temporary Works

- Where relevant, a method statement shall be prepared by competent person for temporary work including but not limited to formwork and false work.
- Temporary work coordinator of competent knowledge shall be appointed to supervise temporary work.
- When necessary, design, erection, installation, loading and unloading of temporary works shall be checked and certified by a professional engineer.
- Basic guidance for temporary works are:
 - Component of temporary work erection shall be of sound material;
 - Works shall be carried out by competent workers;
 - Works shall be carried out according to method statement and supervised;
 - Safe means of access and egress shall be provided including for those to inspect the temporary work. Where relevant , suitable guardrails shall be provided;
 - Follow the control measures and safe system of work as a result of Risk Assessment;

- Temporary work structure shall be checked by technical competent persons on daily and weekly basis. The safety checklist must be endorsed by a professional Engineer to suite for the live site situation.

C.1.25 Structural Steel Erection

- Major hazards of structural steel erection are fall from height, falling of objects and instability of structure during erection so that risk assessment shall be conducted so as to recommend control measures.
- Safety consideration shall be given at design stage and a method statement shall be prepared.
- Identify the erection sequence and ensure safe means of access and working places;
- Identify the lifting points and loading of components for safety handling, lifting, storing, stacking and transportation of components;
- Consider the ground bearing capacity and existing underground services;
- Provide and use appropriate type of plant and equipment as specified in method statement;
- Work shall be supervised;
- Work team involved in structural steel work shall be informed about the sequence of work and method statement.
- Suitable storage areas for components waiting for erection shall be provided.

C.1.26 Welding Operation

- No welding or cutting operation should be allowed near places where combustible material are stored, or near material or plant where explosive or flammable dust, gases or vapor are likely to be present or given off.
- Combustible materials and structure that cannot be removed from the vicinity of welding operations should be shielded or protected by other suitable means.
- Welders should wear fire-resistant protective clothing, helmets and goggles with suitable filter lenses.
- Welders should wear clothing that is free from grease, oil and other flammable material.
- Workers when removing excess metal, slag, etc. should wear suitable personal protective equipment; chip away from the body; and ensure that other person are not struck by chips.
- Adequate precautions such as welding screen should be taken to protect persons working or passing near welding operations from dangerous sparks and radiation.
- Suitable fire extinguisher should be kept ready for immediate use at places where welding is done.
- When welding and cutting operations are carried out in confined space, adequate

- ventilation by means of exhaust fans or forced draught should be constantly provided.
- Electrode conductors or cables should not be excessive in length.
 - Return conductors should be taken directly to the work and securely connected mechanically to it or to the work bench, floor, etc.
 - Frames of arc-welding machines should be effectively earthed.
 - In hand-operated arc-welding machines, cables and cable connectors used in arc-welding circuits should be effectively insulated on the supply side.
 - The outer surface of electrode holders of hand-operated arc-welding machines, including the jaw should be effectively insulated.
 - When lengths of cable have to be jointed, only insulated connectors should be used, on both the earth line and the electrode holder line.
 - Welding circuits should be switched off when not in use.
 - Electrodes should only be inserted in the holder with insulating means such as insulating gloves.
 - No person shall carry out welding with wet body or welding in wet.

C.1.27 Site Traffic and Site Transport

- Operators should be experienced and licensed drivers regardless of whether they are operating on or off, on trained if for special type of vehicle.
- When the driver leaves the driving seat, the engine of the vehicle or machine shall be switched off, the gear engaged and parking brakes applied.
- Vehicle or machine should only be backed under the direction of a trained banksman. In dumping areas, the banksman should be identified by a reflecting jacket.
- Vehicle or machine regularly used for transportation of personnel, but not designed for the purpose, shall be provided with safe seating, and side and end protection to prevent falls.
- All site vehicles and transports shall be well maintained in a safe working condition.
- The outdoor speed limit for all vehicles on site is 8 Km per hour. Sufficient numbers of speed limit signs shall be displayed at site entrances and along vehicle access.
- Vehicle accesses shall be of sufficient width to allow the passages.
- Where appropriate, mirrors shall be provided at corners and maintained properly.
- No vehicle or machine, except approved by the Main Contractor or the Owner, shall be operated in any building or structure.
- Vehicle or machine must keep the headlights on and be equipped with sufficient warning signals when in operation indoor.
- Sufficient signing, lighting and guarding shall be provided for work to be carried out along vehicle access.
- Workers work along vehicle access shall wear reflective clothing.
- All vehicles shall use low gear when running down inclined road.
- Where appropriate, wheel washing bay shall be provided for moving mud prior to going onto public access.

- All vehicles and transports shall be parked at designated areas so those site roads, especially emergency escape routes, are not obstructed.
- Reversing audible warning shall be equipped to all site vehicles and transports.
- No motor cycle or bicycle is permitted for any transportation means on the Site.
- No driver who is under the influence of alcoholic drinks or the like substances is permitted to operate a vehicle or plant on the Site. Otherwise, he/she will be removed from the Site immediately and will not be allowed to re-enter the Site.

C.1.28 Wood working Machines

- Woodworking machine must not be used by anyone who has not received training or instruction.
- No person under eighteen years of age shall be employed on any woodworking machine.
- Woodworking machine shall be maintained in good condition.
- The working area shall be kept clean, free from obstruction.
- Finished products shall be stacked properly.
- Safety devices must be provided and used properly.
- Power must be switched off during repair or inspection.
- No smoking shall be allowed in woodworking area and suitable fire extinguishers shall be readily available.
- The following safety devices must be provided and safety regulations should be observed where a circular saw is used:

Adjustable Top Guard

- The guard made of stiff sheet metal and normally is semi-circular;
- The guard shall be adjustable to various levels to suit the thickness of wood;
- Proper adjustment of the guard must be made before work is started so that the wood may just pass underneath it.

In the event of the operator slipping, the guard shall be able to prevent his body coming in contact with the saw teeth. ◀ Adjustment of the guard shall only be made whilst the saw is at rest.

Riving Knife

- The riving knife shall be fixed that the distance between the knife and the saw teeth is no less than 3 millimeters and not more than 12 millimeters;
- The bolts or studs for securing the knife should be properly tightened to prevent being pulled out against the revolving saw and caused damaged.

Under Bench Plate

- This plate shall be installed to prevent workers from being hurt by the saw when removing sawdust;

- The sheet metal used for guarding each side of the saw should not more than 150 mm apart;
- The bottom side should be at least 50 mm lower than the saw teeth.

Push-sticks

- Operators to prevent the hands from being too closed to the saw shall use push sticks.

Emergency Stop switch

- An efficient stopping switch shall be provided and be readily and conveniently operated by the person in charge of the machine.

C.1.29 Abrasive Wheels

- Check the speed of the spindle of the machine does not exceed the maximum permissible speed of the wheel as specified by the manufacture.
- All mounting of wheels must only be done by competent persons appointed in writing and subject to an audit procedure which able to ensure no abrasive wheel is mounted other than persons appointed. Such procedure shall be part of the regular checks or inspection of abrasive wheel.
- A wheel should not be mounted on a machine for which it is not intended and certainly not on any makeshift apparatus or where there is a vibration of the machine.
- The bush, if any, should not project beyond the sides of the wheel.
- The wheel should be fit freely but not loosely on the spindle.
- Flanges should not be less than one-third of the diameter of the wheel and their bearings surface should be true and free from burrs.
- A guard should be provided and kept in position at every abrasive wheels, unless the nature of the work absolutely precludes its use, for the following purposes:
 - To hold the wheel parts in event of breakage.
 - To protect the wheel from accident damage.
 - To prevent the operator from coming into contact.
 - To prevent an oversize wheel being fitted.
- For bench and floor stand, a work rest has to be provided and properly adjusted as close as possible, in any case not exceeding 3.2mm (1/8 inch), to the wheel.
- Transparent screens, which are fitted in front of the exposed part of the wheel, shall be provided.
- Persons carrying out dry grinding operations and turning or dressing an abrasive wheel should wear properly fitted eye protector and protective clothing in cases.
- There should have trained machine operators to operate machine safety in the workshop.
- The maximum permissible speeds of the wheels and the spindle, statutory warning notice for using abrasive wheel should clearly be displayed.

- The working floor surrounding the abrasive wheel should kept clear of loose material, in good and even condition and prevented from becoming slippery.
- An efficient stopping switch shall be provided and be readily and conveniently operated by the person in charge of the machine.

C.1.30 Substances Hazardous to Health

- Material safety data sheet shall be obtained and Safety Officer shall conduct substance assessments.
- Direct contact with chemicals shall be avoided as much as possible and amount to be chemical applied shall be as low as possible.
- Material safety data sheet for substance/material shall be available.
- No person shall work alone without supervision when using particular dangerous goods.
- All substance containers shall clearly be labeled in accordance with statutory requirements and warning signs shall be posted at working area to warn persons passing by.
- Suitable first aid equipment and sufficient amount of clean water shall be available on site.
- Adequate training, information and instruction should be provided to relevant parties.
- Substances should not be left unattended unless stored in suitable danger goods store.
- Prolonged exposure to chemical shall be avoided.
- No eating, drinking or smoking is allowed.
- Sufficient correct type of personal protective equipment shall be available and used.
- Amount of substances stored inside the workplace shall be limited to necessary to complete the daily job requirement.
- Substances shall be stored according to the compatibility categories.
- Curb shall be erected around store containers to prevent spillage flow into drainage system. Any disposal of waste shall be separately packed according to their categories and dump by cleaning contractor when necessary.
- Mechanical ventilation shall be provided when necessary.
- The volume of airflow shall be of sufficient. Guidance of airflow might refer to occupational exposure limit (OEL) when necessary.

C.1.31 Alcohol Control

Alcohol Breath Test (used for the measure of the Blood Alcohol Concentration) for workers of contractors will be done upon the request from the Owner. Regardless of the limit imposed, workers of contractors must be conscious of being in the possession of their faculties to perform activities.

- Breath Alcohol Concentration limits:
 - ✓ Workers performing critical activities: BrAC=0
 - ✓ Workers performing non-critical activities: BrAC≤0.24mg/l

		BrAC Test Results	
		0 < BrAC ≤ 0.24mg/l	BrAC > 0.24mg/l
1	Workers of contractors performing critical activities	The worker must not perform the assigned activities. He/she can be allocated to other non-critical activities, or be suspended from work for the rest of the working period or day, as considered appropriate by the project/contract manager.	The worker must be suspended from work for the rest of the working period or day, as considered appropriate by the project/contract manager.
2	Workers of contractors performing non-critical activities	No action required	The worker must be suspended from work for the rest of the working period or day, as considered appropriate by the project/contract manager.

- Alcohol Breath Test shall be performed at the work place to contractors' workers upon decision of the Owner and proactively by the contractor.
- The tests shall be done using alcohol test kits provided by the Owner or by the Contractor, in accordance with the manufacturer's instructions.
- Test results exceeding the limit shall be documented. Tests results shall be considered restricted information that can only be made available to the tested person, employees in charge of the control process, and contractors' hierarchies and the respective project/contract manager in the case of contractors' workers.
- Tests conducted shall be recorded.

Part D

Appendixes

- Appendix I - Certificate of Competency form
- Appendix II - Sample of Contractor's Monthly Safety Reports
- Appendix III - Sample of Method Statement
- Appendix IV - Sample of Risk Assessment

Appendix I - Certificate of Competency form

Contractor Name: _____

Emp. No	Employee Name	Holder of Occupational safety card	Safety officers/ supervisors	Operation and/or inspection of lifting appliances, gears and hoists	Erection, alteration, dismantling and inspection of plant and machinery	Erection, alteration, dismantling and inspection of scaffolds	Operation and inspection of excavations	Lifting Operation and Hand Signaling	Hot work	Inspect and maintain electrical appliance	First aider	Inspect air compressor	Risk assessment for confined space	Installation, alteration, dismantling and inspection of electrical power supply	Others subject (please specify)	Remark

Note: Please refer to the requirements of H&S Manual clause A.3.2. Contractors Responsibilities.

Company Chop:

Issue Date:

Appendix II – Sample of Contractor’s Monthly Safety Reports

ABC Contractor Company Limited
Monthly Site Safety Report No. XX
Contract No. XXXX
Contract Title: XXXX

1. Reportable Accident

1.1 No reportable accident was noted within this reporting period.

- a. Number of reported accident for September : 0
- b. Cumulative number of accident : 0
- c. Total man-days worked for September : 0
- d. Total man-hours worked for September : 0
- e. Cumulative man-hours worked : 0
- f. Accident rate for September : 0
- g. Cumulative accident rate : 0

1.2 Accident statistics

Month/2017	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average person employed per day	0	0	0	0	0	0	0	0	0			
No. of accident	0	0	0	0	0	0	0	0	0			
Frequency rate	0	0	0	0	0	0	0	0	0			

Month/2017	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average working hours per day	0	0	0	0	0	0	0	0	0			
No. of accident	0	0	0	0	0	0	0	0	0			
Frequency rate	0	0	0	0	0	0	0	0	0			

Appendix II – Sample of Contractor’s Monthly Safety Reports

ABC Contractor Company Limited
Monthly Site Safety Report No. XX
Contract No. XXXX
Contract Title: XXXX

2. Safety Training

- 2.1 XXX sessions of Tool Box talks Training and 6 sessions of Induction Training were conducted in XXX 2017. The corresponding training course attendance and training records were attached.

3. Site Safety & Environmental Committee Meeting

- 3.1 Site SHEQ Committee Meeting was carried out at XXX 2017. (see attachment)

4. Site Safety Inspection

- 4.1 Joint Site Safety inspections were carried out on XXX, XXX, XXX respectively.

- 4.2 Safety Supervisor Inspection records are attached.

5. Revision of Safety Plan

- 5.1 Revised Safety Plan was submitted by XXX 2017 for CEM retention.

6. Site Inspection By Government Department

Nil

7. Dangerous incident and Nearly-miss accident

Nil

8. Competent Persons

- 8.1 The Competent Persons List is attached.

9. Anti-mosquito weekly inspection reports and monthly audit (if applicable)

Appendix II – Sample of Contractor’s Monthly Safety Reports

ABC Contractor Company Limited
Monthly Site Safety Report No. XX
Contract No. XXXX
Contract Title: XXXX

9.1 The monthly ovitap index for August was XX%. The anti-mosquito inspections were carried out for XXX (see attached).

9.2 The record photos of applying Larvicidal Oil at XXXX area are attached.

10. Risk Assessment

10.1 Risk assessments were submitted for CEM. (see attached Risk Assessment Index)

Prepared By:

Chan Tai Man (Contractor Safety Officer)

Date: XXX 2017

Appendix II – Sample of Contractor’s Monthly Safety Reports

ABC Contractor Company Limited
Monthly Site Safety Report No. XX
Contract No. XXXX
Contract Title: XXXX

Safety Training for the reporting month:

Summary of Tool Box Talk

Topic	Date	No. of attendants
Total		

Summary of Induction Course Training

Company	Date	No. of attendants
Total		

Contractor Name	Appendix III – Sample of Method Statement	CONTRACT NO. XXXXXX
	<u>DOCUMENT TITLE:</u>	DOCUMENT REF.
	METHOD STATEMENT FOR DISTRIBUTION OF O/H LINE MAINTENANCE WORKS (INSULATOR INSPECTION & CLEANING)	XXXX
<div>METHOD STATEMENT FOR DISTRIBUTION O/H LINE MAINTENANCE WORKS (INSULATOR INSPECTION & CLEANING)</div>		
Page 90 of 94		

Contractor Name	Appendix III – Sample of Method Statement	CONTRACT NO. XXXXXX
	<u>DOCUMENT TITLE:</u>	DOCUMENT REF.
	METHOD STATEMENT FOR DISTRIBUTION OF O/H LINE MAINTENANCE WORKS (INSULATOR INSPECTION & CLEANING)	XXXX

REVISION CONTROL

Rev. No.	Date	Checked by	Reviewed by	Approved by	Description
0	DD/MM/YYYY	XXX		XXX	

Contractor Name	Appendix III – Sample of Method Statement	CONTRACT NO. XXXXXX
	<u>DOCUMENT TITLE:</u>	DOCUMENT REF.
	METHOD STATEMENT FOR DISTRIBUTION OF O/H LINE MAINTENANCE WORKS (INSULATOR INSPECTION & CLEANING)	XXXX

METHOD STATEMENT FOR
DISTRIBUTION OF O/H LINE MAINTENANCE WORKS
(INSULATOR INSPECTION & CLEANING)

INDEX

- 1.0 Objectives
- 2.0 References
- 3.0 Responsibilities
- 4.0 Method of Work
- 5.0 Man Power
- 6.0 Equipments
- 7.0 Safety & Accident Prevention
- 8.0 Shop drawing sketch

Contractor Name	Appendix III – Sample of Method Statement	CONTRACT NO. XXXXXX
	DOCUMENT TITLE: METHOD STATEMENT FOR DISTRIBUTION OF O/H LINE MAINTENANCE WORKS (INSULATOR INSPECTION & CLEANING)	DOCUMENT REF.
		XXXX
<div>(Descriptions in detail)</div> <div>.....~~~END~~~.....</div>		
Page 93 of 94		

Appendix IV- Sample of Risk Assessment

Risk Assessment Report 風險評估報告

承辦商姓名 Contractor Name: _____

地點/ 工程 Location/ Project: _____

工作 Work Operations:		報告編號 Report No. :	
		參考 References:	Regulations / Procedures
評估日期 Date of Risk Assessment:		復檢者 Reviewed by:	
下次評估日期 Date of Next Review:		批准者 Approved by:	
評估者 Risk Assessed by:		批准日期 Date of Approval:	

工作活動 Work Activities	風險 Risk	危害 Hazard	受影響人士 Person at Risk	可能性 Likelihood	嚴重性 Severity	風險等級 Risk Level	控制措施 Recommended Control Measures			行動 Emergency	負責人 Action by
							工程措施 Engineering	行政措施 Administration	個人防護 Protection		

CEM

SAFETY, HEALTH, ENVIRONMENT

AND QUALITY

REQUIREMENTS & RESPONSIBILITIES

FOR MATERIALS SUPPLIERS

(Version 5)

Date: 22nd January 2015

1. CEM Policy in Safety, Health, Environment and Quality

As a provider of an essential service to the development of Macao and the well being of its population, CEM is aware of its specific responsibilities and dedicated to carrying out its activities in a sustainable way, with full respect for the legitimate expectations of all interested parties.

Therefore, CEM has established an Integrated Management System in conformity with applicable international standards (ISO 9001, ISO 14001, OHSAS 18001, ISO 14064 and ISO 20000). It will provide the framework for setting and reviewing objectives and targets in the Safety, Health, Environmental and Quality areas.

CEM committed to:

- Continuously and efficiently reducing the impact of its activities on the environment, enhancing the quality of its products and services, and improving safety and health conditions;
- Complying with all applicable legislation and regulations as well as other requirements to which it may proactively subscribe;
- Applying the best available sustainable technologies in order to minimize environmental impact and achieve the highest safety, health and quality standards;
- Developing internally a Safety, Health, Environmental and Quality culture by raising awareness, educating, and training employees to carry out their activities in a responsible manner;
- Promoting awareness in the above areas amongst customers, contractors, suppliers and Macao society;
- Improving communication with customers, general public and other interested parties, for mutual benefice, as a way of enhancing the ability of all to create value.

While CEM employees are responsible for understanding and complying with this Policy, CEM management is responsible for ensuring that it is fully implemented.

2. Environmental Law for the Suppliers

CEM also expects suppliers to comply with the following laws:

1) Decree no. 35/97/M dated 25 August 1997

- The supplier / contractor shall not discharge any harmful waste water, oils, other substance or residue that can cause pollution in the area adjacent to the territorial sea, ports, rivers, docks, beaches and other areas under the jurisdiction of the Maritime Administration.
- The supplier / contractor shall maintain safety all the time for their ship(s) during sailing, embarking, unloading and mooring. Pouring of waste or any other materials, such as lubricants and liquid fuel, into the sea is prohibited. It is also not allowed to pollute or occupy the areas that are under the jurisdiction of the Maritime Administration.
- The suppliers/contractors should comply with the safety rules that were set by the [Marine and Water Bureau](#), for handling hazardous materials in the dock.

2) Decree no. 58/95/M dated 14 November 1995, article 268

Suppliers/contractors who do not comply with laws and regulations by performing the following actions will be penalized:

- Pollute water or soil, or by any other way degrade their quality;

- Pollute air by using machines or installations; or
 - Produce disturbing noise by using equipment, installations or vehicles.
- 3) The suppliers/contractors shall ensure the safety of people and properties, and the quality of the environment, in accordance with Decree no.11/99/M dated 22 March 1999.

The above laws are not exhaustive. Suppliers should check the new environmental laws that are in force in Macao from time to time.

Below are list of Safety, Health & Environmental legislations in force in Hong Kong SAR and Mainland China that CEM also proactively subscribed to as additional requirements to be observed during service provision:

- 1) The Construction Sites (Safety) Regulations
- 2) The Factories and Industrial Undertakings (Safety Offices and Safety Supervisors) Regulations
- 3) The Factories and Industrial Undertakings (Confined Spaces) Regulations
- 4) The Factories and Industrial Undertakings Ordinance (Section 6A & 6B)
- 5) The Factories and Industrial Undertakings (Dangerous Substances) Regulations
- 6) The Dangerous Goods Ordinance
- 7) The Electricity (Wiring) Regulations
- 8) The Boiler and Pressure Receiver Ordinance
- 9) Noise Control Ordinance (Cap 400)
- 10) Air Pollution Control Ordinance (Cap 311)
- 11) Water Pollution Control Ordinance (Cap 358)
- 12) Waste Disposal Ordinance (Cap 354)
- 13) Waste Disposal (Chemical Waste) (General) Regulation (Cap 354)
- 14) Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap 354)
- 15) Ozone Layer Protection Ordinance (Cap.403)
- 16) Dumping at Sea Ordinance (Cap. 466)
- 17) Environmental Impact Assessment Ordinance (Cap. 499)
- 18) Regulations on the Safety Administration of Dangerous Chemicals
- 19) Inventory of the Forbidden Import Chemicals and the Strictly Controlled Import Toxic Chemicals
- 20) Regulation of the First-Import Chemicals and the Import/Export Toxic Chemicals
- 21) Provisional Regulations on Environmental Protection in Cases of Wastes Importation
- 22) Regulations of the People's Republic of China on the Control Over Dumping Wastes into the Sea Waters
- 23) Control over prevention of pollution by vessels in sea waters
- 24) Control over dumping wastes into the sea waters
- 25) Prevention and Control of Atmospheric Pollution
- 26) Prevention and Control of Pollution from Environmental Noise
- 27) Prevention and Control of Water Pollution
- 28) Environmental Protection Law of the PRC
- 29) Water Law of the PRC
- 30) Inventory of the Hazard Wastes

3. Responsibility of CEM Materials Suppliers

CEM suppliers are responsible for understanding and complying with the above Policy as well as the regulations stated in Section 2. **In case the suppliers/contractors offend against the laws as stated in this document, which leads to environmental pollution and the likes, they are fully responsible to provide remedy for the problem. Otherwise, CEM reserves the right to terminate the contract/purchase order.**

- 3.1** CEM suppliers are required to submit the following documents to CEM with their proposal **(Please specify if not applicable):**

1) Technical notice for any equipment and/or safety data sheet **for any chemical materials including the potential impact and risk on environment, and the safety risk for users.**

These documents usually include:

- A general description

- Physical data

- Stability, toxicology for chemical products

- Transport and handling information

- Individual protection tools

- Certificate(s) of calibration of the measuring equipment

- Training records and experience of the staff for operating the measuring equipment

2) Disposition or treatment of waste:

A detailed description of how to dispose waste (in the form of gas, liquid and solid) during the execution and completion of work.

3.2 All materials or equipment should be identified and labeled with the international symbols (pictograms form) representing the dangers, when deliver to CEM.

CEM

SAFETY, HEALTH, ENVIRONMENT

AND QUALITY

REQUIREMENTS & RESPONSIBILITIES

FOR SERVICES SUPPLIERS

(Version 6)

Date: *14 July 2017*

1. CEM Policy in Safety, Health, Environment and Quality

As a provider of an essential service to the development of Macao and the well being of its population, CEM is aware of its specific responsibilities and dedicated to carrying out its activities in a sustainable way, with full respect for the legitimate expectations of all interested parties.

Therefore, CEM has established an Integrated Management System in conformity with applicable international standards (ISO 9001, ISO 14001, OHSAS 18001, ISO 14064 and ISO 20000). It will provide the framework for setting and reviewing objectives and targets in the Safety, Health, Environmental and Quality areas.

CEM committed to:

- Continuously and efficiently reducing the impact of its activities on the environment, enhancing the quality of its products and services, and improving safety and health conditions;
- Complying with all applicable legislation and regulations as well as other requirements to which it may proactively subscribe;
- Applying the best available sustainable technologies in order to minimize environmental impact and achieve the highest safety, health and quality standards;
- Developing internally a Safety, Health, Environmental and Quality culture by raising awareness, educating, and training employees to carry out their activities in a responsible manner;
- Promoting awareness in the above areas amongst customers, contractors, suppliers and Macao society;
- Improving communication with customers, general public and other interested parties, for mutual benefice, as a way of enhancing the ability of all to create value.

While CEM employees are responsible for understanding and complying with this Policy, CEM management is responsible for ensuring that it is fully implemented.

2. Laws for the Services Suppliers

Suppliers shall follow up and comply with the following local laws:

2.1 Environment

1) Decree no. 35/97/M dated 25 August 1997

- The supplier shall not discharge any harmful waste water, oils, other substance or residue that can cause pollution in the area adjacent to the territorial sea, ports, rivers, docks, beaches and other areas under the jurisdiction of the Maritime Administration.
- The supplier shall maintain safety all the time for their ship(s) during sailing, embarking, unloading and mooring. Pouring of waste or any other materials, such as lubricants and liquid fuel, into the sea is prohibited. It is also not allowed to pollute or occupy the areas that are under the jurisdiction of the Maritime Administration.
- The suppliers should comply with the safety rules that were set by the Marine and Water Bureau, for handling hazardous materials in the dock.

2) Decree no. 58/95/M dated 14 November 1995, article 268

Suppliers who do not comply with laws and regulations by performing the following actions will be penalized:

- Pollute water or soil, or by any other way degrade their quality;
 - Pollute air by using machines or installations; or
 - Produce disturbing noise by using equipment, installations or vehicles.
- 3) The suppliers shall ensure the safety of people and properties, and the quality of the environment, in accordance with Decree no.11/99/M dated 22 March 1999.

2.2 Health and Safety

- 1) Occupational Noise Regulation, decree no. 34/93M
- 2) Hygiene and Safety Regulation for industrial workshops, decree no. 57/82M
- 3) Hygiene and Safety Regulation for commercial area, office, decree no. 37/89M
- 4) Industrial Safety and Hygiene Regulation for construction, decree no. 44/91M

The above laws are not exhaustive. Suppliers should check the new environmental laws that are in force in Macao from time to time.

Below are list of Safety, Health & Environmental legislations in force in Hong Kong SAR and Mainland China that CEM also proactively subscribed to as additional requirements to be observed during service provision:

- 1) The Construction Sites (Safety) Regulations
- 2) The Factories and Industrial Undertakings (Safety Offices and Safety Supervisors) Regulations
- 3) The Factories and Industrial Undertakings (Confined Spaces) Regulations
- 4) The Factories and Industrial Undertakings Ordinance (Section 6A & 6B)
- 5) The Factories and Industrial Undertakings (Dangerous Substances) Regulations
- 6) The Dangerous Goods Ordinance
- 7) The Electricity (Wiring) Regulations
- 8) The Boiler and Pressure Receiver Ordinance
- 9) Noise Control Ordinance (Cap 400)
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- 20) Regulation of the First-Import Chemicals and the Import/Export Toxic Chemicals
- 21) Provisional Regulations on Environmental Protection in Cases of Wastes Importation
- 22) Regulations of the People's Republic of China on the Control Over Dumping Wastes into the Sea Waters
- 23) Control over prevention of pollution by vessels in sea waters
- 24) Control over dumping wastes into the sea waters
- 25) Prevention and Control of Atmospheric Pollution
- 26) Prevention and Control of Pollution from Environmental Noise
- 27) Prevention and Control of Water Pollution

- 28) Environmental Protection Law of the PRC
- 29) Water Law of the PRC
- 30) Inventory of the Hazard Wastes

3. Responsibility of CEM Materials Suppliers

CEM suppliers are responsible for understanding and complying with the above Policy as well as the regulations stated in Section 2. **In case the suppliers/contractors offend against the laws as stated in this document, which leads to environmental pollution and the likes, they are fully responsible to provide remedy for the problem. Otherwise, CEM reserves the right to terminate the contract/purchase order.**

3.1 CEM suppliers are required to submit the following documents to CEM with their proposal **(Please specify if not applicable):**

- 1) Technical notice for any equipment and/or safety data sheet ***for any chemical materials including the potential impact and risk on environment, and the safety risk for users.***

These documents usually include:

- A general description

- Physical data

- Stability, toxicology for chemical products

- Transport and handling information

- Individual protection tools

- Certificate(s) of calibration of the measuring equipment

- Training records and experience of the staff for operating the measuring equipment

2) Disposition or treatment of waste:

A detailed description of how to dispose waste (in the form of gas, liquid and solid) during the execution and completion of work.

3) Action Plan for any possible incident/accident:

3.1.1 **A detailed action plan** for any possible incident/accident that may occur during the execution of work.

3.1.2 **The name and contact means** of company representative(s) should be printed on the action plan.

Name in Full	Contact Telephone No.	Position
_____	_____	_____
_____	_____	_____

4) Occupational safety card (Cartão de Formação em S.O. para a Construção Civil):

The suppliers shall provide **the name list** of their staff held the **Occupational Safety card issued by DSAL** (The Macau Labour & Employment Affairs Bureau), if any.

Name in Full	Occupational Safety Card No.	Position
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

It is compulsory to submit a photocopy of the cards to CEM as Macau Government has legislated that all employees who work at a site should hold a card. In order to cooperate with the government to develop the safety concept, **CEM will take into consideration** in the selection of contractors which workers possess the “Occupational Safety Card” issued by DSAL (The Macau Labour & Employment Affairs Bureau). Suppliers are highly recommended to encourage their employees who work at engineering and construction sites to obtain the “Occupational Safety Card”. Such information should be provided to CEM with the proposal.

- 5) Any other documents and/or proofs to be considered as relevant for the contract, such as authorization, specific qualification, competence of the employees, etc.

List of Documents:

6) Site Safety

Suppliers shall provide the list of Hazardous Materials which will be used in the works; such as flammable liquid, compression gas, explosion gas, etc.

3.2 Personal Safety Equipment

Suppliers shall provide adequate and valid personal protective equipment to their employees which depend on their work environments and replace the expired one; when required for example: suitable uniforms; ear protectors; safety shoes; goggles; respirator gloves; welding masks; helmets; safety belts; chemical suits.

- 3.3** All materials or equipment should be identified and labelled with the international symbols (pictograms form) representing the dangers, when deliver to CEM.

- 3.4** *In accordance with our tender documents, CEM suppliers are required and reminded to submit the following documents to CEM and accepted by our Engineer before/ after commencement of the activities within CEM premises, for details, please refer to the tender document “ Health and Safety Manual For CEM Contractors”.*

*Please confirm if any constraint on each item from your side and **specify if not applicable:*** _____

<i>Item</i>	<i>Documents to be submitted</i>	<i>Received and approved by</i>	<i>Deadline of submission</i>
1	Safety plan	CEM Project Manager/ Representatives	Must be submitted by Contractors, within seven (7) days after the confirmation of the Contract or one month before the commencement of

			<i>work but depending on which circumstance occur first, to the CEM Project Manager for review and endorsement.</i>
2	<i>Method Statement together with the relevant Job Hazard Analysis or risk assessment</i>		<i>Prior to commencement of work.</i>
3	<i>Filled form of "Certificate of Competency" with the Contractors' company chop.</i>		<i>Prior to processing the worker's site entry registration.</i>
4	<i>SHE personnel's resume with detailed listing of his/ her past experiences</i>		<i>Prior to his/ her appointment.</i>
5	<i>Copy of Form 1 of Macau Law 44/91/M</i>		<i>Within 1 week after started the works.</i>
6	<i>Contractors' Monthly Safety Report</i>		<i>Prior to the contractor monthly meeting.</i>
7	<i>Reporting of Incident or Accident or near miss</i>		<i>Immediately report the accident to the local Labor Affairs Bureau in writing, CEM and local police.</i> <i>A preliminary written report- within 24 hours to the CEM.</i> <i>A comprehensive written investigation report- within seven (7) working days.</i>
8	<i>Report of Internal Safety Audit</i>		<i>Within twenty-eight (28) days after the completion of the audit.</i>

SHE Non-Compliance in Contracts Managed by CEM

(Version 4)

Date: 1st Nov 2023

Introduction

CEM is committed to the overall objective of ZERO ACCIDENTS not only in its own activities but also in those performed by its Contractors. As such, CEM requires that Contractors fully comply with current generally applicable health and safety legislation and best practices, as well as with the specific health and safety contract requirements. In regard to the importance that such compliance has for CEM and to foster contractor's awareness and commitment to the above objective, a set of rules as described hereafter, shall apply to any contract celebrated with CEM wherever applicable.

Breach of safety obligations

The Contractor in control of the site is responsible for presiding and maintaining safe working and environmental conditions for workers and everyone on-site.

Contractors that failed to comply with the Safety & Health and Environmental (SHE) requirements namely personal safety (use of PPE, work safety conditions, installations hygiene/housekeeping, human behavior), installations safety (working installations and working preparations) as well as equipment safety (machine guards, earthed appliances, fire extinguishers) without reasonable justification are considered committing SHE non-compliance and are liable to administrative charges in accordance with the attached list of "Fines/Penalties for SHE Non-Compliance".

For breach of "CEM Safety, Health, Environment and Quality Requirements & Responsibilities for Services/Materials Suppliers" and/or "Health and Safety Manual for CEM Contractors" that resulted to an accident / incident, regardless of whether causing any damages or injuries, when proven to be attributable to the Contractor, CEM has the right to immediately interrupt or to terminate the contract and to be reimbursed of the total amount required to re-establish the situation, repair the damage and put the equipment in service. Depending on the severity, CEM has the right to apply a penalty between MOP50,000.00 to MOP250,000.00 on the Contractor.

Application of Fines/Penalties

Whenever a breach is observed, CEM informs the Contractor verbally and in writing of the particular breach and sets a time limit for its rectification.

At the same time, CEM reserves the right to apply fines/penalties and the Contractor will receive written notification for the respective fines/penalties.

The fine/penalties will be deducted in any moneys due or to become due by CEM to the Contractor.

Use of Collected Fines/Penalties Values

The purpose of applying fines/penalties is to create awareness and, consequently, a safer and healthier work environment. Therefore, the monetary values accumulated shall be applied back into the system in the form of promotional actions such as training, posters, or the purchase of elementary personal protective equipment (safety helmet, safety shoes, eye protection, reflective vest, etc.) which are then given directly to the workers / Contractor or donation to nonprofit organizations in Macau SAR.

Fines/Penalties for SHE Non-Compliance

Item	Non-Compliance	Amount per single Incident/Accident (MOP)
1	Not wearing suitable eye protector to avoid projectile and spilled object generated when carrying out work of cutting, welding, drilling, concrete breaking and chemical process	5,000 (per worker)
2	Suitable hearing protector not being worn in environments where the daily equivalent sound level of noise exceeds 85dBA or where instructions for wearing ear protection are posted	5,000 (per worker)
3	Proper respirators not being worn when carrying out work which generates dust or chemical fumes	5,000 (per worker)
4	Not using or using substandard safety shoes, reflective vest or safety helmet, or improperly wear the Y-chin strap of the safety helmet	5,000 (per worker)
5	Not wearing clothes that can identify you as a CEM contractor or wearing a CEM contractor work permit	5,000 (per worker)
6	Suitable life jacket not being worn when carrying out the works close to the water and/ or on the workboat	7,500 (per worker)
7	Safety harness not being used properly or not used when working at a level liable to fall from a height of 2 meters or above	10,000 (per worker)
8	Failure to wear appropriate personal flame-retardant clothing or pants when performing live work, or failure to wear appropriate personal protective equipment such as a live-work helmet with a face shield	15,000 (per worker)
9	Not using or using substandard Personal Protection Equipment while performing specific work or live work	5,000 (per worker)
10	When there is a risk of falling at a height of 2 meters or above, use an "A" ladder or ladder similar to an "A" ladder as a working platform, or use a substandard working platform/scaffolding	10,000
11	Use of "A" wooden ladder which is prohibited in CEM	10,000

Item	Non-Compliance	Amount per single Incident/Accident (MOP)
12	No protective fencing provided at open edge of working place	15,000
13	Failure to correctly place traffic signage and protect trenches and provide crossings, etc. according to statutory requirement	7,500
14	Failure to provide proper and safe access/exit	7,500
15	Failure to provide sufficient and reasonable collective protection on site according to the Project Safety Plan and/or Project Manager advice	15,000
16	While the collective protection is infeasible, the contractor hasn't provided the suitable PPE to the workers	15,000
17	Protective guarding not in place or not functioning properly for revolving part of the machine	12,500
18	Safety switch or emergency stop device not being provided or not functioning properly on the bench circular saw or steel-bending machine or other machine tools	12,500
19	Failure to provide sufficient and reasonable safety device(s) on plant and machinery that is (are) described in Contract and/or Project Safety Plan and/or Project Manager advice	30,000
20	Lifting appliance or lifting gear not examined in compliance with statutory requirement before being put in use, or the other lifting gears found in abnormal state or haven't been checked regularly	12,500
21	Safety latch is missing, not fixated or malfunctioned on a hook of crane	12,500
22	Violate the safety of lifting operation or adopt incompetent operator / rigger during lifting operation	7,500
23	Substandard electric appliance in use or installed (including but not limited to the following: non-weatherproof plug and socket, non-industrial wire, non-insulated transformer / wire connection, and without earthing)	15,000
24	When performing live work, failure to use appropriate or good live work equipment or failure to isolate the surrounding environment	50,000

Item	Non-Compliance	Amount per single Incident/Accident (MOP)
25	Flash Back Arrestor not in place on oxy-acetylene cylinders or the regulator not functioning properly, or the hose with crack	15,000
26	Oxy-acetylene cylinder in use not secured in an upright position or cylinder stored haphazardly or exposed to direct sunshine	15,000
27	Flammables / combustibles not removed from a distance of ten meters from the Hot Work point or insufficient fire prevention / Hot Work Permit taken in the Hot work process	15,000
28	Having no fire watcher or valid statutory labelled fire extinguisher provided under the hot work permit	15,000
29	Entry of the confined space without prior risk assessment and/or implementing sufficient safety control measures	10,000
30	Having no watchman assigned to guard at the entrances of or allowing incompetent entrant assigned into a confined space	12,500
31	Occupancy of the public road or parking spaces after traffic license expires	30,000
32	Occupancy of the public road or parking spaces without traffic license	30,000
33	Construction area of public road exceeds the permitted area stated in the traffic license	20,000
34	Insufficient or inappropriate temporary traffic signs or measures	15,000
35	Traffic signs or hot sols were not restored within the deadline of the traffic license after work completion	20,000
36	Traffic signs or hot sols were wrongly restored after work completion	15,000
37	Improper site restoration after work completion, including removal of fences and all necessary equipment	20,000

Item	Non-Compliance	Amount per single Incident/Accident (MOP)
38	The excavation area of public road exceeds the permitted area stated in statutory license	20,000
39	Materials are improperly stored or stacked at a height of 2 meters or above with falling risk	15,000
40	The materials or consumables on site not being fenced properly or potentially creating hazards to the others	7,500
41	Disposing of construction waste, chemicals, oil, or sewage at CEM working sites	5,000
42	Inflammable liquid and/or dangerous chemical not stored properly or a secondary container not provided while in use	10,000
43	Smoking at designated non-smoking areas	3,000
44	Causing fire on site	30,000
45	Destroy and/or damage any of the fire-fighting or safety facilities	30,000
46	Failed Alcohol Breath Test (BrAC exceeding 0.24mg/l)	2,000
47	Breach of traffic rules / control at CEM premises or at work site under the management of CEM	1,500
48	Project notice not being posted in the prominent area on site, showing the information of the relevant personnel-in-charge and safety personnel	10,000
49	Excretion not in a designated hygiene facility	2,500
50	First aid kit not available or the contents of the first aid kit are insufficient or unhygienic	7,500

Item	Non-Compliance	Amount per single Incident/Accident (MOP)
51	Absence from Weekly Inspection or Monthly Safety Meeting	10,000
52	Not properly implementing entire or part of the Project Safety Plan and risk control measures	15,000
53	Not properly implementing entire or part of the Fire Safety Plan	15,000
54	Failure to provide and/or display valid statutory certificate	10,000
55	Appointing and/or employing unskilled or untrained person to operate mechanical or electrical machinery and/or equipment	15,000
56	Based on the quantity of workers on site, having insufficient safety personnel assigned as required by the Macau Government	15,000 (per person per day)
57	Breach of "CEM Safety, Health, Environment and Quality Requirements & Responsibilities for Services/Materials Suppliers" and/or "Health and Safety Manual for CEM Contractors" requirement	50,000 – 250,000
Note	1. The penalty shall be doubled if the violation causes or contributes to the injury of workers or others.	
	2. For any violations not listed in this document, CEM can refer to the corresponding laws and regulations of the Macau Government for corresponding penalties.	