

## CHECK LIST

To be filled by bidder.

ITEM	Checklist
Copy of company/ Sole proprietorship registration certificate	<input type="checkbox"/>
Copy of company GST/MIRA/VAT registration certificate and Tax clearance	<input type="checkbox"/>
Share Holders ID card copies/ Passport Copies foreigners	<input type="checkbox"/>
Copy of most recent memorandum of association	<input type="checkbox"/>
A Cover letter including proposed price and project schedule (Timeline)	<input type="checkbox"/>
Language of document shall be in English or Dhivehi	<input type="checkbox"/>
Experience – Part 1 List of Similar Projects completed over last five years	<input type="checkbox"/>
Experience – Part 2 List of Ongoing Maldive Gas Projects	<input type="checkbox"/>
This tender submission checklist, completed, signed, stamped and dated.	<input type="checkbox"/>

Signed .....

In the capacity of .....

Dully authorized to sign bids for and on behalf of

.....

(Company Name & Stamp) Date: .....



**MALDIVE GAS PRIVATE LIMITED**

Bidding

Document For

**CONSTRUCTION OF HYDRO TEST AND GENSET ROOM IN K.  
THILAFUSHI OUTLET**

**TENDER AND CONTRACT DOCUMENT**

**Reference No. MGPL-I/PD/2022/13**

11 May 2022

# **Section I. Instruction to Bidders**

## **Disclaimer**

The information contained in this Request for Proposals document (the “RFP”) or subsequently provided to Bidder(s), whether verbally or in documentary or any other form by or on behalf of the Maldivian Gas Private Limited (the “MGPL”) or any of its employees or advisors, is provided to Bidder(s) on the terms and conditions set out in this RFP and such other terms and conditions subject to which such information is provided.

Information provided in this RFP to the Bidder(s) is on a wide range of matters, some of which may depend upon interpretation of law. MGPL accepts no responsibility for the accuracy or otherwise for any interpretation or opinion on law expressed herein.

MGPL, its employees and advisors make no representation or warranty and shall have no liability to any person, including any Applicant or Bidder under any law, statute, rules or regulations or tort, principles of restitution or unjust enrichment or otherwise for any loss, damages, cost or expense which may arise from or be incurred or suffered on account of anything contained in this RFP or otherwise, including the accuracy, adequacy, correctness, completeness or reliability of the RFP and any assessment, assumption, statement or information contained therein or deemed to form part of this RFP or arising in any way for participation in this Bid Stage.

MGPL also accepts no liability of any nature whether resulting from negligence or otherwise howsoever caused arising from reliance of any Bidder upon the statements contained in this RFP. MGPL may in its absolute discretion, but without being under any obligation to do so, update, amend or supplement the information, assessment or assumptions contained in this RFP.

The Bidder shall bear all its costs associated with or relating to the preparation and submission of its Bid including but not limited to preparation, copying, postage, delivery fees, expenses associated with any demonstrations or presentations which may be required by MGPL or any other costs incurred in connection with or relating to its Bid. All such costs and expenses will remain with the Bidder and MGPL shall not be liable in any manner whatsoever for the same or for any other costs or other expenses incurred by a Bidder in preparation or submission of the Bid, regardless of the conduct or outcome of the Bidding Process

## **Introduction**

Maldive Gas Private Limited (MGPL) invites to well-qualified business entities (Local/International) engaged in construction industry to provide proposals to handle and carry out the work to build a hydro test room and gen set room, as per the terms and conditions provided in this Document.

## **Background**

Maldive Gas Private Limited (MGPL), a subsidiary of State Trading Organization plc (STO), is engaged in the natural gas distribution market since 1999, catering to a customer base of over 40,000. Over the years we have emerged as the market leader in providing Liquefied Petroleum Gas (cooking gas) throughout the Maldives. In addition to LPG, we also provide a wide range of related appliances and industrial gases such as Acetylene, Argon, Nitrogen, and Helium. We are also the sole producer and supplier of medical oxygen catering to more than 95% of hospitals throughout the country.

## **Definitions**

For the purpose of this Request for Proposal (RFP), the following words and expressions shall have the meaning hereby assigned to them except where the context otherwise requires: -

- 3.1 'MGPL' means Maldive Gas Private Limited, which expression shall unless excluded by or repugnant to the context include MGPL's representative.
- 3.2 'MGPL's Representative' means the staffs or any person authorized by who would be in charge of work and would sign the documents on behalf of the MGPL.
- 3.3 'STO' means the State Trading Organization Plc, which expression shall unless excluded by or repugnant to the context include STO's representative.
- 3.4 'Consultant' means any person / firm / company or organization engaged in rendering professional services and shall include all his associates.
- 3.5 'Bid Due Date' means 19th May 2022, 10:00 hours or date extended according to the process stated herein.
- 3.6 'Bid Stage' means the period between the date of this RFP and Bid Due Date.
- 3.7 'LOA' means Letter of Award notification.
- 3.8 'Member or Associate' means shareholder/s of the Bidder or a partner in business.
- 3.9 'Subsequent Agreements' means one or more agreements, deed, instruments executed between MGPL and Selected Bidder pursuant to the Project.
- 3.10 'Laws' means, existing Laws and Regulations of Republic of Maldives and any other applicable international protocol.

## Schedule of Bidding Process

MGPL shall endeavor to adhere to the following schedule:

<b>Event Description</b>	<b>Date</b>
2 Last date for receiving queries	16 <sup>th</sup> May 2022, 10:00hrs
3 Authority response to queries latest by	17th May 2022, 10:00hrs
4 Bid due date	19th May 2022, 10:00hrs
5 Validity of Bids	30 days of bid due date

## Pre bid Meeting

Venue: Madive Gas, K.Thilafushi Site

Time: 10:00 hrs

Date: 14 May 2022

## Addenda to the Bid Document

Before the deadline for submission of bids, MGPL may modify the Bid Documents by issuing addenda. The addenda shall be communicated in writing to all Bidders and shall become a part of the Bid Documents.

## Clarification of Bid Documents

A prospective bidder requiring any clarification of the Bid Documents may notify MGPL in writing to the mailing address [procurement@maldivegas.com](mailto:procurement@maldivegas.com). MGPL will respond in writing to any request for clarification sent to **procurement@maldivegas.com ONLY**

# Eligible Bidders

## Qualification of Bidders

The bid document shall comprise the following information in the given format and order, which Maldive Gas shall use to determine whether the Bidder possesses relevant experience, technical capacity to undertake the project works and to complete successfully in accordance to the bid. Any bid not accompanied the following in the given **format and order** shall be rejected by the Employer as non-responsive.

- a. The bidder shall not be affiliated with a firm or entity
  - b. Bidder Must Submit Past Experience Letters relating to the scope of work mentioned in this RFP.
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## 1. Cost of Bid preparation

The bidder shall bear all costs associated with the preparation and submission of this bid, and the provision of sample materials and the employer will in no case be responsible or liable for those costs.

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## 2. One Bid per Bidder

Each Bidder shall submit only one Bid by itself or as a partner in a joint venture. A Bidder who submits or participates in more than one Bid will be disqualified.

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## 3. Site Visits

Bidders are advised to examine the site of the works and obtain all information that may be necessary for preparing bid proposals.

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## 4. Bid Sum

The bidder shall fill in on the appropriate Bills of Quantities the rates and prices for all items of the Works described.

Notwithstanding any other requirement of the Bid Documents Bidders are advised that they shall be wholly responsible for and shall include in their rates all the costs associated with carrying out the Works as described in the specification.

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## **5. Addenda to the Bid Document.**

Before the deadline for submission of bids, Maldive Gas may modify the Bid Documents by issuing addenda.

The addenda shall be communicated in writing to all Bidders and shall become a part of the Bid Documents.

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## **6. Clarification of Bid Documents**

A prospective bidder requiring any clarification of the Bid Documents may notify Maldive Gas in writing to the postal mailing address shown under “Submission of Bids” in the following, Maldive Gas will respond in writing to any request for clarification received before the due for clarifications. Copies of Maldive Gas response will be forwarded to all Bidders, including a description of the enquiry but without identifying its source.

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## **7. Obvious Works**

The bidders shall include rate for where an item of work is obviously required for the type of work being undertaken then it shall be deemed to have been included even though the item is not specifically mentioned or shown in the drawings or specifications

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## **8. Discrepancies**

All participants in the Tender exercise are deemed to have read the Specifications and BOQ carefully in conjunction with all the Contract Drawings. Any discrepancies between these documents are to be brought to the attention of the Employer and clarified prior to the closing of the Tender. Should any said discrepancies be discovered at a later date, the decision of the Employer is final and any extra cost due to the contractor as a result of such discrepancies will NOT be entertained what so ever. The Contractor shall, at all times, exercise with care and professional scrutiny to ensure that there are no discrepancies and/or divergence between Contract Drawings and specifications prior to execution of any portion of the Works on site. The Contractor shall immediately give the Employer a written notice specifying any such discrepancies or divergence should he discovered such issues and the Employer shall issue instructions in regard thereto. The Contractor should exercise due diligence in this matter as a failure and/or negligence in complying with the above stated requirements may result in extra costs. Any extra costs incurred in respect therefore shall be borne solely by the Contractor.



## **9.Late Bids**

Late Bids shall not be accepted.

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## **10.Modification or Withdrawal of Bids**

The bidder may modify or withdraw his bid by giving notice in writing before the deadline prescribed for submission of bids.

The bidder's modification or withdrawal notice shall be prepared, sealed, marked, and submitted in the same fashion as described above for bids and additionally marked 'MODIFICATION' OR "WITHDRAWAL" as appropriate.

No bid may be modified after the deadline for submission of bids.

Withdrawal of a bid between the deadline for submission of bids and the expiration of the period of bid validity may result in the forfeiture of the bid bond.

## **11. Bid Opening**

Bids will be opened immediately after the deadline for Bid submission stated in the appendix

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## **12. Correction of Errors Criterion**

Bids determined to be substantially responsive will be checked by the employer for any arithmetic errors. Errors will be corrected by the Employer as follows.

- (a) Where there is a discrepancy between the amounts in figures and in words, the amount in words will govern; and
  - (b) where there is a discrepancy between the unit rate and the line item total resulting from multiplying the unit rate by the quantity, the unit rate as quoted will govern, unless in the opinion of the Employer there is an obviously gross misplacement of the decimal point in the unit rate, in which case the line item total as quoted will govern, and the unit rate will be corrected.
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## **13. Period of Bid Validity**

Bids shall remain valid, from the date of Bid opening, for the period stated in the appendix or any other date that is the subject of a Bid amendment. A Bid for a shorter duration shall be rejected as a non-responsive Bid.

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## **14. Bid Security**

The Bidder shall furnish, as part of his bid, a bid security in the amount of MRf 10,000/-. The bid security shall be guarantee from a bank located in Male' or a foreign bank which is acceptable to the Employer. The bid security shall be valid for 30 days beyond the validity of the bid.

The bank guarantee submitted as bid security shall be in accordance with the sample form of bid security form provided with this bid document. Other formats may be permitted, subject to the prior approval of the Employer.

Any bid not accompanied by an acceptable bid security shall be rejected by the Employer as non-responsive.

The bid securities of unsuccessful bidders will be returned as promptly as possible, after the expiration of the period of bid validity. The bid security of the successful bidder will be returned when the bidder has signed the agreement and furnished the required performance security.

### **The bid security may be forfeited**

- a) If the bidder withdraws its bid during the period of Bid validity; or
- b) If the bidder does not accept the correction of its bid price;
- c) In case of a successful bidder, if it fails within the specific time limit to
  - i. Sign the agreement, or
  - ii. Furnish the required performance security, or
  - iii. Furnish the required domestic preference security.

## **15. Award Criteria**

Subject to Clause 17 of the Instructions to Bidders, the Employer will award the Contract to the Bidder whose Bid has been determined to be substantially responsive to the bidding documents and most favorable, provided that the bidder has the capability and resources to carry out the contract effectively as determined by the Employer.

## **16. Employer's Right to Accept or Reject.**

Maldivian Gas reserves the right to accept or reject any bid, to accept part/ package wise and to cancel the bidding process and reject all bids, at any time prior to the award of Contract, without thereby incurring any liability to the affected bidder or bidders or any obligation to inform the affected bidder or bidders of the grounds for Maldivian Gas's action.

## **17. Notification of Award.**

The Bidder whose Bid has been accepted will be notified of the award by the Employer, in writing confirmed by registered letter, prior to expiration of the Bid Validity period.

The notification of award shall be binding and shall constitute the formation of the contract.

Upon the furnishing of a performance bond, acceptable to Employer, by the successful bidder, the Employer promptly will notify the other bidders that their bids have been unsuccessful.

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## **18. Performance Bank Guarantee.**

Within **Fourteen (14) days** of receipt of the notification of award from the Employer, the successful bidder shall furnish to the Employer a performance Bank Guarantee in an amount equal to ten percent (10%) of the Contract sum. The performance Bank Guarantee shall be valid up to six (06) months subsequent to successful completion of the project in accordance with the Conditions of the contract.

The performance bank guarantee shall be in accordance with the sample form of performance bank guarantee provided with this bid document. Other formats may be permitted, subject to the prior approval of the Employer.

The performance Bank Guarantee and the withheld amount as Performance Guarantee will be released upon successful completion of the project.”

Failure of successful bidder to comply with the requirements shall constitute sufficient grounds for the annulment of the award and forfeiture of the bid security.

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## 19. Evaluation and comparison of Bids

The submitted bids will be evaluated under the following criteria.

- a) Price:
  - a. The amount stated in the bid form & BOQ.
- b) Duration:
  - a. Completion period stated in the bid form.
  - b. Submitted work program schedule. Work program shall be prepared in MS project format and should be detailed with WBS of all Major works.
- c) Experience:
  - a. Previous experience in works of similar nature, while completing the projects within the contracted period. Completion certificates have to be submitted to validate bidder's statements. Valid completion certificates shall include the following;
    - i. Contract amount and duration with scheduled start and finish date.
    - ii. Actual completed amount, completion date and duration.
    - iii. A general statement by employer/engineer regarding the nature/scope of work and performance of the contractor with seal and signature.

The evaluation will be done by awarding points based on the following categories.

<b>Variables</b>	<b>The weightage (%)</b>
Price (Total project value including all costs)	70
Experience	20
Work Duration & Delivery	10
<b>Total</b>	<b>100</b>

## **Section II. Scope of Works**

## Scope of Works

### 1. Location of the Works

The site for the works proposed under this contract is the Island of K.Thilafushi.

### 2. Description of the Works.

The contract work constitutes the following:

1. Site clearing prior to work.
2. Concrete works for the buildings as per the drawings and BOQ.
3. Masonry & plastering as per the drawings and BOQ.
4. Door and windows/roofing as per the drawings and BOQ.
5. Electrical and plumbing works as per the drawings and BOQ.
6. Site cleaning upon completion of work.
7. Provide As-Built Drawings & supporting technical specification document upon completion.

### **NOTE:**

1. The contractor is responsible for any damages to the existing building property during construction. The contractor shall indemnify the respective party against all losses or claims.
2. Contractor shall arrange for water and electricity
3. Contractor must clean the site area after completion of the work.
4. Contractor should dispose the waste materials as per Maldives environmental rules.
5. All the items on the bills are for supply and construction unless or otherwise specified.
6. The bidders shall include rate for where an item of work is obviously required for the type of work being undertaken then it shall be deemed to have been included even though the item is not specifically mentioned or shown in the drawings or specifications or in the BOQ
7. Any discrepancies shall be notified during the clarification period; else, it should be included in the addition-omission bill.

## **Section III. General Conditions**

# 1. General Provisions

## 1.1 Definitions

In the Contract as defined below, the words and expressions defined shall have the following meanings assigned to them, except where the context requires otherwise:

### The Contract

- 1.1.1 "**Contract**" means the Agreement and the other documents listed in the Agreement.
- 1.1.2 "**Specification**" means the document as listed in the Appendix, including Employer's requirements in respect of design to be carried out by the Contractor, if any, and any Variation to such document.
- 1.1.3 "**Drawings**" means the Employer's drawings of the Works as listed in the Appendix, and any Variation to such drawings

### *Persons*

- 1.1.4 "**Employer**" means Maldive Gas Pvt Ltd, otherwise known as MGAS.
- 1.1.5 "**Contractor**" means the person named in the Agreement and the legal successors in title to this person, but not (except with the consent of the Employer) any assignee.
- 1.1.6 "**Party**" means the Employer or the Contractor.

### *Dates, Times and Period*

- 1.1.7 "**Commencement Date**" means the Commencement Date shall be within 14 days from the date of the submission of the Performance Security. The Commencement Date shall be the date specified in the notice to proceed issued by the Engineer to the Contract.
- 1.1.8 "**Day**" means a calendar day.
- 1.1.9 "**Time for Completion**" means the time for completing the Works as stated in the Bid Form (or as extended under Sub-Clause 5.3), calculated from the Commencement Date.

### *Money and Payments*

- 1.1.10 "**Cost**" means all expenditure properly incurred (or to be incurred) by the Contractor, whether on or off the Site, including overheads and similar charges, but does not include profit

### *Places*

- 1.1.11 "**Site**" means the overall working area and such other specific areas needed by the contractor to carry out the works, which have been handed over to him
- 1.1.12 "**Country**" means the country in which the Site is located

### *Other Definition*

- 1.1.13 "**Contractor's Equipment**" means all apparatus, machinery, vehicles, facilities and other things required for the execution of the Works but does not include Materials or Plant.
- 1.1.14 "**Employer's Liabilities**" means those matters listed in Sub-Clause 4.1
- 1.1.15 "**Force Majeure**" means an exceptional event or circumstance: which is beyond a Party's control; which such Party could not reasonably have provided against before entering into the Contract; which, having arisen, such Party could not reasonably have avoided or overcome; and, which is not substantially attributable to the other Party



1.1.16 "**Materials**" means things of all kinds (other than Plant) intended to form or forming part of the permanent work.

1.1.17 "**Site**" means the places provided by the Employer where the Works are to be executed, and any other places specified in the Contract as forming part of the Site.

1.1.18 "**Variation**" means a change to the Specification and or Drawings (if any) which is instructed by the Employer under Sub-Clause 8.1.

1.1.19 "**Works**" means all the work and design (if any) to be performed by the Contractor including temporary work and any Variation

## 1.2 Interpretations

Words importing persons or parties shall include firms and organizations. Words importing singular or one gender shall include plural or the other gender where the context requires.

## 1.3 Law

The law of the Contract is the law of the Republic of Maldives.

## 2. The Employer

### 2.1 Provision of Site

The Employer shall provide the Site and right of access thereto at the times stated the Appendix

### 2.2 Applying for Permits

The Employer shall, if requested by the Contractor, assist him in applying for permits or approvals which are required for the Works.

### 2.3 Employers Instructions

The Contractor shall comply with all instructions given by the Employer in respect of the Works including the suspension of all or part of the Works.

## 3. The Contractor

### 3.1 General Obligations

The Contractor shall carry out the Works properly in accordance with the Contract and remedy any defects therein in accordance with the provision of the contract and to the satisfaction of the Employer.

### 3.2 Contractors Representatives

Numbers and particulars of the person authorized to receive instructions on behalf of the Contractor.

### 3.3 Staff List

Following the acceptance of the Bid the Contractor shall immediately submit a list of contractor's staff who will be working at the project site

### 3.4 Site Log Book

Contractor shall maintain site logbook and enter all required information with respect to project activities.

### **3.5 Progress Reports**

Progress of works shall be monitored daily and reported to MGAS in writing in an approved format by the Employer.

### **3.6 Recording Information**

The contractor shall keep daily and necessary records and shall give copies of such records to engineer's representative.

Such records shall contain usage of daily resource (labor/Material), Start and finish of each item for each compound, problem faced or encountered, progress, work program for following day, staff and key personnel involved, usage of labor force and other resources including Machineries or equipment, weather condition and other many information requested by MGAS.

### **3.7 Contractors Site Area**

Throughout the period of the Contract, the contractor shall maintain the area of his operation within the limits of the Site in clean, tidy and safe condition by arranging materials and the like in an orderly manner. All rubbish, debris, waste materials and the like shall be systematically cleared from the site as it accumulates.

The Contractor shall take all steps necessary as directed by the Engineer to minimize or eliminate dust, noise or any other nuisance which may occur. Plant emitting dust, smoke, excessive noise or other nuisance shall not be permitted.

The Contractor shall satisfy himself as to the means of access to the site and other relative items affecting it for both himself, his Sub-Contractors and Suppliers.

### **3.8 Environmental Protections**

The Contractor shall take all necessary precautionary measures to ensure carrying out the works in accordance to acceptable environment norms.

### **3.9 Materials, Contractors Equipment's & Labor**

The Contractor, at his own expenses, shall provide all transport, supervision, labour, all materials and Contractor's Equipment (including levelling instrument) required for the proper execution and completion of the works. Contractor shall make all arrangements and provide all water and electricity for the proper execution of the works.

### **3.10 Protection against damage**

Contractor should take all safety measures and all precautions to prevent any damages to MGAS's installation, equipment or any other utility or features. The contractor shall carryout the works without affecting adjoining structures and shall take all necessary precautions.

The contractor shall indemnify the employer or the respective party against all losses or claims in respect of:

1. injury to any person
2. loss of or damage of a property

Which may arise out of or in consequence of the execution and completion of the works and the remedying of defects therein.

### **3.11 Confidentiality of MGAS's Operations**

The Contractor shall ensure complete confidentiality of information on the

activities of Employer. No information whatsoever should be provided to any third party on the installation or any other activity of the Employer.

**3.12 Permits for the Works**

The Contractor shall procure all necessary permits for the works from the relevant Authorities and copies of such shall be submitted immediately to the Employer.

**3.13 Defective Works**

Any defective work, material and also deviations from working details specified in the drawings and specifications shall be removed and reconstructed or otherwise rectified without undue delay to the approval of the Employer and the Contractor shall be responsible for all additional costs incurred for these works.

**3.14 Defects Liability Period**

Contractor shall make good any defects due to inappropriate workmanship within 12 month of completion of works. Contractor should attend to the defect rectification within a week of notice.

**3.15 Subcontracting**

The Contractor shall not subcontract the whole of the Works. The Contractor shall not subcontract any part of the Works without the consent of the Employer.

**4. Employers Liabilities**

**4.1 Employer Liabilities**

In this Contract, Employer's Liabilities mean:

- a) a suspension under Sub-Clause 2.3 unless it is attributable to the Contractor's failure,
- b) physical obstructions caused by the Employer other than climatic conditions, encountered on the Site during the performance of the Works, which obstructions or conditions were not reasonably foreseeable by an experienced contractor and which the Contractor immediately notified to the Employer in writing,
- c) any delay or disruption caused by Employer's request for Variation,

**5. Time for Completion**

**5.1 Execution of the Works**

The Contractor shall commence the Works on the Commencement Date and shall proceed expeditiously and without delay and shall complete the Works within the Time for Completion.

The Project start date will be considered with the site handover date and project duration will be calendar days with timing of 8.00AM to 6.00PM including mobilization period.

**5.2 Programmed**

Within the time stated in the Appendix, the Contractor shall submit to the Employer a program for the Works in the Programme form stated in the Appendix for approval. Thereafter the plan shall be followed and no departure permitted unless to a revised and re approved plan.

### 5.3 Extension of Time

The Contractor shall be entitled to an extension the Time for Completion if he is or will be delayed by any of the Employer's Liabilities.

On receipt of an application from the Contractor, the Employer shall consider all supporting details provided by the Contractor and shall extend the Time for Completion as appropriate.

### 5.4 Late Completion

If the Contractor fails to complete the Works within the Time for Completion, the Employer may claim for damages and remedies under the law of contract, including delay damages calculated with the following formula:

$$0.75XCP/CT$$

Where,

CP - Balance after deducting the completed value from total price of contract  
CT- Agreed duration for completion mentioned in the contract (days)

Employer shall without prejudice to its other remedies under the contract, deduct a sum using the above formula as delay damage up to a maximum of an amount equivalent to **10** percent of the contract sum. When the maximum amount is reached, without any definite indication that completion will take place in a reasonable time as determined by Employer, then Employer may terminate the contract without further notice to Contractor.

## 6. Taking Over

### 6.1 Notification of Completion

The Contractor shall notify the Employer in writing when he considers that the Works are complete.

### 6.2 Taking Over Notice

The Employer shall notify the Contractor when he considers that the Contractor has completed the Works stating the date accordingly. Alternatively, the Employer may notify the Contractor that the Works, although not fully complete, are ready for taking over, stating the date accordingly.

The work shall be deemed complete when the Employer hands over a written statement confirming that the work has been complete, and this notice shall state the date of the commencement of the defect liability period pursuant to clause 3.14 of the Contract.

The Employer shall take over the Works upon the issue of this notice. The Contractor shall promptly complete any outstanding work and clear the Site.

## 7. Remedying Defects

### 7.1 Remedying Defects

The Employer may at any time prior to the expiry of the period stated in the Appendix, notify the Contractor of any defects or outstanding work. The Contractor shall remedy at no cost to the Employer any defects due to the Contractor's design, Materials, quality or workmanship not being in accordance

with the Contract.

The cost of remedying defects attributable to any other cause shall be valued as a Variation. Failure to remedy any defects or complete outstanding work within a reasonable time of the Employer's notice shall entitle the Employer to carry out all necessary work at the Contractor's cost.

## **8. Variations and Claims**

### **8.1 Right to Vary**

Employer may at any time, by a written order given to the contractor for making changes to within the scope of bid in the services to be provided works to be performed by the contractor.

Further variations shall not be under taken without written instruction from Employer. Any claims by the contractor for adjustment under the variation order shall be notified to Employer prior to commencement of works.

### **8.2 Valuations of Variations**

Variations shall be valued as follows:

- a. At a lump sum price agreed between the Parties, or
- b. Where appropriate, at rates in the Contract, or
- c. In the absence of appropriate rates, the rates in the Contract shall be used as the basis for valuation, or failing which
- d. At appropriate new rates, as may be agreed or which the Employer considers appropriate

### **8.3 Early Warning**

A Party shall notify the other as soon as he is aware of any circumstance which may delay or disrupt the Works, or which may give rise to a claim for additional payment. The Contractor shall take all reasonable steps to minimize these effects.

The Contractor's entitlement to extension to the Time for Completion or additional payment shall be limited to the time and payment which would have been due if he had given prompt notice and had taken all reasonable steps.

### **8.4 Variation and Claim**

Should there be any Variation requested, the Contractor shall submit to the Employer an itemized make-up of the value Variations and claims within 2 days of the instruction. The Employer shall check and if possible agree the value. In the absence of agreement between the parties in regards to the value of Variations, the Employer shall have the right to determine the value.

## **9. Contract Price and Payment**

### **9.1 Payment Terms**

### **9.2 Retentions and other deductions**

Retentions at the rate stated in the Appendix and any other amount for which the Employer has specified his reasons for disagreement shall be deducted from each

payment.

### **9.3 Payment of Retentions**

The retention shall be paid by the Employer to the Contractor within 30 days after either the expiry of the period stated, and upon contractor submitting the invoice in the Appendix, or the remedying of notified defects or the completion of outstanding work, all as referred to in Sub- Clause 7.1, whichever is the later.

Costs incurred by the Employer to make good any defects or complete any outstanding works not rectified or completed by the Contractor, having being notified, shall be deducted from the retention money.

### **9.4 Payment Period**

The Employer shall pay to the Contractor upon completion of work.

### **9.5 Set-off**

Employer reserves the right of set-off against amounts payable to Contractor under this Contract and / or any other agreement or transaction between the Parties, the amount of any claim or refunds Employer may have against Contractor.

## **10. Default**

### **10.1 Default by Contractor**

If the Contractor abandons the Works, refuses or fails to comply with a valid instruction of the Employer or fails to proceed expeditiously and without delay, or is, despite a written complaint, in breach of the Contract, the Employer may give notice referring to this Sub-Clause and stating the default.

If the Contractor has not taken all practicable steps to remedy the default within 7 days after the Contractor's receipt of the Employer's notice, the Employer may by a second notice terminate the Contract in whole or in part. The Contractor shall then demobilize from the Site leaving behind Materials and any Contractor's Equipment which the Employer instructs in the second notice is to be used until the completion of the Works.

### **10.2 Default by Employer**

If the Employer fails to pay in accordance with the Contract, or is, despite a written complaint, in breach of Default by Employer the Contract, the Contractor may give notice referring to this Sub- Clause and stating the default. If the default is not remedied within 25 days after the Employer's receipt of this notice, the Contractor may suspend the execution of all or parts of the Works.

If the default is not remedied within 15 days after the Employer's receipt of the Contractor's notice, the Contractor may by a second notice terminate the Contract.

### **10.3 Payment upon Termination**

After termination, the Contractor shall be entitled to payment of the unpaid balance of the value of the Works executed, adjusted by the following:

- a. any sums to which the Contractor is entitled under Sub-Clause 8.4,

- b. any sums to which the Employer is entitled,

The net balance due shall be paid or repaid within 30 days of the notice of termination.

#### **10.4 Termination for Convenience**

The Employer may terminate this Contract for its convenience at any time upon providing 15 (Fifteen) days written notice to the Contractor. In such case, the Contractor shall be entitled to receive as full compensation for all services performed hereunder;

Payment for all works performed prior to the date of termination, together with all retainage withheld in accordance with clause 9.2. Payment of such compensation is the sole and exclusive remedy of the Contractor for termination of this Contract by the Employer and the Contractor shall not be entitled to, and hereby waives, claims for lost profits and all other damages and expenses.

### **11. Risk and Responsibility**

#### **11.1 Contractor's Care of the Works**

The Contractor shall take full responsibility for the care of the Works from the Commencement Date until the date of the Employer's notice under Sub-Clause 6.2. Responsibility shall then pass to the Employer

If any loss or damage happens to the Works during the above period, the Contractor shall rectify such loss or damage so that the Works conform to the Contract.

Unless the loss or damage happens as a result of an Employer's Liability, the Contractor shall indemnify the Employer, the Employer's contractors, agents and employees against all loss or damage happening to the Works and against all claims or expense arising out of the Works caused by a breach of the Contract, by negligence or by other default of the Contractor, his agents or employees.

#### **11.2 Force Majeure**

If a Party is or will be prevented from performing any of its obligations by Force Majeure, the Party affected shall notify the other Party immediately. If necessary, the Contractor shall suspend the execution of the Works and, to the extent agreed with the Employer, demobilize the Contractor's Equipment.

If the event continues for a period of 84 days, either Party may then give notice of termination, which shall take effect 28 days after the giving of the notice.

After termination, the Contractor shall be entitled to payment of the unpaid balance of the value of the Works executed and of the Materials and Plant reasonably delivered to the Site, adjusted by the following:

- a. Any sums to which the Contractor is entitled under Sub-Clause 10.3,
- b. The cost of demobilization,
- c. Any sums to which the Employer is entitled.

The net balance due shall be paid or repaid within 28 days of the notice of

termination.

## 12. Resolution of Disputes

The Employer and the contractor shall make every effort to resolve amicably by direct informal negotiations any disagreement or dispute arising between them under or in connection with the contract.

If after thirty (30) days from the commencement of such informal negotiations, MGAS and the contractor have been unable to resolve amicably a contract dispute, either party may refer the dispute to the Civil Court of the Maldives.

## 13. Notices

Any notice or communication permitted or required by this Agreement shall be deemed effective when personally delivered or deposited, or posted, mailed, telexed, telegraphed, emailed or facsimiled properly addressed to the appropriate party at the address set forth or at such address as either party may specify in writing. In case either party hereto changes their address, the party concerned shall give such notice to the other party 2 (two) weeks' time before effecting the change. A notice shall be effective when delivered or on notice's effective date, whichever is later.

### **For MGAS:**

Maldivian Gas Pvt. Ltd. Fen Building,  
5/F,  
Orchid Magu, Henveryu,  
Male', Republic of Maldives  
Tel: +960 3005411  
E-Mail: [procurement@maldivegas.com](mailto:procurement@maldivegas.com)

### **For Contractor:**

Address:  
Tel:  
Fax:  
E-Mail:



# **Section IV. Technical Specifications**

# **TECHNICAL SPECIFICATIONS**

## **1. PRELIMINARIES**

### **1.1 GENERAL AND PRELIMINARIES**

The Conditions of Contract, Bill of Quantities and the Drawings shall be read in conjunction with the Specifications and matters referred to, shown or described in the former are not necessarily repeated in the latter.

Notwithstanding the subdivision of the Specifications into various headings, every part is to be deemed supplementary to every other part and the various parts are to be read with each other, so far as it may be practicable to do so, or when the context so permits.

### **1.2 STANDARDS, MATERIALS, GOODS AND WORKMANSHIP**

Materials, goods and workmanship shall be of the best quality of their respective kinds and, as far as applicable, shall comply in every respect with the requirements of the quoted Standards, Codes of Practice and Specifications or any other National Standard approved by the Employers. Preambles and descriptions of materials, goods and workmanship given in any one section of the specifications shall apply throughout the whole of these specifications unless otherwise described. The substitution of materials, goods, workmanship and the like from that specified shall only be permitted with the written approval of the Employer.

The Contractor shall submit for the approval of the Employer a list of names and addresses of the manufacturers and trademarks or names of all the various types of materials and goods he proposes to use the Works. This list shall include reference to the specifications Clause or Article to which the materials and goods apply.

All materials used in the Works shall be new and of the appropriate quality all to the Employer's approval.

Materials shall be obtained from approved sources and used in accordance with the manufacturer's printed instructions. In the absence of a specification all materials shall comply with a relevant standard. The Employer shall order the removal of any materials, which he has not approved.

No orders for materials and goods shall be placed until approval has been obtained for the materials and goods from the Employers.

The Contractor shall note that it is his responsibility to include in his price for the cost of the materials and products as specified and no adjustment will be allowed should the alternatives be rejected by the Employer.

All workmanship shall be of the best standard. All goods and materials to be incorporated in the Works must be new, unused, of the most recent or current models and incorporate all recent improvements in design and materials unless provided otherwise in the contract.

### **1.3 DRAWINGS AND SPECIFICATIONS**

Drawings, BOQ and Specifications are intended to complement each other, so that if anything is shown on the Drawings, but not mentioned in the specifications or vice versa, it is to be furnished and built as though specifically set forth in all three. If any

discrepancies, errors, ambiguities or omissions occur in the Drawings or BOQ or Specifications, the same shall be referred to the Employer before proceeding with the Works, and the Employer decision on such discrepancies, errors, ambiguities or omissions shall be final. In addition to the Drawings, BOQ and Specifications attached hereto, the Employer will during the progress of the Works furnish additional Drawings, Specifications, and instructions as may be necessary, in the opinion of the Employer for the

Purpose of the proper and adequate execution and maintenance of the Works, and the Contractor shall make his work conform. Such drawings and instructions shall be deemed to be part of the Contract Documents.

#### **1.4 SAMPLES**

The Contractor shall furnish for approval with reasonable promptness, all samples as directed by the Employer. The Employer shall check and approve such samples with reasonable promptness only for conformance with the design concept of the Works and for compliance with the information given in Contract Documents. The work shall be in accordance with the approved samples.

#### **1.5 ORDERING MATERIALS**

The Bills of Quantities shall not be used as a basis for ordering materials and the Contractor is entirely responsible for assessing the quantities of materials to be ordered.

#### **1.6 MANUFACTURER'S INSTRUCTIONS**

All items or materials shall be assembled, mixed, fixed, applied, or otherwise incorporated in the Works in accordance with the printed instructions of the manufacturer of the items or materials unless specifically instructed otherwise by the Employer.

#### **1.7 TRANSPORTATION TO THE SITE**

The Contractor shall provide all necessary transport, handling and storage of all materials, components and the like to their points of installation on site including transport to and from storage. The Contractor shall provide all necessary transport of labor to and from the site.

#### **1.8 SCAFFOLDING**

The Contractor at his own expense shall provide, erect, maintain, dismantle, and clear away at completion proper and adequate scaffolding for the proper execution and completion of works.

#### **1.9 CUTTING AND PATCHING**

The Contractor shall be responsible for all cutting and patching and making good required for all trades for all work and his prices will be deemed to include for all such cutting and patching and making good.

#### **1.10 DEMOLITIONS**

Demolition includes the complete demolition including grubbing up of foundations and the proper termination of all services as required by the Drawings including the removal and disposal of all demolished materials. The demolition work shall be executed in a systematic manner.

Demolition operations and the removal of debris shall be carried out to ensure minimum interference with roads, streets, footpaths and other adjacent occupied or used facilities. The Contractor at his own expense shall repair damage caused to adjacent facilities by demolition operations. The Contractor shall arrange and pay for the disconnecting, removing and capping of utility services, notify the affected utility agency in advance and obtain written approval before commencing work

#### **1.11 STORAGE AND PROTECTION**

Tall materials shall be stored in protected areas on site and shall be fully protected against effects of weather. All delicate materials shall be carefully handled and stored under cover in a manner to prevent deformation and damage to the material and to shop finishes, and to prevent rusting and the accumulation of mud, dirt or other foreign matter on the metal work. All such damage and accumulation shall be corrected prior to erection.

The Contractor shall cover up and protect the Works from the weather and from damage by his own or other workmen performing subsequent operations. He shall provide all necessary dustsheets, barriers and guard rails and clear away same at completion.

#### **1.12 CONTRACTOR'S SITE AREA**

Throughout the period of the Contract the Contractor shall maintain the area of his operation within the limits of the Site in a clean, tidy and safe condition by arranging materials and the like in an orderly manner. All rubbish, debris, waste materials and the like shall be systematically cleared from the Site as it accumulates.

The Contractor shall take all steps necessary as directed by the Employer to minimize or eliminate dust, noise or any other nuisance, which may occur. Plant emitting dust, smoke, excessive noise or other nuisance shall not be permitted.

#### **1.13 DEFECTIVE WORK**

Any defective work materials and also deviations from the working details in respect of setting out, correct lines and levels, verticality, sizes, thicknesses of members and/or any other dimensional variation of any kind whatsoever, shall be removed and reconstructed or otherwise rectified without undue delay to the approval of the Employer and the Contractor shall be responsible for all additional costs incurred.

#### **1.14 SITE CLEANING**

The contractor shall clean up the site and dispose all unwanted materials from the site every day and on completion of works to the satisfaction of the Employer

#### **1.15 SAFETY OF ADJOINING EXISTING STRUCTURES**

The Contractor shall take all necessary precautions during the excavation for the Works particularly those excavation which are adjoining existing buildings, Curb Stones, pavements and shall protect such structures from the damage or collapse by means of temporary or permanent shoring, strutting, sheet piling or underpinning or excavation in short lengths and/or other methods as he deems fit also he shall properly support all foundations, trenches, walls, floors, etc. affecting the safety of the adjoining existing buildings

The Contractor shall alter, adopt and maintain all such works described above for the whole period of the Contract and shall finally clear away and make good all damages done

The construction and efficiency of the shoring, underpinning, strutting and the like for the purpose for which it is erected shall be the responsibility of the Contractor, should any subsidence or any other damage occur due to the inefficiency of the shoring, underpinning, strutting and the like or any other support provided. The damage shall be made good by the Contractor at his own expense and responsibility.

The shoring, strutting, piling and the like, shall be executed in such a manner as to cause as little inconvenience as possible to adjoining owners or the public and the Contractor shall be responsible for negotiating with the adjoining owners the means to safeguard their property and for the use of any portion of their land for the purpose of executing the excavations and no claims submitted on this ground will be entertained

The Contractor shall be held solely responsible for the safety of the adjoining existing buildings, the sufficiency of all temporary or permanent shoring, underpinning, piling, and the like. The Contractor shall keep the Employer informed as to manner in which he intends to proceed with the execution of the excavations and obtain his approval. Such approval if given shall not absolve the Contractor of his responsibility under this Clause

The Contractor shall save harmless and indemnify the Employer in respect of all claims, demands, proceedings, damages, costs, charges and expenses whatsoever arising out of or in relation to any such matters in so far as the Contractor is responsible under this Clause

## **1.16 OBVIOUS WORKS**

Where an item of work is obviously required for the type of work being undertaken then it shall be deemed to have been included even though the item is not specifically mentioned or shown in the Drawings, Specifications or the Bills of Quantities.

## **1.17 WATER FOR THE WORKS**

The Contractor shall make all necessary arrangements and provide all water for the proper execution of the Works, together with all transport, temporary plumbing, storage and distribution, pay all charges and alter, adapt and maintain temporary work as necessary and remove and make good at completion.

## **1.18 ELECTRICITY FOR THE WORKS**

The Contractor shall make all necessary arrangements and provide all artificial lighting and power for the proper execution and security of the Works and its protection, with all meters, temporary wiring and fittings, pay all charges and alter adapt and maintain the temporary work as necessary and remove and make good at completion.

#### **1.19 LEVELS AND REFERENCE POINTS**

The Contractor shall satisfy himself that the existing ground levels as indicated in Contract are correct. Should there be any dispute regarding any levels, Contractor shall submit to the Employer a schedule of the levels considered to be in error, together with the values he believes to be correct. The ground relevant to the disputed levels shall not be disturbed until the Engineer's decision as to the correct levels is given.

The Contractor shall supply to the Engineer details of the value and location of the temporary benchmarks and reference points he proposes to use.

#### **1.20 INTERFERENCE WITH ACCESS TO PROPERTIES AND APPARATUS**

Before interfering with access to any property, the Contractor shall make adequate alternative arrangements for the occupier's utility.

#### **1.21 CONTRACTOR'S SITE AREA**

Throughout the period of the Contract the Contractor shall maintain the area of his operation within the limits of the Site in a clean, tidy and safe condition by arranging materials and the like in an orderly manner. All rubbish, debris, waste materials and the like shall be systematically cleared from the Site as it accumulates.

The Contractor shall take all steps necessary as directed by the Employer to minimize or eliminate dust, noise or any other nuisance, which may occur. Plant emitting dust, smoke, excessive noise or other nuisance shall not be permitted.

#### **1.22 SAFETY**

The Contractor shall comply with industrial normal safety practices for working in or around the site.

Contractor's workers should be provided with safety equipment in compliance with the acceptable industrial safety.

When working at Site the contractors should comply with Occupational Health and Safety (OH & S) standards to meet OHSAS18001:2007. OH & S refers to the conditions and factors that affect or could affect the health and safety of employees or other workers (including temporary workers and contractor's personnel), visitors, or any other person in the workplace. This includes,

Wearing of Proper Site clothing.

Wearing of hard hats, gloves at working site. Wearing Safety Shoes at working sites.

Maintaining a "First aid Kit" to attend to minor injuries that may occur during Site

works. Providing Safety Sign boards near areas where a danger or public related health issue may occur.

Providing Proper Barricading and Warning lights when an area such as an “excavated area is left open”.

Wearing of Safety Mask/Gas Protection Mask when working with Hazardous chemicals.

And any other related safety precautions as per the site condition that may affect the health and safety of the workers or people involved in the workplace.

### **1.23 ENVIRONMENTAL PROTECTION**

The Contractor shall take all necessary precautionary measures to ensure carrying out the works in accordance to acceptable environment norms.

### **1.24 SECURITY**

The contractor shall ensure that the site is secure during the period of work and shall be liable for any loss or damage sustained as a result of their failure to comply with this condition.

The Contractor shall provide and maintain, night lights, road sign boards, warning tapes etc.

Where the works are in close proximity to buildings, walls or other existing structures, the contractor shall take adequate measures to prevent any damage to such structures. In addition, before commencing work the Contractor shall submit details in writing to the Engineer’s Representative of his proposed method of carrying out these measures and shall not commence operations until these are approved in writing.

### **1.25 PROTECTION**

The Contractor shall cover up and protect the Works from the weather and from damage by his own or other workmen performing subsequent operations. He shall provide all necessary dustsheets, barriers and guard rails and clear away same at completion.

The Contractor shall take all reasonable and proper steps for the protection of all places on or about the Works, which may be dangerous to his workmen or any other persons or to traffic. The Contractor shall provide and maintain warning signs, red warning lamps and barricades as necessary in all such places.

### **1.26 SITE HOARDING**

The Contractor shall provide a site hoarding at the boundary of the Site as required by the Local Authority bylaws and to the entire satisfaction of the Local Authority and the Consultant. The Site hoarding shall be maintained during the progress of the Works and shall be dismantled and cleared away upon completion.

The Contractor shall be responsible for ensuring the security of the Site, for protecting the same from trespass and providing all necessary watching and lighting in connection therewith.

### **1.27 EXISTING SITE SERVICES**

The Contractor shall follow up and obtain all the required information relating to any existing site services, telephone, electrical, water, drainage and the like on the site before commencing excavation. The Contractor shall be responsible for the protection of all existing services within the site and shall make good at his expense any damage to existing services resulting from his carrying out of the Works to the satisfaction of the Consultant and relevant authority. The Contractor shall be responsible for giving notice to the relevant authority where temporary or permanent re-routing or diverting of existing services is found to be necessary and shall complete same at his own expense to the Employer and respective Authorities' approval.

Where diversions of services as aforementioned are not required in connection with the permanent Works, the Contractor shall uphold, maintain and keep same in working order in existing locations.

### **1.28 SITE PROGRESS MEETINGS**

During the course of the Works, Site progress meetings shall be held at fortnightly intervals for the purpose of coordinating the Contractor's works and to ensure that full compliance is maintained. Minutes of such Site meetings will be recorded, copies will be distributed to all persons concerned and full effect shall be given to all instructions contained therein.

The Contractor shall submit all reports as instructed by the Employer in connection with Site progress meetings and the day-to-day management of the Works.

### **1.29 SETTING OUT**

The Contractor shall be responsible for accurately setting out the Works to the specified positions, dimension, levels and Building Lines and also checking the site surveys for dimensional and level accuracy and reporting any discrepancies before building work commences. All setting out points, benchmarks, site rails, pegs and other survey points shall be clearly marked and protected from damage or disturbance during the execution of the Works.

### **1.30 SIGN BOARD**

The Contractor shall provide and maintain a sign board for the Site consisting of a timber framed block board panel.

### **1.31 CONSTRUCTION SCHEDULE AND EXECUTION PLAN**

The Contractor shall prepare and submit to the Engineer for approval a construction schedule and an execution plan of how he plans to carry out the works including any temporary facilities, stock yards, etc., before the start of the work.

### **1.32 PERMANENT DRAINAGE, WATER AND ELECTRICITY CONNECTIONS**

The Contractor shall allow for arranging and obtaining the permanent drainage, water and electricity connections to the proposed development and he shall be responsible for making all payments in connection therewith.

### **1.33 DISPOSITION OF EXISTING UTILITIES**

Before commencing any construction work, the Contractor shall obtain from the various utilities Departments, Companies or Employer the location of any existing



utilities on the Site. Active utility lines damaged during the course of construction operations shall be repaired or replaced as determined by the Consultant at the Contractor's expense. Immediately an active utility line is damaged the Contractor shall notify the Employer and the utility owners by telephone and in writing. Inactive or abandoned utilities encountered during construction operations shall be removed, plugged or capped. The location of such utility shall be noted reported in writing to the Employer.

## **2. GROUND WORKS**

### **2.1 NATURE OF SOIL**

The Contractor is to visit the Site and ascertain for himself the condition of the surface of the ground and the type of substrata likely to be encountered in the excavation of the proposed development.

### **2.2 ORIGINAL LEVELS**

A survey of the existing site shall be made and the results to be submitted to the Employer before commencement of the work.

### **2.3 EXCAVATION**

The Contractor shall perform all excavation as required for all work under this Contract as indicated on the Drawings.

Excavation shall be carried out in all materials and by whatever means are necessary accurately to the lines and levels shown on the Drawings, or as ordered by the Consultant. No blasting of any kind will be permitted.

Except where indicated on the drawings to remain undisturbed, the Contractor shall remove all topsoil, plants, roots, vegetation, rubbish, rocks, etc. from areas lying within limits of structures and from areas to receive fill, embankment, surfacing, road construction, concrete or other construction.

Footings and foundations shall rest on firm undisturbed soil free from loose materials.

### **2.4 FINISH OF EXCAVATION AND INSPECTION**

The Employer shall inspect all the excavations before commencement of further work and the Contractor shall notify the Employer when excavations are ready for inspection.

### **2.5 DEWATERING**

Where the excavation level is below the natural water table and it is necessary to pump continuously from the excavation or to install a specialist form of dewatering equipment around the perimeter of the site or excavation, the Contractor will be responsible for ensuring the safety and stability of all adjoining structures and services or utilities above or below ground level. It will also be the responsibility of the Contractor that the equipment installed shall ensure that the excavation and subsequent construction is carried out in dry conditions. Dewatering shall be carried out with liaising to relevant local government authority and as per the government

regulations.

## 2.6 SHEETING AND SHORING

Excavation for trenches shall be sheeted, braced and shored as necessary to prevent caving or sliding.

## 3. CONCRETE WORKS

### 3.1 CONCRETE

#### 3.1.1 CEMENT

##### **Cement for buildings/structures other than the Sewerage treatment plant & sewerage pumping stations**

Cement shall, be Ordinary Portland Cement of an approved brand with reference to BS EN 197-1:2011, BS 8500-1:2015, BS EN 206:2013 and ASTM C150 / C150M - 15. Cement

shall be of recent manufacture and shall be used within a period of 6 months of manufacture.

The Contractor shall with each fresh consignment of cement delivered to the site furnish the Consultant with a copy of the Manufacturer's statement of compliance with the above Standard Specifications together with the date of manufacture, certified by an independent agency in the country of origin and its date of delivery to Site.

Check tests will be required by the Consultant. These tests shall be carried out at the Contractor's expense. Any cement failing to meet the required standards will be rejected and replaced at the Contractor's expense.

##### **Cement for the Sewerage treatment plant or any below the water table**

**works** Cement shall, be Sulphate resistant Portland Cement (SRPC) of an approved brand with reference to BS EN 197-1:2011 , BS 8500-1:2015 and ASTM C150 / C150M - 15. Cement shall be of recent manufacture and shall be used within a period of 6 months of manufacture.

The Contractor shall with each fresh consignment of cement delivered to the site furnish the Consultant with a copy of the Manufacturer's statement of compliance with the above Standard Specifications together with the date of manufacture, certified by an independent agency in the country of origin and its date of delivery to Site.

Check tests will be required by the Consultant. These tests shall be carried out at the Contractor's expense. Any cement failing to meet the required standards will be rejected and replaced at the Contractor's expense.

#### 3.1.2 NORMAL WEIGHT AGGREGATE

Fine aggregate for use in the production of concrete shall be of river sand and shall conform to the requirements of BS 882. Its grading shall be to Zones 1, 2 or 3 as defined in BS 882 and shall have not more than 10% retained on the 5 mm sieve.

Course aggregate for use in the production of concrete shall be composed of crushed gravel or stone. It shall conform to the requirements of BS 812 and shall have not more than 10% passing the 5 mm sieve.

Sources of aggregate shall be to the approval of the Consultant and samples of aggregate from the proposed sources shall be submitted to the Consultant at least 28 days before intended use. No new sources of aggregate will be permitted without prior approval of the Consultant.

The aggregates shall be free from salt and other organic impurities and shall contain not more than 0.03% by weight of chlorides nor 0.4 % by weight of sulphates.

Any aggregates which fail to meet these requirements shall be rejected and removed from the site, following which the Contractor's sources of supply shall be re-examined for suitability.

### 3.1.3 WATER

Water used for mixing and curing concrete or washing aggregate shall not contain vegetable matter, acid, sulphates, chlorides or other salts in such quantities as to cause efflorescence on the face of the concrete nor to effect adversely the setting time or strength of the concrete nor to instigate electrochemical corrosion of the reinforcement. Potable water containing not more than 10 parts per million dissolved solids shall be used for all reinforced concrete work.

### 3.1.4 MIX PROPORTIONS

The Contractor, having knowledge of the source and type of cement, aggregates, plant and method of placing he intends to use for the aggregate/cement ratios and water/cement ratios which he considers will achieve the strength requirements specified and will produce a workability which will enable the concrete to be properly compacted to its full depth and finished to the dimensions and within the tolerances shown on the Drawings, shall be responsible for designing his concrete mixes within the following limitations. The aggregate/cement ratios and the water/cement ratio shall not exceed the upper limits specified below. Furthermore, the quantity of cement per cubic meter of concrete shall in no case be less than the minimum specified:

Normal weight concrete grades	Characteristic compressive strength of cubes at 7/28 days		Maximum aggregate size (mm)	Maximum free water cement ratio	Kg of cement per cubic metre of compacted concrete	
	7 days	28 days			Max	Min
25	20	25	20	0.47	550	350

As soon as possible after commencement of the Contract, the Contractor shall prepare such trial mixes as required to satisfy the Consultant that the specified concrete strengths will be obtained using the materials and mix proportions in accordance with the above clauses. The proportion of cement shall be increased if necessary to obtain the strengths required.

From each trial mix, six preliminary Test Cubes shall be made and tested two at 7 days and four at 28 days, the test at 7 days being intended to give an early indication of possible variation from the required strength. If the difference between the highest and lowest results from any one trial mix is more than 15 per cent of the average of the strength test results, the test is to be discarded and a further trial mix made, unless all test results so obtained are above the required strength.

### 3.1.5 BATCHING AND MIXING OF CONCRETE

All concrete shall be matched by weight and mixed mechanically. Hand mixing shall be allowed if written permission has been given by the Employer.

Mixing Concrete:

Mixing shall be done in a mechanical mixer. The mixer drum shall be free of hardened mortar adhering to its inner surface. Before mixing commences the drum shall be primed by washing with rich cement grout. A measured quantity of dry course aggregate shall be first placed in the hopper. This shall be followed with the measured quantity of sand and then cement. The skip shall be raised and the dry material slipped into the drum.

The dry materials shall be mixed for at least four turns of the drum after which the correct quantity of water shall be added gradually while the drum is in motion, to ensure even distribution of the materials.

The total quantity of water for mixing shall be introduced before 25% of the mixing time has elapsed and shall be resulted to achieve the specified water cement ratio. The complete contents of the mixer shall be emptied before recharging. When the mixer is closed down for the day or for any period exceeding 20 minutes, the drum shall be flushed clean.

Concrete mixture shall be constantly controlled to obtain required workability and mix strength. Mixing time for each batch shall be not less than 3 minutes.

### **3.1.6 PLACING**

Concrete shall be conveyed from the mixer to its final position in any suitable manner, provided there is no segregation, loss of ingredients or contamination. It shall be placed in its final position before initial setting takes place and within 20 minutes of the addition of the water to the mixer. However, when agitating equipment is used to convey concrete such as in ready-mixed concrete, the elapsed time between the addition of the water and placing may be increased to 45 minutes.

All vibrations, compaction and finishing operations shall be completed within 15 minutes from the time of placing the concrete in its final position.

### **3.1.7 TESTING**

The frequency of testing shall be as noted in the clauses of this section. The Works Test Cubes shall be made at least once for each individual part of the structure.

At least six cubes shall be made at one time. Three of the six cubes are to be tested at 7 days. The remaining three cubes are to be tested at 28 days, and their average strength must not fall below the minimum strength specified and the lowest test result shall not be more than 20% below the average of the four cubes.

When the result of the 7-day test is unsatisfactory, The Contractor may elect to remove and replace the defective concrete without waiting for the 28-days test. If the result of the 28-days test is unsatisfactory, all concreting shall be stopped at the Contractor's expense and shall not proceed further without written permission from the Employer.

### **3.1.8 CURING**

Freshly placed concrete shall be protected from rain, dust, chemical attack and the harmful effects of heat, wind, flowing water, vibrations and shocks. This protection shall continue until the concrete is sufficiently set such that it can no longer be damaged by these factors which shall not be less than 24 hours after the time of placing.

Concrete shall be cured for at least 7 days or longer if instructed.

Timber formwork covering the concrete shall be moistened with water at frequent

intervals to keep it from drying during the curing period. Metal formwork exposed to the sun must be shaded from its direct rays, painted white or otherwise protected during the curing period.

### 3.1.9 FORMWORK RK

The Contractor shall supply, design, erect, strike and remove the formwork and be entirely responsible for its stability and safety so that it will carry the wet concrete and all incidental loadings and preserve it from damage and distortion during its placing, vibration, ramming, setting and curing. It shall be so constructed as to leave the finished concrete to the dimensions shown on the Drawings and of a material capable of providing the surface finish specified. In any event, the maximum permissible deflection under all loads shall not exceed 2mm or 1/600 of the free span, whichever is less.

Formwork shall be constructed so as to prevent the loss of any liquid from the wet concrete and to be removable without shock to the partially set concrete. When the concrete is to be vibrated, all wedges must be nailed so as to prevent slipping or distortion. Wherever required and prior to placing of the reinforcement the internal surfaces of all formwork shall be treated with an approved mould oil.

The Contractor is entirely responsible for the safe removal of formwork and all other temporary works.

## 3.2 REINFORCEMENT

Reinforcement shall be high yield deformed bars or mild steel complying with B.S. 4449 or welded wire fabric complying with B.S. 4483, except that the characteristic strength for mild steel reinforcement shall be 250N/mm<sup>2</sup> and for high yield steel shall be 415 N/mm<sup>2</sup>.

Reinforcing bars are to be stored clear off the ground and shall be truly straight. Suitable covering shall be provided to protect against windblown sulphates, chlorides and other deleterious matter.

All structural reinforcement steel shall be epoxy coating of non-pre-stressed reinforcement to ASTM A775/A775 M for the sewerage treatment plant/Lift Stations. In other cases, reinforcement shall be epoxy coated high yield deformed bars or epoxy coated mild steel complying with BS 4449:2005+A2:2009 (with coating requirements stated in BS ISO 14654:1999) or welded wire fabric complying with BS 4483:2005. 2. Reinforcing steel shall be of the dimensions given in the approved Drawings.

Reinforcing bars are to be stored clear off the ground and shall be truly straight. Suitable covering shall be provided to protect against windblown sulphates, chlorides and other deleterious matter.

Specimens sufficient for three tensile tests and three cold-bending tests per ten tonnes of bars or fraction thereof and for each different size of bars shall be sampled. Testing shall be in accordance with BS 4449:2005+A2:2009 and batches shall be rejected if the average results for each batch are not in accordance with BS 4449:2005+A2:2009.

All steel is to be totally free from dirt, paint, loose rust or scale and is to be thoroughly brushed and cleaned after positioning and immediately prior to concreting.

The bars are to be accurately bent to the shapes indicated, and the bending must, wherever possible, be completed before the steel is fixed in position. Straight portions of bars must be true and bends must be kept out of winding. The internal radius of

bends shall not be less than four times the diameter of the bar, except for stirrups and column binders. Great care is to be taken to bend stirrups and column binders to fit closely around the main bars. In the absence of reinforcement bending schedules the bending requirements of BS 8666:2005 “Scheduling, dimensioning, bending and cutting of steel reinforcement for concrete. Specification “or other similar approved standard shall govern.

Except where agreed by the Consultant all bars are to be bent cold in an approved bar bending machine. Lengthening of bars by welding and re-bending of incorrectly bent bars will not be permitted. Unless otherwise stated splices in reinforcing bars shall be formed by lapping.

Such laps in bars in any member shall be staggered. Except as otherwise indicated on the Drawings, the minimum overlap of lapped splices shall be 40 bar diameters or 300mm, whichever is greater.

The steel is to be fixed in position exactly as indicated and the bars are to be securely wired together with 1.6 or 1.4mm soft iron binding wire or approved spring steel slips wherever necessary to prevent any displacement during concreting. Binders and stirrups shall tightly embrace the longitudinal reinforcement to which they shall be security bound or spot welded. Binding wire shall be turned in from the formwork and shall not project beyond reinforcing bars. Spacers, chairs and the like, temporary or permanent, are to be used as required to ensure that the steel has the exact amount of cover indicated. No permanent spacers may show on a surface where a fair faced concrete finish or brushed aggregate finish is required.

Unless otherwise indicated, the minimum cover to the reinforcing bars and to binding wire shall be as follows:

<b>POSITION</b>	<b>COVER mm</b>
<b>Main bars in columns</b>	40-45
<b>Main bars in floor slabs and soffits of roof slabs</b>	30
<b>Main bars in top of roof slabs</b>	30-35
<b>Bars in top ground slabs</b>	30-35
<b>Bars in foundation/below ground level</b>	50-55
<b>Clear cover in beams soffit</b>	30-35

The Contractor is to ensure that no steel is displaced from its position during the placement of concrete.

All reinforcement to be sprayed with water two hours before concreting commences.

All reinforcing steel and binding wire shall be stored under cover and shall be at least 250mm above the ground.

### **3.3 MORTAR**

#### **3.3.1 Description**

Mortar for bedding kerbs, channels, cover frames etc. shall be 1:3 cement: sand mortar. Mortar for grouted stone pitching shall have 5% by weight of hydrated lime added to it. Mortar for use with blockwork shall be 1:4 cement: sand mortar.

#### **3.3.2 Materials**

Cement shall be Portland cement to BS12 and sand shall be a natural sand or crushed natural stone or a combination of both as specified in BS 1200.

### **3.3.3 Mixing**

Mortar shall be mixed thoroughly either by hand or mechanically until its color and consistency are uniform. The constituent materials shall be accurately gauged; allowance being made for bulking of sand. Mortar shall be made in small quantities only as and when required. Mortar which has begun to set or which has been mixed for a period of more than one hour shall be discarded.

## **4. MASONRY AND RENDERING**

### **4.1 MATERIALS**

#### **4.1.1 Cement**

Cement shall be used as described under concrete work. White or colored cement shall comply with the physical requirements of BS EN 197-1:2011.

#### **4.1.2 Water**

Water shall be as described under Concrete Works.

#### **4.1.3 Sand**

Sand shall be imported river sand, free from silt, quality to be approved by the Consultant. For use in plastering, sand is to comply with the requirements of BS 1199 and 1200:1976.

#### **4.1.4 Blocks**

Blocks shall be solid cement blocks 125/150 mm thick for external walls and hollow cement blocks 100 mm thick for internal walls. The blocks must be manufactured with cement and sand with no defects and samples shall be submitted to the Consultant for the approval before ordering the material. The average compression strength should be not less than 2.8N/mm<sup>2</sup> and shall comply with physical requirements of BS EN 771-5:2011.

### **4.2 MORTAR**

Mortar shall be mixed using the ratios provided in section 5.4.6.3. For work not in contact with earth or sand, one-part lime may be added to the mix. Mortar for pointing facing concrete blocks shall be prepared using white cement. When block work is constructed below ground level sulphate resisting cement shall be used. Should the Contractor wish to use a plasticiser with mortar, then the mortar shall consist of 1-part cement to 4 parts sand with plasticiser added and used strictly in accordance with the manufacturer's instructions. The plasticiser must be approved by the Consultant before use.

Mixing shall be carried out by means of an approved mechanical mixer. The mortar shall be mixed dry until a uniform mix is obtained. Sufficient water shall then be added and the mixing continued until a homogenous mix is obtained. Excess water shall not be used in the mix. All mortar shall be used before the initial set has taken place and on no account shall mortar which has commenced to set be remixed with water or new batches and used.

### **4.3 WORKMANSHIP**

Generally, in accordance to BS 8000.

Blockwork shall be set out and built to the respective dimensions, thicknesses and heights shown on the Drawings and/ or as instructed in writing by the Employer

Blocks shall be laid in true and regular courses on a full bed of mortar of 10 mm average thickness, exclusive of any key in the jointing surfaces of the blocks. Sufficient mortar shall be used in bedding and jointing to ensure that all keys are solidly filled. Where blocks abut against concrete each third course shall be tied thereto by means of approved galvanized steel ties. All horizontal joints shall be properly level. The Vertical joints shall be properly lined and quoins, jambs and other angles plumbed as the work proceeds.

All walls shall be plumbed vertical.

#### **4.4 PROTECTION OF FINISHED BLOCKWORK**

The Contractor shall ensure that the finished blockwork walling is not damaged by subsequent operations.

The Contractor is to protect newly or partially built walling against it being dried out too rapidly by the sun's heat or from any other adverse climatic effects and is to follow the Employer's instructions in this matter.

#### **4.5 LINTELS**

Prefabricated lintels shall comply with the requirements of B.S 5977, Part 2. All lintels shall be bedded on cement and sand mortar and the Contractor shall allow for a minimum bearing at each end of 150 mm.

#### **4.6 PREPARATION OF SURFACES FOR PLASTERING**

Surfaces to receive plastering, beds and the like are to be dry brushed to remove all loose particles, dust, laitance, efflorescence and the like, any projecting fins on concrete surfaces shall be hacked off. All traces of mold oil shall be removed from concrete surfaces by scrubbing with water containing detergents and rinsing with fresh water.

#### **4.7 PLASTERING**

Internal plastering is to comply with BS 5492.

The plaster for use masonry wall is to be composed of 1-part cement, and 4 parts of sand, and is to be applied the finished stated thickness.

Plaster or render is to be mixed in clean buckets and gauge boxes. All tools are to be kept clean and fresh plaster or render is not to be contaminated with set plaster or render.

The working time permissible after the addition of water to the plaster or render mix is to be 30 minutes. Mixed plaster or render that has exceeded this limit is to be removed from the site and not re-tempered and used in the works.

The Contractor is to ensure that before plastering or rendering commences the junctions between differing base materials are reinforced with a strip of galvanized expanding metal lath secured at both edges. All angle beads and the like shall also have been fixed.

All Plastering shall be executed in a neat workmanlike manner and made good to wood frames, skirting, pipes, fittings and the like.

Plasterwork is to be finished with a smooth, troweled face, free from blemishes and fit to receive decoration. Render is to be finished with a wood float.

### **5. ROOFING AND WATERPROOFING**

#### **5.1 ROOFING**



Roofing sheets, flashings, ridge capping and gutters shall be Zinka alumina natural colour roofing sheet unless otherwise specified. All other material to be used in the roofing work shall be good quality and approved type, if non-standard type to be it is subject to Employer approval.

Workmanship shall be to the highest standards and codes of practice.

The Contractor is to be solely responsible for providing a roof that is completely watertight and corrosion resistant and able to withstand expansion extremes likely to be encountered with temperature fluctuations. The Contractor is to ensure that the completed roof will be able to withstand normal pedestrian traffic at occasional intervals without sustaining damage of any description.

## **6. METALWORK**

### **6.1 GENERAL**

#### **6.1.1 MATERIAL**

Shape of steel shall be precise and straight and free of injurious scratches and rust. All steel sections shall be of strength class 43 A.

Dimensions of steel section and tolerance of dimension shall confirm to standard dimensions of steel regulated in ASTM or BS standard.

#### **6.2 FABRICATION**

Section of each material shall be cut perpendicular to axis unless otherwise specified in the drawing or by the Consultant.

Cut section shall be free of any noticeable defect. Deformation caused by cutting shall be corrected.

Those directed in the drawing shall be chiseled finish and completely attached. Material shall be checked for bend, distortion, warp, etc. before fabrication.

#### **6.3 QUALITY OF WORK**

Metal work shall be fabricated carefully and accurately to ensure compliance with design and performance requirements, using types and grades of metal as specified for the purpose. The finished work must be free from distortion and cracks. Proprietary products shall be used to the recommendations of the manufactures.

Steelwork shall be fabricated and erected by competent, experienced persons and shall generally conform to B.S. 449: Part 2 - "Specification for the use off structural steel in buildings."

#### **6.4 SHOP ASSEMBLY**

The components parts shall be assembled in such manner that they are neither twisted nor otherwise damaged, and shall be so prepared that the specified cambers if any are provided.

All tubular members shall be sealed so as to prevent the access of moisture to the inside of the members.

#### **6.5 BOLTING**

Bolts shall be of sufficient length to have at least one complete thread projecting beyond the outer face of the nut when tightened up. Washers shall be provided in all cases.

Shape of bolts, nuts and washers shall be in accordance with the requirement of BS4190 and BS 3692.

Quality of bolt shall be SC 34 A

Spacing of bolt holes shall be as directed in the following table.

Diameter of Bolt	Standard pitch	Minimum Pitch	End Distance	Edge Distance
12	50	50	30	25
16	50	40	40	30

Minimum pitch and end distance for light weight steel shall be more than 3 times and 2.5 times a bolt diameter respectively. Diameter of hole shall not be over 0.5 mm larger than bolt diameter. However, for anchor bolt 5mm clearance shall be allowed between bolt diameter and diameter of hole unless otherwise specified.

Bolt hole shall either be drilled open or reamed after sub punching. Punching can only be permitted for a material thickness less than 13 mm.

Rolled edge around a hole shall be removed.

Position of a bolt hole shall be precise so that the center of all holes aligns.

Nuts shall be protected against losing by concrete covering, double nuts or other proper means.

Shear bolt shall be provided with washers to keep the nut outside of grip.

## 6.6 WELDING

### 6.6.1 General

Arc welding rod shall conform to materials to be welded, and position.

Steel shall normally be welded by the metal arc process conforming to B.S. 5135.

Other methods shall be subject to the approval of the Employer.

Welding of stainless steel, aluminum alloys, copper alloys, bronze etc. and brazing shall conform to the appropriate British Standard where specified, approval and testing of welders and welding procedures shall be as B.S. 4870, B.S 4871 and B.S. 4872. Surfaces to be welded shall be dry. When rain is falling or during periods of high wind, necessary precautions shall be taken to protect outdoor welding areas.

Welding shall be so carried out as to ensure that:

1. Welds will be of good clean metal deposited by a procedure, which will ensure uniformity and continuity of work.
2. The surfaces of the weld will have an even contour and regular finish and will indicate proper fusion with the parent metal.

Welder shall have an authorize qualification in Maldives and approved by the Consultant.

### 6.6.2 Welding Machine

Arc welding machine shall be alternate or direct current type which provides sufficient and adequate current.

The field arc welding machine shall be provided with remote control for easy control of current.

### 6.6.3 Preparation

Welding shall be done as much down wards as possible using a jig such as rotary frame. Welding rod shall be always kept in a dry area and if necessary dried by drying equipment. Welding surface shall be free of water, scale or others injurious to welding work. Slag appeared on the created surface in the middle of welding shall be cleaned before starting again.

#### **6.6.4 Fabrication.**

Welding edge shall be smoothed by automatic gas cutting or other proper finishes.

#### **6.6.5 Built-up**

Jig shall be used to keep mutual position of materials in assembly. Temporary bolt hole for assembly shall be bored with approval of the Consultant. Proper amount of construction, predistortion or restrain shall be added to welding parts to attain precise finish dimensions and shape. Welding materials shall be properly met in fillet welds.

#### **6.6.6 Tack**

Short bead shall be avoided for tack welding. The minimum length of tack welding shall be as follows. Plate thickness under 3.2mm Bead length over 30mm, from 3.2 to 25mm- 40mm.

The end of joint, corner angle, beginning and ending point of final welding shall be avoided for tack welding.

#### **6.6.7 Work**

Type of welding rod, rod diameter, current, voltage and welding speed shall be selected in accordance with type of welding work.

Order of welding and movement of rod shall be determined so as that there shall be no deformation after welds.

Welding shall be carefully done in concealment in raining and strong wind.

#### **6.6.8 Finishes**

Surface of welds shall be as smooth as possible and size and length of welds shall not be less than designed dimensions.

Reinforcement of weld shall not exceed  $0.1s + 1\text{mm}$  (s: Designated size) in filled welds. Welded parts shall be free of undercut, overlap, crack, blow hole, lack of welds, and lack of weld settlement, rolled up slag or other defects.

Crater at the end of bead shall be carefully heaped up and slag, sputter, etc. shall be completely removed after welds.

#### **6.6.9 Safety**

Safe scaffoldings shall be provided for the field welds work.

Welding facilities shall be such that there shall be no electric leakage of electric shock. There also shall be sufficient protection for fire.

Electric shock protection device shall be used and also care shall be taken not to get suffocated or intoxicated by gas when welding in small area.

#### **6.6.10 Inspection**

Welding parts shall be inspected before, during after welding in accordance with work schedule.

#### **6.6.11 Correction**

Welding parts having injurious defects shall be removed and re-welded.

When deposited metals gets cracked, at least 50mm from the edge of crack shall be cut off and re-welded.

When base metals get cracked, it shall be replaced.

Under cut parts shall be corrected by attaching deposited metal.

Injurious deformation left on welding materials shall be corrected or reinforced.

#### **6.6.12 Transportation**

While transporting materials, care shall be taken for preventing from defect.

#### **6.6.13 Erection and Field Painting**

Material shall be stored on flat surface in order not to get distortion, twist or other defects. Correction shall be made to those distortions or twisted before erection.

Connection of materials by bolts, etc. shall be made after distortion on plumb is thoroughly corrected. Temporary bracing or other reinforcement shall be placed to resist wind pressure or other loads erection.

Care shall be taken on all facilities so that there is no accident.

## **7. ALUMINUM DOOR AND WINDOWS**

### **7.1 General**

All windows and doors are to be constructed by approved specialist suppliers of light, medium or heavy section to suit location, local building regulations, and particular requirements noted on the drawing as to weight and profile.

All frames should be made to fit the actual openings with a 5mm clearance all round. Discrepancies in overall width or height exceeding 5mm will not be allowed and the frames will be rejected in such cases. Any small discrepancies shall have the gaps suitably backed and then filled with gun-applied water repellent mastic sealant.

All nuts, bolts, washers and screws used for assembly and fixing shall be of adequate strength for their purpose within the design and shall be stainless steel grade 18/8.

All sealants used in the assembly of, and in the fixing of cladding and window framing, shall be non-setting to allow thermal movement without detriment to those joint sealants used for peripheral caulking and shall be one-part silicone sealant and shall conform to BS 4245 or ASTM C920. All spliced joints between mullions will be sealed with an approved silicone product, compatible with other sealants and packings used.

All ironmongery shall have the same finish as the frames and shall be approved by the Consultant.

### **7.2 Side hung windows, doors and ventilators**

All Windows and doors should be weather-stripped. The weather protection should be achieved by a positive compressive action against the section and should not depend on external contact. At every contact between two profiles two weather-stripping sections should be provided to complete weather protection.

The bottom sections for hinged doors must be capable of being adjusted vertically if necessary. The gap between the bottom section and the floor should be covered with a pair of special splay-type sections.

The shutters of the windows and doors should be assembled with concealed corners of high rigidity. Hinges should be concealed within the sections.

Hinges shall be anodised aluminium with stainless steel pins and nylon washers. Handles shall be anodised aluminium finished to match the aluminium sections and mounted with self-lubricating nylon washers.

Windows shall have anodised aluminium handles, colour as framing and a latching

mechanism securing the shutter to the frame both at the top and bottom.

### **7.3 Workmanship**

Take site dimensions and submit Drawings as detailed elsewhere in these documents, showing elevations, plans and full size sections, proposed methods of fixing, proposed methods of forming joints, any proposals for fabricating large components in more than one piece.

Mechanical joints shall be tight with no visible gaps. Where screw heads will be visible after component is fixed, or raised screw heads would interfere with any moving part of component, use countersunk machine screws unless specified otherwise. Mechanical joints of components which will be located externally shall be bedded in bedding compound, including all mating surfaces, cleats and other fixings.

## **8. PAINTING**

### **8.1 GENERAL**

The painting materials shall be obtained from an approved manufacturer and shall be supplied ready mixed in the manufacturer's sealed and branded containers. Each container shall bear the maker's brand name, identification of contents and directions for its proper use. All material must be thoroughly stirred before use. All painting work must be carried out according to paint manufacturer's instructions unless otherwise directed by the consultant. Appropriate primers and under coats shall be used on all surfaces to be painted.

All sealers, primers, undercoats and thinners shall be the products recommended by the manufacturers of paint used for the finishing coat.

The paint type shall be Nippon or similar brand and the Consultant shall approve the colour before placing the order.

### **8.2 PAINT SPECIFICATION**

For interior apply Acrylic or similar alkali resisting primer sealer, apply putty grind by sanding to level uneven surfaces, finish with two coats of matt finish with acrylic copolymer emulsion paints.

For exterior apply Acrylic or similar waterproofing quality primer sealer, apply texture coat, and apply two coats of finish as per manufacturer's specifications. The exterior shall have textured paints finished appearance as granite finish.

Marine grade timber varnish for all timber doors, cupboard doors and other exposed timber members.

For surfaces below ground, apply bituminous paint.

### **8.3 MATERIALS**

#### **8.3.1 Priming Paints**

Priming paints shall be the primer recommended by the manufacturer of the finishing paint or:

- ◆ For woodwork -lead-based or priming paint to comply with B.S 2521 and 2523.
- ◆ For steel work-red oxide priming paint to comply with B.S 2524.
- ◆ For galvanized, zinc or aluminum work- grey zinc chromate priming paint.
- ◆ For concrete, block work, plaster, plasterboard and the like- alkali priming paint.

### **8.3.2 Undercoating**

Undercoating shall be:

- ◆ Zinc oxide based undercoating paint.
- ◆ White lead based undercoating paint in accordance with B.S 2525-7. Colors shall approximately match the finishing paint.
- ◆ Synthetic alkyd based undercoating in accordance with the recommendations of the paint manufacturer.

### **8.3.3 Finishing Paints**

Finishing paints shall be as otherwise specified.

## **8.4 WORKMANSHIP**

### **8.4.1 General**

The Contractor shall carry out all tests necessary for determining the colors and shades of the finishes and the appropriate methods of application. Sample panels shall be completed in accordance with Consultant's instructions.

All work shall be performed in accordance with the manufacturer's written instructions. Before application of any paint or finish all surfaces shall be cleaned, dried and prepared as specified hereinafter, all to the Consultant's approval, no work shall commence until this approval is given in writing to the Contractor.

No exterior or exposed painting shall be carried out under adverse weather conditions such as rain, extreme humidity, dust storms, high temperature of surface etc.

All coating shall be well applied, leaving no sags, laps, brushes or other defects. Each coat must thoroughly dry before next coat is applied. All work must be carefully cut into a true line and left smooth and clean.

### **8.4.2 Painting to Concrete, Block or Plaster**

Concrete, blockwork and plaster surfaces to be painted or decorated shall have all cracks cut out and made good to the satisfaction of the Consultant.

Plasterboard surfaces shall have taped joints and the surface puttied to the satisfaction of the Consultant. The surfaces shall be completely dry and shall be brushed free of impurities immediately prior to the commencement of the painting work.

Efflorescence shall be completely removed by rubbing down with dry coarse cloths followed by wiping down with damp cloths and allowed to dry. All surfaces shall be rubbed down with fine glass paper and brushed free of dust before applying any form of decoration.

Concrete blockwork and plastered surfaces which are to receive paint shall be given one thin coat of oil putty and allowed to dry for at least two days. The surfaces shall then be rubbed down with fine glass paper and given a second thin coat of oil putty and when completely set shall be rubbed down again with fine glass paper before applying the painting system.

Emulsion paint shall be applied by brush or roller and shall consist of primer and two full coats of paint.

Oil paint shall be applied by brush or roller and shall consist of a priming coat, two undercoats and one finishing coat of paint.

### **8.4.3 Painting to Metalwork**

Steelwork delivered to the Site unprimed shall be cleaned of impurities, scrapped and wire brushed to remove rust and painted with one coat of priming paint applied by brush.

Steelwork delivered to Site primed shall be cleaned of impurities and damage to the priming paint and made good with priming paint.

Galvanized metalwork to be painted shall be cleaned of impurities. Where rusting has occurred the rust shall be removed by wire brushing and made good with an approved rust inhibitor. The surfaces shall be coated with a mordant solution, washed with clean water and painted with two coats of priming paint applied by brush.

Metal which is concealed shall be prepared and primed as above and shall be painted with two priming coats and one finishing coat of paint applied by brush.

## **9. ELECTRICAL WORKS**

### **9.1 General**

The work shall be carried out strictly in accordance with the standard specifications and shall also conform to the requirements of Electricity Rules in force in Male', Republic of Maldives.

All materials to be used in the Works shall be of standard make and shall bear the certification marks of local authorities. All materials shall be approved by the Consultant before use in the Works.

Earthing shall invariably be done in the presence of the Consultant or his representative. All the conduits shall be continuously earthed. Check nuts shall be provided at the point where the conduct enters the I.C. box and junction box.

The Contractor shall arrange for the inspection of all Medium Pressure Installation by the Electrical inspector of the local electric supply authority from where the electricity connections has to be obtained, and see that they are passed by him.

The Contractor shall be responsible for all necessary permits, approvals, fees. deposits etc., required to complete the Electrical works in accordance with the Contract.

Ceiling fans shall be KDK brand and switches and sockets etc shall be ABB brand.

#### **9.1.1 Scope of work**

The work consists of furnishing all tools, plants, labour, materials and equipment and performing the internal electrical Works comprising of.

- a) Light and power wiring
- b) Fans and fixtures
- c) Wires and Cables
- d) Distribution Fuse gear
- e) Earthing System

#### **9.1.2 Standards**

The latest relevant British Specifications, and I.E. recommendations shall be applicable and be followed for the equipment specified herein.

#### **9.1.3 Specifications**

The Contractor shall furnish all material and equipment at site, conforming fully to the specifications given herein and to the accepted standards, the Institution of Electrical Engineers, London, and the Maldives Electricity Bureau. It is not the intent of these Specifications to include all details of design and construction of various material and equipment to be supplied under this contract. The Contractor shall supply and install all material and equipment specified herein and also all installation and small material

such as nuts, bolts, washers, shims angles, levelling material, insulation, tape, solder, etc. and all such required for complete installation as intended by the Specifications.

#### **9.1.4 Shop Drawings**

The design drawings do not show conduit routes and depict only the position of various fixtures and outlets. All the planning for the conduit routes shall be carried out, well in advance of the actual execution of work, by the Contractor to the satisfaction of the Consultant. For this purpose, the Contractor shall prepare and submit shop drawings and obtain prior approval from the Consultant before commencement of the work.

No work should be carried out without the availability of approved shop drawings. These shop drawings shall clearly depict the load balancing chart of each Distribution Board. Time required for the preparation and approval of shop drawings shall be considered to have been included in the total time allowed for the completion of the work.

#### **9.1.5 Guarantee**

The Contractor shall furnish written guarantee in triplicate of the manufacturer for successful performance of each equipment. Such guarantee shall be for replacement, which may be found defective in material or workmanship. The guarantee shall cover a minimum period of 12 months effective from the date of completion certificate.

#### **9.1.6 Test Reports**

The Contractor shall be responsible for the submitting the test reports/certificates and get the installation inspected passed by the State Electric Company.

### **9.2 Conduit and Conduit Accessories**

The main wiring for the building will be taken inside the slabs through a conduit system. Before concreting the slab, the Contractor should produce a detailed conduit layout drawing and obtain approval from the Consultant. A system of access for power and communication lines below the carpet flow should be provided.

#### **9.2.1 Conduit Pipe**

The conduit for the wiring go flights, socket outlets and other systems shall be made of PVC conforming to BS 3505/1968 Class-D.

The conduit shall have following wall thickness and standard weights:

Pipe Size	Wt/100Rft.	Wall thickness
20mm dia	3.4 kg	0.04 to 0.05
25mm dia	4.5 kg	Wires, Cables and Cords

#### **9.2.2 Wires & Cords**

The wires & cords for the conduit wiring shall be single core, made of stranded copper conductors, PVC insulated, tested to B.S. 6004, 1975. The voltage grade shall be 300/500 volts or 450/750 V unless otherwise specified on Drawings and Bills of Quantities.

- (a) For light or fan point wiring with 1.5 mm square or as specified in the BOQ.
- (b) For light circuit wiring with 2.5 mm square or as specified in the BOQ.
- (c) For power plug 15A wiring with 4mm square or as specified in the BOQ.

#### **9.2.3 Installation Instructions**

All wiring shall be continuous between terminations and use of connectors or joints is not be allowed. Spur and tee connections are strictly prohibited.



Manufacturers recommended lubricant shall be allowed to facilitate pulling of wires. Use of any kind of oil and soap is prohibited.

### **9.3 Wiring Accessories**

#### **9.3.1 Switches**

Indoor switches controlling lights and fans shall be single pole, 5A, one or two way, suitable for 250V, 50 Hz. The body of the switches shall be made of moulded plastic, one, two, three or four gang with integral built in moulded plastic face plate.

Weatherproof switches shall conform to B.S. standard.

#### **9.3.2 Switch Socket Outlet Units**

Switch & socket units shall be single, pole, 3 pin rated 5A, 15A or 20A, 250V, 50 Hz. These shall be molded plastic type with white integral built-in face plate. Each socket shall have its control switch by the side of it on a common face plate. Thus the complete unit specified in BOQ shall be as switch and a socket outlet unit.

### **9.4 Light Fixtures**

#### **9.4.1 General**

The description of light fixtures is given in the Bills of Quantities, and stated on the Drawings, and all relevant material are described in this Section. The determination of quality is based on certified photometric data covering the coefficient of utilisation, light distribution curves, construction material, shape, finish, operation, etc.

The Contractor shall submit samples of each and every lighting fixture specified for approval of the Consultant.

Outdoor lights shall be weather proof and is subject to the approval of the Consultant.

#### **9.4.2 Fluorescent Light Fixture**

All the light fixtures shall have lamps and electronic ballast's of the wattage specified. The fluorescent lamp shall be either ft - 18 watts or 4 - 35 watts and the colour shall generally be cool daylight in the order of preference or as mentioned specifically. The fluorescent lamps shall be Philips to BSS 1853 or equivalent but having a minimum useful life of 5000 hours. The new generation of 26mm dia 18 watts and 36 watts' energy efficient lamps shall be preferred.

The ballast shall be totally enclosed electronic type suitable for operation on 220 V, 50 Hz, single phase supply, a wiring diagram, wattage, voltage and current ratings shall be printed on the body of the ballasts. The power loss shall not more than 10 watts for '6 watts' ballast. The ballast shall be noiseless in operation without any whistling sound. the manufacture shall be called upon to guarantee a trouble free life of 3 years, effective from the date of completion certificate.

The starters shall have radio-interference suppressers.

The internal wiring of the light fixtures shall be carried out at manufacturers factory with heat resistance wires of size not less than 1.5 mm square.

The louvers of light fixtures shall be made of anodized aluminium and/or moulded plastic. The diffusers shall be made of acrylic Perspex.

All the lighting fixtures shall be suitable for local climatic conditions.

contractor to design and submit the single line diagram of the L.T. switch board

#### **9.4.3 Earthing**

The switchboard shall be effectively earth by means of a copper strip of 25mm x 3mm (1" x 1/8") cross -section bolted to connections near the bottom of the switchboard.

#### **9.4.4 Accessories**

Designations labels, lifting lug, foundation bolts, interconnecting nuts bolts, and washers, thimbles, lugs, levelling shims cable glands and/or cable end box for all the sizes of incoming and outgoing cable shall be supplied with the switchboard.

### **9.5 Testing**

#### **9.5.1 Tests**

The following tests shall be conducted on each completed switchboard Type Tests

- (a) Temperature rise test
- (b) Mechanical endurance test
- (c) Making/Breaking Capacity

#### Test Routing Test

- (a) High Voltage test

The Switchboard shall be tested to British/Electricity Council Standard 41-5. Preference shall however, be given to Switchboards fabricated from all components manufactured by only one manufacturer.

#### **9.5.2 Installation Instruction**

The Switchboard shall be fixed firmly on the floor in perfect line, plumb and level position. All incoming and outgoing cable connections shall be made from the bottom including Earth connections.

#### **9.6 Distribution Board**

The distribution boards shall be either free standing, cubical type or wall mounting type suitable for recessed mounting Each distribution board (d.b.) shall be tropical in design, fully dust and vermin proof and liquid repellent.

## Section V. Sample Forms

### Notes on Sample Forms

<b>Bid Form:</b>	The Bidder shall complete and submit with its bid the Bid Form. The Bid Form shall be included unamended for the bidder to complete, sign and submit with the Bid.
<b>Letter of Award:</b>	Should not be completed by the Bidder
<b>Form of Agreement:</b>	should not be completed by the Bidders at the time of their Bid
<b>Bid Security:</b>	The Bidder shall provide the Bid security in the form included hereafter or in another form acceptable to the Employer, pursuant to the provisions in the Instructions to Bidders.
<b>Performance Bank Guarantee</b>	These form should not be completed by the Bidders at the time of their Bid preparation. Only the successful Bidders will be required to provide performance security
<b>Form of Experience</b>	Bidder shall complete and submit the form with their

## BID FORM

**Description of works:**           **CONSTRUCTION HYDRO TEST AND GENSET ROOM  
AT THILAFUSHI**

**Bid to:**                               Maldive Gas Pvt Ltd

**Address:**                           Orchid Magu'  
  Henveyru  
  Male'  
  Republic of Maldives.

Having examined the conditions of Contract, technical specifications, drawings and bill of quantities for the execution of above named works, I/we the undersigned, offer to construct and maintain the whole said work in conformity with the said conditions of Contract, technical specifications, drawings and bill of quantities for the sum of **Rf:**  
..... (i  
n  
figures)

..... (in words) or other sums may be ascertained in accordance with the said conditions.

We undertake, if our Bid is accepted, to commence the works within fourteen (14) calendar days from the date of the submission of the Performance Security and to complete whole of the works comprise in the Contract within calendar days.

We agree to abide by this Bid for a period of ninety (90) days from the date of submission of the Bid and it shall remain binding upon us and may be accepted at any time before the expiration of that period. We understand that you are not bound to accept the lowest or any Bid you receive.

Unless and until a formal agreement is prepared and executed, this Bid together with our written acceptance thereof, shall constitute a binding Contract between us.

Yours Faithfully,

Signed .....

In the capacity of .....

Dully authorized to sign bids for and on behalf of

.....

(Company Name & Stamp) Date: .....

Name & Address of Signatory

Name: .....

Address: .....

Tel No: .....

## Letter of Award

..... (date)

To:.....

.....

.....

.....

(Name & Address of the

Contractor) Dear Sir

This is to notify that Your Bid Dated..... for” **CONSTRUCTION OF HYDRO TEST AND GENSET ROOM TENDER** ” for the Contract Sum of Rufiyaa (amount in Figures)

.....  
(amount in words), as corrected and modified in accordance with the Instructions to Bidders is hereby accepted by Maldive Gas Pvt. Ltd.

You are hereby instructed to proceed with the commencement of said project in accordance with the bid proposal subject to the terms and conditions of the contract.

Yours faithfully,

(Signature, Name and Title of signatory authorized to sign on behalf of the Employer)

## FORM OF AGREEMENT

Construction of Hydro Test and Genset Room in K.Thilafushi

(Contract No.      )

This agreement made on the \_\_\_\_\_ between **Maldive Gas Pvt. Ltd.** (hereinafter called “the Employer”) of the one part and \_\_\_\_\_ (hereinafter called “ the Contractor”) of the other part.

Whereas the Employer has requested the Contractor to provide his services to carry out the task as described in the contract documents here to in connection with:

### CONSTRUCTION OF HYDRO TEST AND GENSET ROOM IN K.THILAFUSHI

The Employer agrees to employ the Contractor subject to and in accordance with the Conditions of Contract attached hereto and the contractor agrees to provide his services to carry out the Task subject to and in accordance with the Conditions of contract for the Contract Sum set out in the Bid.

Now this agreement witnessed as follows

1. In this agreement words and expressions shall have the same meaning as are respectively assigned to them in the Conditions of Contract referred to.
  
2. The following documents shall be deemed to form and be read construed as part of this agreement viz:
  - (a) Instructions to Bidders
  - (b) General Conditions
  - (c) Technical Specifications
  - (d) Bill of Quantities
  - (e) Bid Form, Qualification Information & Sample Forms of Securities
  - (f) Appendix to Bid
  
3. In consideration of the payment to be made by the Employer to the Contractor or as hereinafter mentioned, the Contractor hereby covenants with the Employer to the Works in conformity in all respects, with the provisions of the Contract.
  
4. The Employer hereby covenant to pay the Contractor in consideration of his carrying out of Task and the remedying of defects therein, the Contract Sum at the time and in the manner prescribed by in the Bid.

5. IN WITNESSETH whereof the parties hereto have caused this agreement to executed on the day and the year first above written.

**EMPLOYER**

**Maldiv Gas Pvt Ltd**

Signature: .....  
Name: .....  
Title: .....  
Date: .....

**CONTRACTOR**

Signature: .....  
Name: .....  
Title: .....  
Date: .....

**WITNESS**

Signature: .....  
Name: .....  
Title: .....  
Date: .....

**WITNESS**

Signature: .....  
Name: .....  
Title: .....  
Date: .....

## **BID SECURITY (BANK GUARANTEE)**

WHEREAS, \_\_\_\_\_ [name of bidder] (hereinafter called “the Tenderer”) has submitted his bid dated \_\_\_\_\_  
\_\_\_\_\_ [date] for the

CONSTRUCTION OF HYDRO TEST AND GENSET ROOM IN K.THILAFUSHI (**hereinafter**  
called “the Tender”).

KNOW ALL PEOPLE by these presents that We \_\_\_\_\_ [name of bank] of \_\_\_\_\_ [name of country] having  
our registered office at \_\_\_\_\_ (hereinafter called “the Bank”) are bound unto  
**MALDIVE GAS PVT. LTD** (hereinafter called “the Employer”) in the sum of, \_\_\_\_\_ for which payment well and truly to be made to  
the Employer the Bank binds itself, its successors and assigns by these presents.

SEALED with the Common Seal of the said Bank this \_\_\_ day of \_\_\_\_\_ 2022. THE CONDITIONS of this  
obligation are:

1. If the Tenderer withdraws the Tender during the period of validity specified in the Form of Tender;

or

2. If the Tenderer having been notified of the acceptance of the Tender by the Employer during the period of validity fails  
or refuses to execute the Memorandum of Agreement in accordance with the Instructions to Tenderers, if required

we undertake to pay to MGAS up to the above amount upon receipt of the first written demand, without MGAS having to  
substantiate its demand, provided that in his demand MGAS will note that the amount claimed is due to the occurrence of one or  
both of the two conditions, specifying the occurred condition or conditions.

This Guarantee will remain in force up to and including the date 30 days after the deadline for submission of Tenders as such  
deadline is stated in the Tender Documents or as it may be extended by MGAS, notice of which extension(s) to the Bank is hereby  
waived. Any demand in respect of this Guarantee should reach the Bank not later than the above date.

DATE \_\_\_\_\_ SIGNATURE OF THE BANK \_\_\_\_\_

WITNESS \_\_\_\_\_ SEAL \_\_\_\_\_

[signature, name, and address]



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## PERFORMANCE BANK GUARANTEE

To: **MALDIVE GAS Pvt. Ltd of Orchid Magu, Henveryu, Male', Republic of Maldives** (hereinafter called "the Employer")

WHEREAS \_\_\_\_\_ [name and address of Contractor] (hereinafter called "the Contractor") has undertaken, in pursuance of Contract No. \_\_\_\_\_ dated \_\_\_\_\_ to execute. This is to notify that Your bid Dated ..... for **CONSTRUCTION OF HYDRO TEST AND GENSET ROOM IN K.THILAFUSHI** (hereinafter called "the Contract");

AND WHEREAS it has been stipulated by you in the said Contract that the Contractor shall furnish you with a Bank Guarantee by a recognized bank for the sum specified therein as security for compliance with his obligations in accordance with the Contract;

AND WHEREAS we have agreed to give the Contractor such a Bank Guarantee;

NOW THEREFORE we hereby affirm that we are the Guarantor and responsible to you, on behalf of the Contractor, up to a total of \_\_\_\_\_ [amount of guarantee]

\_\_\_\_\_ [in words], such sum being payable in Maldivian Rufiyaa and we undertake to pay you, upon your first written demand and without cavil or argument, any sum or sums within the limits of

\_\_\_\_\_ [amount of guarantee] as aforesaid without your needing to prove or to show grounds or reasons for your demand for the sum specified therein.

We hereby waive the necessity of your demanding the said debt from the Contractor before presenting us with the demand.

We further agree that no change or addition to or other modification of the terms of the Contract or of the Works to be performed hereunder or of any of the Contract documents which may be made between you and the Contractor shall in any way release us from any liability under this guarantee, and we hereby waive notice of any such change, addition or modification.

This guarantee shall be valid until (06) months subsequent to successful completion of the project in accordance with the Conditions of the contract.

Signature and seal of the guarantor \_\_\_\_\_ Name of Bank \_\_\_\_\_ Address \_\_\_\_\_  
\_\_\_\_\_ Date

## FORM OF EXPERIENCE

Part- 1. List of similar projects completed over the last five years. Marks will be given for valid projects meeting the criteria

Project Name	Employer	Client Contact (Name & Mobile number)	Type of work	Contract Value	Completed Year
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					

**Note: Please attach Completion Certificate based on above listed project in chronological order at the back of Section IX. QUALIFICATION DOCUMENTS, EXPERIENCE – PART 1 (LIST OF SIMILAR PROJECTS COMPLETED OVER LAST FIVE YEARS). (Technical evaluation marks for experience would be given based on the submitted valid completion Certificates).**

**Part- 2. List of Ongoing MGAS projects.**

<b>Project Name</b>	<b>Client Contact (Name &amp; Mobile number)</b>	<b>Type of work</b>	<b>Contract Value</b>	<b>Value of Work Still to be Completed</b>	<b>Schedule Completion Date</b>
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					

**Note: Please attach Award letters based on above listed projects in chronological order at the back of Section IX. QUALIFICATION DOCUMENTS, EXPERIENCE – PART 2 (LIST OF ONGOING MGAS PROJECTS).**