# REQUEST FOR TENDER (RFT)

# WORKS

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| **RFT NUMBER:** | **331/18/WK/RFT/EF/SH/BU/PBRP/PWD** |
| **DESCRIPTION:** | **Reconstruction and Renovation of Ex FOL Stadium Building in Port Vila** |
| **EMPLOYER:** | **Public Works Department**<br>**Ministry of Infrastructure and Public Utilities**<br>**PMB 9044, Port Vila, Vanuatu** |
| **TENDER SUBMISSION ADDRESS:** | **Office of the Central Tenders Board**<br>**Ministry of Finance and Economic Management**<br>**S.I.P. Building**<br>**PMB 9058**<br>**Port Vila. Vanuatu** |
| **SUBMISSION DATE & TIME:** | **10am, 28 June 2018** |
| **OPENING DATE:** | **3pm, 28 June 2018** |

## REQUEST FOR TENDER

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## LETTER OF INVITATION

| | | |
|---|---|---|
| **To: Potential Tenderer** | **RFT No.** | **331/18/WK/RFT/EF/SH/BU/PBRP/PWD** |
| | **Date Issued** | **30 May 2018** |
| | **Validity of Tender** | **90 days** |
| | **Location of Works** | **Ex FOL, Port Vila** |
| | **Completion Date** | **30 January 2018** |
| **Submission Date and Time (VANUATU Local Time)** | | **10am, 28 June 2018** |
| **Opening date and time:** | | **3pm, 28 June 2018** |
| **Works Required:** The project involves the repairs, structural strengthening of columns and replacement of the roof of the ExFOL Main Stadium in Port Vila, Vanuatu. | | |
| PURCHASER Project Code | GIP: TCP:17A978 | |

You are invited to submit a Tender in response to this Request for Tender (RFT). The Works are being procured by Public Works Department (the "Employer"). The completed Tender must be signed by your authorised representative and must be valid for a minimum period as indicated above from the Closing Date of the RFT.

This Tender is open to all Tenderers who wish to respond to the RFT. Tenderers may only associate with each other either under a consortium, joint venture or association relationship, or under a sub-contractual agreement to complement their respective areas of supply to enhance their capacity to perform the Works.

This Invitation to Tender comprises of:

Section 1 General Conditions of Tendering
Section 2 Special Conditions of Tendering
Section 3 Employer's Technical Specifications
Section 4 Tender Response Schedules
Section 5 General Conditions of Contract
Section 6 Special Conditions of Contract
Section 7 Forms

It is critical that all Tenderers undertake a site visit of the intended project site and familiarise themselves of the project details and requirements.

A Contractor will be selected using the evaluation procedure described in the RFT.

Payments made against any Contract arising from this Tender will be made in the currency of the Tender and the Contract.

The Employer reserves the right to accept or reject any Tender, and to cancel the Tender process and reject all Tenders, at any time prior to the award of Contract, without thereby incurring any liability to the affected Tenderer(s).

Instructions on how to respond to the Tender are provided in this RFT.

Please submit your Tender by mail, courier or hand delivered to the address stated on the cover page of the RFT in a sealed envelope/ package, marked as requested in this RFT. Your Tender must be received before the Closing Date and Time for submission of Tenders. Tenders received after this deadline shall not be considered and shall be rejected.

Note that the project

Signed:

Name: Sam Namuri
Title/Position: Director General
Address: Ministry of Infrastructure and Public Utilities
PMB 9044, Port Vila
(For and on behalf of the Employer)

## SECTION 1 - GENERAL CONDITIONS OF TENDERING (GCT)

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## GENERAL CONDITIONS OF TENDER

### 1.1 PREPARATION OF TENDERS

1.1.1. The Employer invites Tenders for the construction of Works as described in the Employer's Technical Specifications (See Section 3) of this RFT. The Tenderer shall inform itself fully of all circumstances and conditions relating to submitting a Tender, including site visits if appropriate, and shall satisfy itself as to the correctness and sufficiency of the RFT documentation.

1.1.2. The estimated timeframe for commencement and completion of the Works is given in the Special Conditions of Tendering (**SCT**) (See Section 2).

1.1.3. The Tenderer shall prepare its Tender using the Tender Response Schedules (**TRS**) as detailed in the **SCT**. In case of a consortium, association or joint venture, each member shall complete the **TRS**. The completed and signed TRS, together with the required supporting documentation will form the Tender and shall be the basis on which the Tender will be evaluated.

1.1.4. The Tenderer shall provide with the tender the following:

(a) Proposed Work Method Statement and Construction Programme, giving descriptions, drawings, charts, as necessary, to comply with the requirements of the Employer's Technical Specifications. Any Tender that is not submitted with a proposed Work Method Statement and Construction Programme will be regarded as non-responsive and shall be rejected;

(b) One only of the following as stated in the **SCT**:

i. In the case of the basis of payment under the contract being the actual quantities of work ordered and carried, a Bill of Quantities
ii. In the case of the basis of payment under the Contract being the tendered lump sum, a Schedule of Activities.

The preamble and instructions for completing a Bill of Quantities or a Schedule of Activities, as required, are contained in Section 3, the Employer's Technical Specifications.

1.1.5. A Tenderer who submits or participates as a member of a Consortium, Joint-Venture or association in more than one Tender will cause all the Tenders with that Tenderer's participation to be disqualified. However, any firm or organisation is permitted to be a sub-contractor to more than one Tenderer.

1.1.6. Alternative Tender(s) shall only be permitted if so stated in the **SCT**.

1.1.7. The Tenderer shall prepare one original and three copies of the TRS, prepared in the English language. The Tenderer shall enclose the original and the copies, attaching the relevant documents as required by the TRS in one sealed envelope (or parcel) and clearly mark it with the RFT Works number, the Tender description and the name and address of the Employer, the Tenderer's name and address, and the submission time and date. The outer envelope must also bear the statement "Not to be opened before the tender opening session".

1.1.8. The Tenderer may withdraw its Tender before the deadline for submission of Tenders by submitting a notice of withdrawal. The notice must be submitted in an envelope

identifying the Works RFT and clearly labelled “Withdrawal of Tender”. The withdrawal will be announced at the Tender Opening, but the withdrawn Tender will not be opened nor further considered.

1.1.9. The Tenderer may amend its Tender before the deadline for submission of Tenders by submitting a notice of amendment. The notice, and amended Tender, must be submitted in an envelope identifying the RFT and clearly labelled “Amendment of Tender”. The amended Tender will be opened and announced at the Tender Opening and considered in the subsequent evaluation of Tenders.

1.1.10. The Employer will not be responsible for, or pay for, any expense or loss, which may be incurred by a Tenderer in the preparation and submission of its Tender.

1.1.11. The Employer may, at its discretion, extend the deadline for the submission of Tenders by amending the Tender Document in accordance with Section 1.6.3 in which case all rights and obligations of the Employer and Tenderers previously subject to the deadline shall thereafter be subject to the deadline as extended.

1.1.12. An authorised representative of the Tenderer shall sign the original Tender. The authorisation shall be in the form of a written power of attorney accompanying the Tender or in any other form demonstrating that the representative has been duly authorised to sign and legally bind the Tenderer.

## 1.2 VALIDITY OF TENDER

1.2.1. The Tender shall remain valid for the validity period stated in the SCT from the closing date for Tenders. In exceptional circumstances, the Employer may request that Tenderers extend the Tender validity period. The request and the Tenderer’s response shall be made in writing. The Tenderer may refuse the request, but its Tender will no longer be considered. The Tenderer agreeing to the request will not be required or permitted to otherwise modify its Tender for the period of the extension.

## 1.3 ELIGIBILITY OF THE TENDERER, EQUIPMENT AND SERVICES

1.3.1. A Tenderer may be a natural person, private entity, or government-owned entity or any combination of them in the form of a joint venture, consortium or association, under an existing agreement, or with the intent to constitute a legally enforceable joint venture, consortium or association. Government-owned enterprises in Vanuatu may only participate if they are legally and financially autonomous, operate under commercial law, and are not a dependent entity of the Government.

1.3.2. All members of a joint venture, consortium or association (other than sub-contractors) shall be jointly and severally liable for the execution of the Contract in accordance with the Contract terms. The joint venture, consortium or association agreement shall explicitly provide for the joint and several liability of the members towards the Employer. The joint venture, consortium or association agreement shall be included with the tender.

1.3.3. Except as provided for in Clause 1.3.4 Tenderers shall not be excluded from tendering on the basis of nationality, degree of foreign affiliation or ownership, location, size, race or other criterion, not having to do with their qualifications or decisions taken against any Tenderer under Clause 1.4.

1.3.4. The Tenderer, including all members constituting the Tenderer, shall not have the nationality of any country that is prohibited by the legislation of the Republic of Vanuatu or by any international Agreement to which Vanuatu is a signatory, or by an Act of Compliance with a Decision of the United Nations Security Council taken under Chapter VII of the Charter of the United Nations. These countries and any applicable conditions are listed in the **SCT**. These countries and any applicable conditions are listed in the **SCT**.

1.3.5. Materials, equipment and services must not be supplied from those countries that are prohibited by the legislation of the Republic of Vanuatu or by any international Agreement of which the Republic of Vanuatu is a signatory, or by an Act of Compliance with a Decision of the United Nations Security Council taken under Chapter VII of the Charter of the United Nations. These countries and any applicable conditions are listed in the **SCT**.

1.3.6. If the Tenderer is a joint venture, consortium or association (this does not include sub-contractors) all of the members shall appoint one member to act as the Member-in-Charge with authority to bind the joint venture, consortium or association. The composition or the constitution of the joint venture, consortium or association shall not be altered without the prior consent of the Employer.

1.3.7. The Tenderer must meet the following eligibility criteria:
- (a) Must be registered in its country of origin;
- (b) Be free from insolvency, bankruptcy or similar status;
- (c) Have the legal capacity to enter into contract;
- (d) Be current with payments of taxes;
- (e) Not be ineligible pursuant to Clause 1.5;
- (f) The Tenderer and any director, officer, manager or supervisor of the Tenderer has not, within a period of 3 years preceding the date of issuance of the invitation to Tender been convicted of any criminal offence, whether in Vanuatu or elsewhere:
  - (i) Relating to his professional conduct;
  - (ii) Relating to the making of false statements or misrepresentations as to his qualifications to enter into a procurement contract;
  - (iii) Involving dishonesty;
  - (iv) Under anti-corruption legislation; and
- (g) Not be suspended or disbarred by administrative or judicial proceedings from participating in procurements, whether in Vanuatu or elsewhere.

**1.4 QUALIFICATIONS OF THE TENDERER**

1.4.1. To qualify for an award of Contract, Tenderers shall demonstrate that they possess the necessary professional and technical qualifications and competence, financial resources, equipment and other physical facilities, managerial capability, experience in the type of Works that are the object of this RFT business reputation and personnel to perform the Contract.

1.4.2. Tenderers shall meet the following minimum qualifying criteria.
- (a) Have an average turnover of construction work in the last three years of at least the amount specified in the **SCT**;
- (b) Provide three examples of work of a similar nature and complexity completed in the last three years;
- (c) Availability of minimum liquid assets or working capital or credit facilities from a Bank, as specified in the **SCT**;

(d) Provide a suitable Site Manager with the qualifications stated in the **SCT**, and with experience in works of an equivalent nature and volume, a minimum experience as a Site Manager over the period stated in the **SCT**;

(e) Provide a list of key equipment for the completion of the works with proposals for its timely acquisition (own, lease, hire, etc.); the required minimum equipment is provided in the **SCT**;

(f) Any other criteria as specified in the **SCT.**

1.4.3. The Employer shall disqualify a Tenderer:

(a) If it finds that the information submitted in a Tender concerning its qualifications is false, misleading, inaccurate or materially incomplete, or

(b) Whose Tender has previously been rejected by the Employer under Clause 1.5.4 below, or under Clause 5.13.1 of the General Conditions of Contract (GCC).

**1.5 CORRUPT OR FRAUDULENT PRACTICES**

1.5.1. The Employer requires that Tenderers observe the highest standard of ethics during the procurement proceedings and the execution of contracts.

1.5.2. The Employer defines corrupt, fraudulent, collusive, coercive or obstructive practices, for the purpose of this provision in Clause 5.13.1 of the General Conditions of Contract (GCC).

1.5.3. Should any corrupt, fraudulent, collusive, coercive or obstructive practice of any kind come to the knowledge of the Employer, it shall, in the first place, allow the Tenderer to provide an explanation and shall take actions as below when a satisfactory explanation is not received.

1.5.4. In pursuance of this requirement, the Employer will, in the absence of an explanation that is satisfactory to the Employer, reject a Tender if it determines that the Tenderer recommended for award has, directly or through an agent or other third party, engaged in corrupt, fraudulent, collusive, coercive or obstructive practices in competing for the contract in question.

**1.6 PRE-TENDER MEETING, CLARIFICATIONS AND ADDENDA**

1.6.1. If any Pre-Tender/Site Meeting is to be held, the time, date and location will be stated in the **SCT**.

1.6.2. The Tenderer may seek clarifications of the RFT by contacting in writing the Employer named in the **SCT**, no later than 10 days before the Tender submission closing date. The Employer shall send its response simultaneously to all Tenderers in writing, without disclosing the identity of the Tenderer requesting the clarification, or the identity of the other tenderers, no later than 7 days before the Tender submission closing date.

1.6.3. If for any reason the RFT has to be amended, the Employer will modify it by issuing an Addendum in writing, which should be acknowledged in writing by the Tenderer. The Tenderer should note that such an Addendum will form part of the RFT and may, if required, cause an extension of the tender submission closing date and time.

**1.7 TENDER PRICES, CURRENCIES, PAYMENTS AND TAXES**

1.7.1. The Tenderer must provide with the tender a completed Bill of Quantities or Schedule of Activities as stated in the **SCT** giving full prices with its tender.

1.7.2. Prices shall be stated in Vanuatu Vatu (VUV) or, if requested in the **SCT** any freely convertible currency and all payments made under the Contract shall be made in the currency(ies) stated in the Tender.

1.7.3. Taxes and duties shall be as stated in the **SCT**.

**1.8 SUBCONTRACTORS**

1.8.1. If the Tenderer proposes to subcontract any component comprising more than 10% of the value of the Works, the Tenderer shall provide details of the proposed subcontractors, indicating the proposed part of the Works to be subcontracted and the previous relevant experience of that subcontractor, including a statement that the proposed subcontractor(s) is/are eligible under the conditions of the RFT and qualified to perform that part of the works. Additionally, such subcontractors shall complete the TRS and provide with the tender supporting documentation as detailed in the **SCT** (if these are not required of subcontractors, the **SCT** will explicitly state).

**1.9 THE RIGHT TO VARY QUANTITIES**

1.9.1 At the time the Contract is awarded the Employer reserves the right to increase or decrease the quantities, provided this does not exceed the percentage stated in the **SCT**, and without any change in the unit costs quoted in the Tender, and in accordance with the other terms and conditions in the **RFT**.

**1.10 TENDER SECURITY**

1.10.1. If a Tender Security is required, it shall be in the amount and currency stated in the **SCT**. The Tenderer has the option of submitting it either by means of:

(a) A bankers cheque; or

(b) An unconditional Bank Guarantee, in the format shown in Section 7.

1.10.2. The Tender Security shall be valid for 30 days beyond the original Tender validity period, or for 30 days beyond any extended Tender validity period, if one has been requested

1.10.3. The original of the Tender Security shall be included with the TRS, photocopies will not be accepted. If a Tender Security is required, any Tender not accompanied by a Tender Security will be rejected by the Employer.

1.10.4. The Tender Security of the successful Tenderer will be discharged when the successful Tenderer has signed the Contract Agreement and the required Performance Security has been received by the Employer.

1.10.5. The Tender Security for unsuccessful Tenderers will be returned upon expiry of the term of the security or formation of a contract with the successful tender and submission by the successful Tenderer of any required Performance Security, whichever is earlier.

1.10.6. The Tender Security may be forfeited if:

(a) Any Tenderer withdraws its Tender during the period of tender validity specified in Clause 1.2; or does not accept the correction of arithmetical errors; or

(b) The successful Tenderer fails to provide a Performance Security, if required to do so by Clause 1.14; or to sign a contract in accordance with Clause 1.16.

## 1.11 TENDER SUBMISSION AND OPENING

1.11.1. Tenders may only be delivered by hand, mail or by courier service in a sealed envelope/ package, marked as requested in the **SCT**, at the address, and, not later than, the time and date stated on the cover page of the RFT.

1.11.2. Tenders shall be opened at the place of submission stated on the cover page of the RFT, immediately after the time for submission of Tenders, in the presence of the Tenderers and/or their representatives who choose to attend.

1.11.3. The name and address of the Tenderer submitting the Tender together with the tendered total cost shall be read out and recorded. The Tender will be checked to ensure all required documents are present. If required as per Clause 1.9.1 the presence of the Tender Security will also be checked and the result read out.

1.11.4. A record of the Tender Opening will be prepared, including the information disclosed during the opening. Copies of the Record will be provided to all Tenderers who submitted a Tender.

1.11.5. A Tender received after the deadline for submission will be rejected, will remain unopened, and may be collected by the Tenderer if it so wishes. If not collected within 3 months of the Tender closing date it will be disposed of.

## 1.12 EXAMINATION AND EVALUATION OF TENDERS

1.12.1. All Tenders properly received shall be evaluated by a Technical Officer appointed by the Chairperson of the Tenders Board on behalf of the Employer. The Technical Officer's determination of a Tender's compliance shall be based upon the contents of the Tender itself.

1.12.2. The Technical Officer shall evaluate the Tender on behalf of the Employer on the basis of its compliance to the Technical Specifications (see Section 3).

1.12.3. To assist in the examination, evaluation and comparison of Tenders, the Technical Officer may:

(a) Ask Tenderers for written clarification of their Tenders including breakdown of costs, but no change in the cost or substance of the Tender will be sought, offered, or permitted except as required to confirm the correction of arithmetical errors discovered by the Technical Officer during the evaluation of Tenders. The Tenderer shall within the time specified comply with any such requests.

(b) Make corrections for any computational errors. Corrections of computational errors will be made as indicated at Clause 1.11.5 below. For purpose of evaluating Financial Proposals, all prices quoted shall be converted into VUV using the selling rate of the Reserve Bank of the Republic of Vanuatu at the closing date for submission of the Tenders.

1.12.4. Any attempt by a Tenderer to influence the Technical Officer evaluation of Tenders or the CTB's award decisions will result in the rejection of its Tender.

1.12.5. Preliminary Examination

Prior to the detailed evaluation of Tenders, the Technical Officer will determine whether each Tender:

(a) Has been properly signed;
(b) Is from an eligible Tenderer;
(c) Is accompanied by the required Tender Security; and
(d) Has been completed in accordance with the RFT.

1.12.6. Detailed Evaluation

(1) Each Tender will be subjected to a detailed examination to determine whether it is substantially responsive in that it adequately meets:
(a) The minimum specified qualifying criteria; and
(b) The minimum employer's technical specifications; and
© The completed Tender Response Schedules provided in Section 4 of the RFT**,** as required in the GCT and SCT, accompanied by the required supporting documentation required in the RFT.

(2) A substantially responsive Tender is one which conforms to all the terms, conditions and specifications of the RFT, without material deviation or reservation. A material deviation or reservation is one that:
(a) Affects in any substantial way the scope, quality, or performance of the Works specified in the Employer's Technical Specifications;
(b) Limits in any substantial way the Employer's rights or the Tenderer's obligations under the Contract;
(c) If rectified would affect unfairly the competitive position of other Tenderers presenting substantially responsive Tenders.

(3) If a Tender is not substantially responsive it will be rejected by the Technical Officer and may not subsequently be made responsive by the Tenderer by correction or withdrawal of the nonconforming deviation or reservation.

1.12.7. Financial Examination

(1) Only those Tenders that are considered substantially responsive will be considered for financial evaluation.

(2) The Technical Officer will determine for each Tender the evaluated Tender price by adjusting the Tender price as follows:

a) Making any corrections for arithmetical errors;
(i) Where there is a discrepancy between the amounts in figures and in words the amount in words will govern;
(ii) In the case of a Bill of Quantities where there is a discrepancy between the unit rates and the line item total resulting from multiplying the unit rate by the quantity, the unit rate quoted will govern;
(iii) In the case of a Schedule of Activities the total price offered will govern;
b) Making appropriate adjustments to reflect discounts (if any).

(3) Following this, the Technical Officer will compare all evaluated Tenders and rank them accordingly, with the lowest priced technically compliant (substantially responsive) Tender being ranked No. 1, and so on.

(4) For evaluation and comparison purposes only, and if multiple currencies where allowed in tendering, all prices quoted shall be converted into VUV using the VUV selling rate of the Reserve Bank of Vanuatu, at the closing date for submission of the Tenders.

## 1.13 ACCEPTANCE OR REJECTION OF ANY OR ALL TENDERS

1.13.1. The Employer reserves the right to accept or reject any Tender, and to cancel the Tender process and reject all Tenders, at any time prior to the award of Contract, without thereby incurring any liability to the affected Tenderer(s).

## 1.14 APPROVAL AND NOTIFICATION OF CONTRACT AWARD

1.14.1. The Contract will be awarded to the Tenderer whose Tender is substantially responsive and offers the lowest price.

1.14.2. Following the approval of the award the award decision shall be notified to all participating tenderers and no contract may be entered before 10 days have elapsed from the date of such notification.

## 1.15 PERFORMANCE SECURITY

1.15.1. Together with the Contract the successful Tenderer shall deliver to the Employer, if required by the **SCT**, a Performance Security in the amount and for the period stated in the **SCT**, in the format specified in Section 7. The Performance Security shall be issued by an institution/authority acceptable to the Employer.

1.15.2. Failure of the successful Tenderer to submit a Performance Security will constitute sufficient grounds for the cancellation of the award.

1.15.3. In such an event, the Employer shall award the Contract to the next lowest evaluated Tenderer whose Tender is substantially responsive and has been determined by the Employer to be eligible and qualified to satisfactorily perform the Contract, subject to the Employer's right to reject all Tenders in accordance with Clause 1.13.

## 1.16 DEBRIEFING OF UNSUCCESSFUL TENDERERS

1.16.1. Within 5 days of receipt of a written request by any unsuccessful Tenderer, but not before a contract is signed with the successful tenderer, the Employer shall communicate the reasons why its Tender was not successful.

## 1.17 SIGNING OF CONTRACT

1.17.1. 5 days after the notification of the award decision to all participating tenderers the Employer shall send to the successful Tenderer two (2) sets of the unsigned Contract.

1.17.2. The successful Tenderer may be required to provide documentation, or additional documentation, evidencing its qualifications prior to Contract signature.

1.17.3. Within 5 days of receipt of the two (2) sets of the Contract Agreement the successful Tenderer shall sign, date and return both to the Employer.

1.17.4. The delegated representative of the Government of Vanuatu on behalf of the Employer will sign both Contracts and return one to the Tenderer.

## 1.18 DISPUTES AND SETTLEMENTS

1.18.1. The Parties agree that the avoidance or early resolution of disputes is crucial for a smooth execution of the Contract and the success of the assignment. The Parties shall use their best efforts to negotiate all disputes arising out of, or in connection, with this Contract or its interpretation.

1.18.2. Failing successful negotiation any disputes will be settled by the courts in Vanuatu.

## SECTION 2 - SPECIAL CONDITIONS OF TENDERING

These Special Conditions of Tender (**SCT**) apply to this Request for Tender (**RFT**) and supplement Section 1: General Conditions of Tendering.

Tender Number: 331/18/WK/RFT/EF/SH/BU/PBRP/PWD
Tender Name: Reconstruction and Renovation of the Ex FOL Building in Port Vila

| Clause Ref. | Heading | Description |
|---|---|---|
| **1.1.2** | Estimated timeframe for commencement and completion | Contract signing is proposed to occur no later than July 2018<br>Construction period for the completion of the works is from July to January 2019 |
| **1.1.3** | Tender Response Schedules and other required documentation | The tenderer is to complete tender response schedules: 1, 1.1, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 2.8, 2.9, 2.10 & 2.11. |
| **1.1.4** | Basis of payment under the Contract and the type of document required | The basis of payment under the contract is the tendered lump sum and the document required to be completed and included with the Tender is a Schedule of Activities. |
| **1.1.6** | Alternative tenders | There are two Options for project implementation:<br>**Option A:** Implement the project as per the designs in this tender.<br>**Option B:** contractor to design and construct a new sports stadium building.<br>If an alternate tender is submitted (eg for replacement of the entire stadium shed) tenderers are to provide sufficient information so that the Procurement Panel can assess the alternative proposal as part of the tender assessment process. |
| **1.2** | Validity of Tender | 90 days from closing date |
| **1.3.4 & 1.3.5** | Prohibited countries | Not applicable |
| **1.3.7** | Documentation to demonstrate that eligibility criteria are met | As specified in tender schedule 1.9. |
| **1.4.2 (a)** | Qualification criteria | The minimum required annual volume of construction work for the last three years shall be equivalent to VUV80million. [If the accounting system / financial accounts or reports of the tenderer are in a currency different from VUV, then the exchange rate(s) that shall be used by tenderers for conversion purposes shall be as per the Reserve Bank of Vanuatu on the day of tender close.] |
| **1.4.2 (c)** | Qualification criteria | The minimum amount of liquid assets or working capital or credit facility is VUV30million. If the amount is expressed in the accounting system / financial accounts or reports of the Tenderer or any other relevant documents in a currency different from VUV, then the |

| Clause Ref. | Heading | Description |
|---|---|---|
| | | Tenderer shall convert the amounts into VUV using the VUV selling rate of the Reserve Bank of Vanuatu, on the date that is 14 days prior to the closing date for submission of the Tenders. |
| **1.4.2 (d)** | Site Manager | The qualifications of the Site Manager shall be:<br><br>Diploma Construction Engineering Management or related discipline or INTV Level 2 certificate in carpentry, construction, construction management or relevant field.<br><br>The minimum experience of the Site Manager in works of an equivalent nature and volume shall be 20 years with a minimum of 10 years as a Manager. |
| **1.4.2(e)** | Minimum Equipment required | Minimum equipment required shall be lifting equipment, crane, scaffolding, steel working equipment, safety harnesses and rigging equipment, etc suitable to complete the works. |
| **1.4.2(f)** | Other qualification Criteria | The other qualification criteria to be applied will be:<br>1. Have a minimum of ten (10) years of general construction experience and 5 years of structural steel erection experience.<br>2. Have no previous history of terminations, or breach of contract<br>3. Have no previous history of non-performance, or poor past performances in terms of quality control, or safety or timely execution of Services<br>4. Demonstrate to have the equipment required for performing the works.<br>5. Illustrate an understanding of the project through the submission of a works methodology and Gantt Chart.<br>6. Understanding and demonstrated experience in safety management required for a project such as this.<br>7. Safety and Environmental Management Plan / statement showing that company has current systems and procedures to manage safety and environmental effects of the project. |
| **1.4.2(f)** | Other Qualification Criteria | Tenderers must verify that they are complying with Vanuatu Tax laws relating to VAT by submitting a letter from the Customs Office to Verify that they are up to date with their VAT payments. |
| **1.4.2** | Documentation to demonstrate that qualifying criteria are met | As per Tender Submission schedule 2.9. |
| **1.6.1** | Pre-Tender/ Site Meeting | A Pre-Tender/Site Meeting will held at 10am, 11 June 2018 in PWD Conference Room, Nasituan Building, Rue De Paris, Port Vila. |
| **1.6.2** | Contact Person for clarifications | The Contact person appointed by the Employer is: Pamela Nao |

| Clause Ref. | Heading | Description |
|---|---|---|
| | | Procurement and Logistics Officer – Public Buildings Recovery Program<br>Public Works Department<br>PMB 9044<br>Port Vila<br>Vanuatu<br>Tel: 7107172<br>Email: pnnao@vanuatu.gov.vu |
| **1.7.1** | Bill of Quantities or Schedule of Activities | Schedule of Activities |
| **1.7.2** | Currency | VUV (Vatu) |
| **1.7.3** | Taxes and Duties | All works are to be VAT zero rated subject to the provision of a VAT zero-rated certificate and duty exempt for materials imported directly for the implementation of the project under the Public Buildings Recovery Program (GIP TCP: 17A978) by the Ministry of Infrastructure and Public Utilities |
| **1.8** | Subcontracting | Subcontractors are required to fill in TRS 2 and provide with the tender the Documents proving the qualifications and experience of the personnel undertaking the sub-contracting works (Attach CV for the Nominee). |
| **1.9** | Variation in Quantities | NA |
| **1.10.** | Tender Security | No Tender Security required |
| **1.11** | Marking of Tender | All Tenders to be marked as follows:<br><br>CONFIDENTIAL:<br>331/18/WK/RFT/EF/SH/BU/PBRP/PWD<br>Reconstruction and Renovation of the Ex FOL Building in Port Vila<br><br>The Secretary<br>Central Tenders Board Office<br>Ministry of Finance and Economic Management<br>PMB 9058<br>Top Floor<br>S.I.P Building<br>Rue Pasteur<br>Port Vila<br><br>SUBMISSION DATE & TIME:<br>10am 28 June 2018 “Not to be opened before the tender opening session” |
| **1.15.** | Performance Security | No Performance Security is required. |
| **1.16.1** | Debriefing of unsuccessful tenderers | As per GCT |

| Clause Ref. | Heading | Description |
|---|---|---|
| **1.17.1 &1.17.3** | Signing of the Contract | As per GCT |

## SECTION 3 - EMPLOYER'S TECHNICAL SPECIFICATIONS

### SCHEDULE OF WORKS

#### Introduction

This tender/contract is for the reconstruction and renovation of the Ex FOL Main Stadium Building in Port Vila. The Contract is a Lump Sum including all items required to complete the works including management and administration, fabrication, supply and transport of materials, labour, tools and equipment, profit, etc.

#### Background

Tropical Cyclone Pam caused significant damage to public buildings and infrastructure across Vanuatu over the period 12-14 March 2015. In June 2015 the Government of Vanuatu (GoV) established the Cyclone Recovery and Economic Strengthening Program (COM Decision 77/2015) which legislated the recovery program and established the guidelines for the implementation of the program. In compliance with the Program directive the Public Works Department (PWD) submitted the *MIPU GIP: Cyclone Recovery and Strengthening Program – Repair and Reconstruction of Public Buildings and Related Infrastructure – Package 1* which was endorsed by the Program Recovery Committee in September 2016. The GIP received funding support from the Australian Government (as represented by DFAT) on 12 October 2016 (GoV / DFAT: Arrangement 71806 between Government of Vanuatu and the Department of Foreign Affairs and Trade on 27 September 2016 dated 12 October 2016 [concurrence letter]).

The scope of the *Public Buildings Recovery Program (PBRP)* includes the planning, design, documentation preparation, procurement, execution, contract administration and management (including quality, cost and schedule management) of eleven project located in Port Vila and on Tanna Island, Tafea Province. This is one of the projects included under the PBRP.

#### Project Location & Site Layout

The project sites are located in Port Vila, Shefa Province. The site location and site layout are shown in Attachment 1.

#### Site Visit

The tenderer is recommended to undertake a site visit to familiarise themselves with the site prior to submitting a tender submission for this project.

#### Scope Of Work

There are two options for the
The Project (Contract) Works are defined by the following documents:

1. The Scope of Work (following Table)
2. The Drawings (Attachment 2)
3. Specifications
4. Vanuatu Building Code and Home Building Manual

| Item | Description | Description of Works |
|---|---|---|
| 1 | Mobilisation / Establishment | • Mobilize plant, equipment and materials to site.<br>• Establish a site office, administration and working areas.<br>• Install a project signboard at the entry to the site. The sign is to be of dimensions 1m x 1.5m, have steel posts and frame and be of professional (ie printed) standard. The layout and inclusions |

| | | |
|---|---|---|
| | | in the signboard will be confirmed at the commencement of the project works.<br>• Undertake a project start-up meeting with Project Manager<br>• Undertake site set out and clarify works requirements |
| 2 | Project / Contract Management | • Manage the project site and coordinate works with Project Manager / Supervisor<br>• Manage the works and compliance with project requirements<br>• Conduct fortnightly site meetings with Project Manager / Supervisor<br>• Manage project schedule to ensure that the project is implemented on time. Submit the works program to the Supervisor within 14 days of signing the contract.<br>• Develop a Quality Management Plan (QMP) and Inspection and Test Plan (ITP) and submit to Project Manager within 14 days after signing contract for approval. All materials and fabrication to be approved by the Supervisor prior to installation.<br>• Undertake quality management as per the QMP and ITP.<br>• Undertake project administration including submission of invoices, keeping project records such as a site diary and maintenance of quality<br>• Provision of site security for the duration of the project<br>• Consult with Department for Youth and Sport for any disruptions that may occur between construction works and the department works<br>• Escalate any issues that cannot be resolved on the site to the Supervisor |
| 3 | Work Health & Safety and Environmental Management | • Develop Site Safety Plan (SSP) and Environmental Management Plan (EMP) and submit to Project Manager / Supervisor within 14 days after signing contract for approval. The site safety plan is to address risks associated with working at heights, working around cranes and lifting, working around heavy equipment, etc.<br>• Establish and maintain site access control at the entry to the site<br>• Establish site safety and environmental controls on site<br>• All staff / workers are to be provided with and wear appropriate personal protective equipment such as safety boots, high visibility vests, safety helmets, gloves, safety glasses, hearing protection, etc.<br>• Establish and maintain a waste management system on site. The site should always be kept in a tidy state and waste materials should be removed from site on a regular basis.<br>• Building materials removed from the facilities as part of the demolition process that can be recycled should be separated from general waste and stockpiled neatly on site. The Supervisor is to work with the Contractor to develop a recycling plan for these materials. The Contractor is to allow for transport of these materials to an alternate site within the bounds of Vanuatu, or up to a distance of 15km.<br>• All general waste is to be disposed of at the Estas waste centre.<br>• Maintain a safe work environment on site maintain site work health and safety controls including daily safety meetings / tool-box talks |
| 4 | Insurances | • Establish and/or maintain insurances required for the works as required in the Specific Conditions of Contract |

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| **OPTION 1: Implement the design as included in this RFT** | | |
| 5 | Penetrations and Demolition Works | • Undertake demolition works as per drawings:<br>1. Main Stadium (drawing S01):<br>a. Remove the entire roof structure and all associated components<br>b. Remove existing cladding and girders<br>c. Remove end wall<br>d. Cut existing steel columns as per drawings<br>e. Excavate area for pad footing<br>f. Remove all damaged electrical and plumbing services<br>• Confirm all demolition with the Project Manager prior to commencing work.<br>• All demolition materials are to be cleared from the worksite on a weekly basis.<br>• The dust generated from demolition works is to be kept to a minimum.<br>• Noisy activities are to be carried out between 9am to 4pm to minimize effect on neighbours.<br>• All surfaces are to be made good to match existing.<br>• All dimensions are to be checked with supervising engineer before order for fabrication is made |
| 6 | Sports Centre Building / Main Stadium<br><br>Refer to drawings | The project is to include the construction of the following (as defined in the drawings):<br>• Fabrication drawings to be provided to the Supervisor prior to fabrication.<br>• Mark out and construct Slab extension as per drawing details and location<br>• Mark out and confirm setting out of base plates to existing layout<br>• Join existing slab to new slab with construction joints<br>• Construct concrete pad foundations around existing pads as per drawing dimensions and locations<br>• Erect 460UB82 columns with base plate on 50mm grout<br>• Construct concrete column around it to match other existing ones<br>• Undertake repair works on the base of the corroded columns to reinstate the integrity of the columns as per the Supervisors instructions<br>• Construct concrete columns around existing UB's as per drawings<br>• All bolts connecting members checked by supervising engineer<br>• Cut slab and construct strip footing as per drawings<br>• 200mm Block wall with N12 vertical reinforcements and N10 horizontal reinforcements full height of building where indicated as per drawings<br>• Any new block walls are to be rendered with 15mm thick mortar<br>• Construct bond beams mid height of overall wall height<br>• Construct ring beam at the top of wall<br><br>Roofing and roof plumbing: construct a new roof as per drawings including: |

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| | | • All purlins to be C-section C20015 Lysaght (or approved equivalent) as specified in drawings<br>• All purlins to be bolted to cleats by M10 bolts and washers<br>• New roofing sheets to be 24G Colourbond Trimdek (or approved equivalent) roofing sheet type fixed with Hex head self-drilling for metal cyclone roofing screws.<br>• All ridge capping and flashings to be 24G Colourbond (or approved equivalent) to match the roof sheeting.<br>• The roofing is to include (under the Colorbond cladding) galvanised chicken wire and double sided sisilation.<br>• Place new 400x300mm rectangular steel gutters & 150mm diameter down-pipe to roofing areas.<br>• Install girders onto front side of building<br>• Cladding on front side to be 24G Colourbond Trimdek (or approved equivalent)<br>• Install steel gridded windows (ventilated cladding)<br><br>Building Works:<br>General: all works are to be carried out as per the Vanuatu Building Code and Home Building Manual.<br>Notes of materials:<br>• All exposed steel to be coated with anti-rust paint (three coats)<br>• All steel members manufactured to dimensions on drawings<br>• All concrete to be at least 25MPa strength<br>All materials and work is to comply with the Inspection and Test Plan<br><br>Doors:<br>• Replace all doors to match existing<br>• All doors to have three hinges and locksets of good quality (to be approved prior to purchase).<br>• Install steel double doors to main entrance<br><br>Floor – clean the floor and repair any pavement damage. Paint the floor with three coats of paving paint (colour - white). Paint sports court lines for basketball and futsal courts. Details of setout to be approved prior to commencement of work.<br><br>Basketball rings. Construct two basketball ring and backboards to be hung from ceiling – to match existing.<br><br>Grandstand – construct a new grandstand seating to match existing. Steel framed and steel seating platforms. The contractor is to provide construction detail prior to fabrication. Paint the grandstand metal frame with three coats of anti-rust paint.<br><br>Electrical:<br>• Re-install/activate electric meter for the building if required – coordinate activities with Power Supplier in the area<br>• Install electrical wiring gauge 10, 30 Amps (or gauge 12, 20 Amps where necessary)<br>• Install Distribution panel where specified in the drawing (TBC)<br>• Install LED floodlights in arena with minimum brightness of 3000 lumens and beam angle 90°<br>• Install light switches for lights |

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| | | • Install single phase double power points where specified in the drawing – allow for the installation of 16 double power points, four on each wall, located 500mm above floor level. Locations to be confirmed.<br>• Allow for two LED lights to be installed under the entry walkway canopy of 60W capacity.<br>• Allow for the installation of seven (7) external LED security spot lights to be positioned on the external walls at a height of at least 5m. Brightness LED floodlights in arena with minimum brightness of 3000 lumens and beam angle 90°. Locations to be three (3) on front wall, one on each side wall and two to the rear of the building.<br>• Allow for the installation of 'EXIT' light signs to be installed above exit doors. The exit signs are to comply with Australian Standards.<br>• Complete all works as per the drawings and associated documentation.<br>General:<br>• All fittings are to be approved prior to purchase.<br>• All contract works are to be carried out by a licensed and qualified electrician.<br>All electrical works are to be tested and commissioned as part of the works<br><br>Painting:<br>All building surfaces including internal and external surfaces, are to be painted (excluding colorbond areas) as per the Technical Specification, including:<br>• All external walls to be repainted with 1 coat undercoat and 2 coats of acrylic exterior paint, Dulux or approved equivalent<br>• All internal walls to be repainted with 1 coat undercoat and 2 coats of acrylic exterior paint, Dulux or approved equivalent.<br>• All metaltimber window frames and door frames are to be painted with 1 undercoat and 2 coats of high gloss acrylic paint, Dulux or approved equivalent, colour to match the existing.<br>Surface preparation. All surfaces are to be scraped to remove any loose or cracked paint, sanded and wiped down with sugar soap and water prior to painting. |
| **OPTION B: Alternate Design / New Building** | | |
| 7 | New Building | The contractor designs and constructs a new / alternate building with the following criteria:<br>• The design must comply with the Vanuatu Building Code and be signed off by a certified structural engineer.<br>• The concept design is to be provided with the Tender Submission<br>• The building is to have the same footprint and height as the proposed design in Option A.<br>• All structural and framing steel is to be galvanised.<br>• Walls can be Colourbond (0.55BMT Lysaght or approved equivalent).<br>• The building is to maximise natural ventilation while providing protection from the weather.<br>• The price is to include the demolition of the existing structure. |

| | | |
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| | | • Grandstand seating and basketball rings are to be included in the price |
| 8 | Demobilisation | • Finish all works to a high standard including defect rectification<br>• Clear up all rubbish from site and remove to an approved waste disposal site.<br>• Remove all equipment, tools, and any other structures that was placed on site for the execution of the works.<br>• Undertake final inspection with Project Manager for approval. |

**Drawings**

The project drawings are included in Attachment 2. The works are to be executed as per the drawings. If there are any issues with the drawings, discrepancies or confusion, the Project Manager is to be contacted as soon as possible.

**Works By Others**

This Project only relates to the Main Stadium Building. There are two other works packages being released at the ExFOL Facility:

1. Renovation of the existing offices and sports facilities (eg gym and dojo)
2. Renovation of an existing toilet block and construction of a new toilet block

Contractors are to allow for liaison with other contractors on site and coordination of site activities so as to maximise site harmony and cohesiveness.

**Standards of Work**

All works are to comply with the Building Code of Vanuatu, the Vanuatu Home Building Manual and relevant Australian and New Zealand standards.

The Contract Works are to comply with the Public Works General Technical Specification – Building Works (updated February 2017).

**Current Site Conditions**

The current site conditions are illustrated in the photographs included in Attachment 3.

**Quality Management**

The project works are to be carried out to a high quality. Quality is primarily the responsibility of the CONTRACTOR and must be managed on a daily basis. The Contractor is to submit an Inspection and Test Plan (ITP) for the project within two weeks of signing the contract. The ITP is to be approved by the Project Manager prior to the commencement of site works. The ITP is to include contractor checks, client checks, signoffs and hold points. An example ITP is included in Attachment 4 and is to be modified to suit the works.

All welds are to be visually inspected and a weld record kept.

Defects inspections are to commence at least two weeks prior to the programmed handover date.

**Project Administration**

- **Insurance.** The Contractor is to have insurance prior to commencing works including:
    - General Public Liability (minimum 50million vatu)

- Workers compensation (as per Vanuatu Law)
- General insurance for vehicles and equipment.
- If the contractor does not provide evidence of insurance within 14 days the contract may be terminated.

- **Pre-Start Meeting.** A prestart meeting is to be held on site prior to the commencement of the project works. The objective of the prestart meeting is to confirm the project outcomes, responsibilities and relationships for the project. Attendees at the meeting are to include representatives the contractor and Project Manager (PWD).

- **Project Meetings.** A meeting is to be held on a fortnightly basis during the works between the Contractor and the Supervisor and PWD staff.

- **Invoices.** Draft invoices are to be presented to the Project Manager at least one week prior to the end of the month for verification prior to submission of the final invoice.

- **Access To Services.** The contractor is to provide electrical power and water for the works. This access can be negotiated with MoYS but the Contractor is responsible for payment of all costs associated with the supply.

- **Work Hours.** Work hours are generally to be 7:30am to 5pm Monday to Saturday.

- **Security.** The contractor is to ensure that the site security is maintained at all times and that there is no theft on the work site.

- **Ablutions.** The Contractor is to provide ablution facilities for site personnel.

- **Behavior.** All of the contractor's staff are to act in a professional manner at all times.

**Work Health and Safety**

The Contractor is to ensure that all personnel involved in the works, visitors to the works site and people around (and adjacent to) the work site are kept safe. The Contractor is to submit a Project Safety Plan to the Supervisor within 14 days of signing the contract. The Safety Plan is to, as a minimum, address the following issues:

- **PPE**. Workers are to have personal protective equipment (PPE) appropriate to their tasks including (but not limited to) hearing protection (when operating noisy equipment), safety glasses (mechanical tool operation), gloves, boots and hard hats (when working below other works, and when construction equipment is operating).
- **High Visibility Clothing**: Site personnel are to wear high visibility vests on site.
- **Vehicle Use.** Vehicles in and around the construction site are to be registered and operated by licenced drivers in a safe manner
- **Electricity.** Any work that involves the use of electricity, including temporary power during works, is to be carried out be a suitably trained and certified electrician.
- **Signage.** The WHS measures and warnings are to be well signposted around the site.
- **Access and Site Control.** The contractor is to delineate the worksite from the surrounding areas. The contractor is to work with PWD and other stakeholders (noting that there are two sites) to minimise disruption to adjacent operations and activities.
- **Noise.** Noise is to be kept to a minimum. Noisy activities are to be conducted between the hours of 9am to 4pm.
- **Drugs and Alcohol.** No smoking, alcohol consumption or consumption of any other

drugs is permitted by the contractor or staff whist on site.

- **Crane operations.** The contractor is to provide procedures (risk assessment and job safety assessment) for the safe operation and risks management associated with the operation of crane and other heavy equipment.
- **Working at heights.** The contractor is to provide procedures (risk assessment and job safety assessment) for working at heights and erection and maintenance of scaffolding.

**Environmental**

The Contractor is to ensure that the project is implemented in an environmentally responsible manner and compliant with the laws of Vanuatu. The Contractor is to submit a Project Environmental Management Plan Site Safety Plan within 14 days of signing the contract. The plan is to address the following issues:

- **Waste management**: All waste is to be removed from site and disposed of as per council requirements. No waste is to be burnt on site. The costs of waste disposal is to be included in the Contractors Lump Sum price.
- **Dust Control**: to be managed and kept to a minimum
- **Noise**: is to be kept to a minimum
- **Sand and Gravel**: is to be sourced from an area where it is being mined in a sustainable manner. The sand and gravel quarry sites are to be inspected by the Supervisor and PWD staff.

**Child and Gender Protection**

The Contractor is to comply with Government of Vanuatu and DFAT child protection policies, including:

- No children are to enter the worksite or accommodation areas occupied by workers.
- The minimum age for staff / workers undertaking normal low risk work is 16 years. The minimum age for high risk work (such as working at heights) is 18 years old.
- No children younger than that stated above will be engaged for any portion of the works including off-site or subcontracted activities such as quarry works, manufacture of blocks or transport of materials.
- No worker shall enter into an inappropriate relationship with a child (of a sexual nature or otherwise). This is ground for immediate dismissal from the Contract site.
- Photographs taken during the contract period should not include images of children.
- The contractor is encouraged to employ local labour and in particular female staff to be part of the project team.
- The contractor is not to discriminate against females. All contract staff, government staff, stakeholders and surrounding communities are to be treated fairly and with respect.
- The Contractor is encouraged to caution staff to not enter into inappropriate relationships while implementing the project. Any worker found to have paid for sexual favours during the course of the contract implementation will be dismissed from the project and this may be grounds for terminating the Contract.

**Handover & Completion**

Upon reaching completion of the project works the contractor is to inform the Project Manager. A joint inspection involving the Project Manager and contractor's representative will be carried out to confirm any outstanding works and/or defects. If the project works comply with the contract drawings, documentation and specification then a Certificate of Completion will be issued. The issue of the Certificate the contractual conditions will be enacted regarding return of guarantees and commencement of Defect Liability Periods and Warranties.

**Attachment 1: Site Location and Layout**

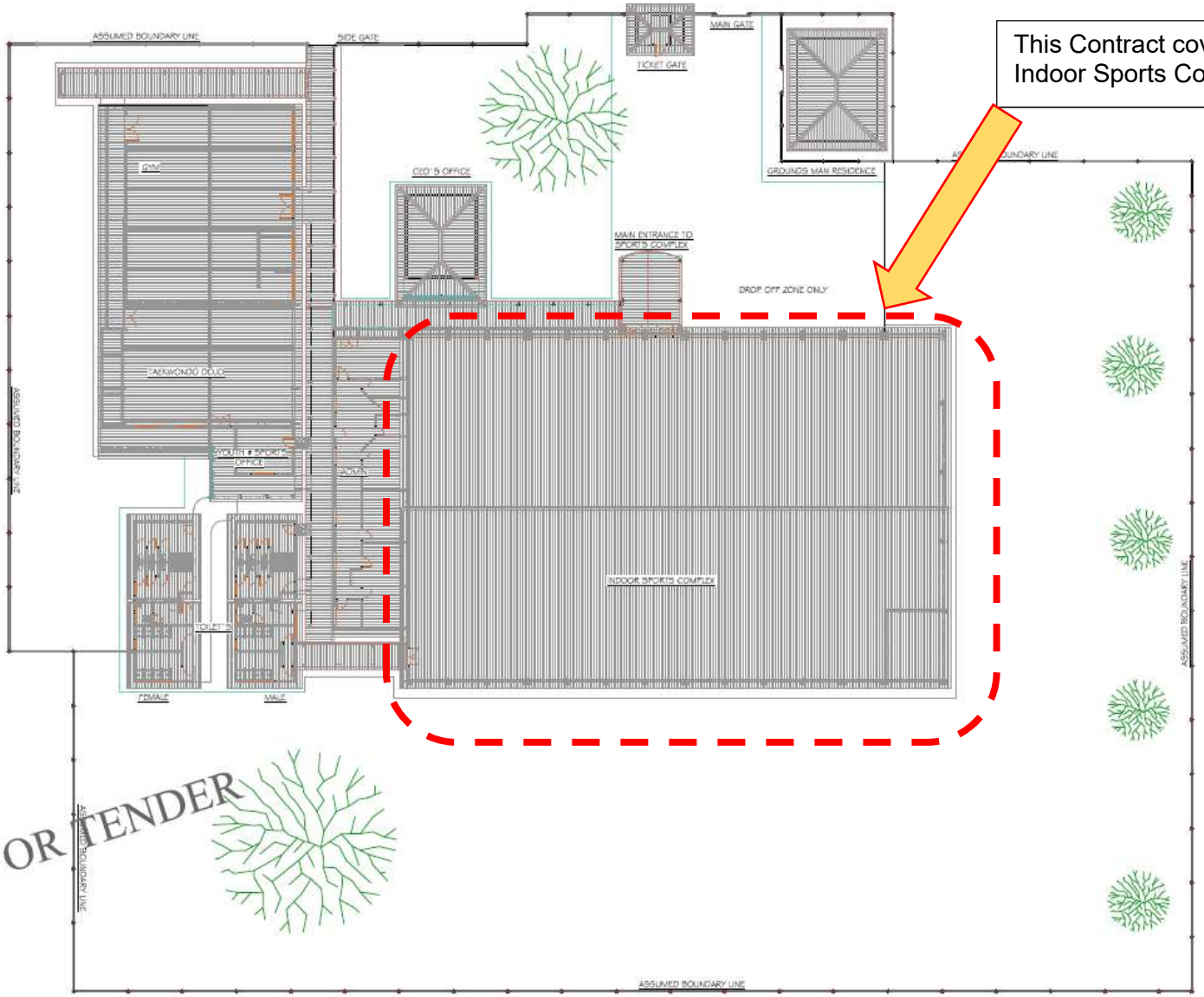

Map 1: Location of project site – VPF House No.7 – Port Vila

**Attachment 2: Drawings**

Note that the drawings for the project are embedded in a larger set of drawings that include works to other buildings on the site. This Project only relates to the Main Stadium Building.

Drawing List

| Drawing No | Drawing Name |
|---|---|
| A0A | TITLE PAGE |
| A01 | SITE LOCATION |
| A02 | SITE LAYOUT |
| A01 | SPORTS COMPLEX AND ADMIN BUILDING LAYOUT |
| S01 | DEMOLITION PLAN |
| S02 | STEEL STRUCTURE LAYOUT |
| S03 | SECTIONS AND DETAILS |
| S04 | TRUSS DETAILS |
| S05 | FOOTING DETAILS |
| S06 | COLUMN DETAILS |
| S07 | WINDOW DETAILS |
| A0B | SPECIFICATIONS |
| E01 | ELECTRICAL LAYOUT |
| S04 | TYPICAL FOOTING DETAILS |
| S05 | TYPICAL SLAB DETAILS |
| S06 | TYPICAL WALL DETAILS |
| S07 | TYPICAL COLUMN AND BEAM DETAILS |
| | |

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| | | REVISION | DATE: |
|---|---|---|---|
| DESIGNED BY: | BI CONSULTING | 1 | |
| DRAWN BY : | R,B | 2 | |
| CHECKED BY : | B. IEREMIAH | 3 | |
| CLIENT NAME : | PBRP PROJECT | | |
| DATE : | 02,06,17 | | |

NOTES :

PROJECT : EX-FOL RENOVATION

DRAWING TITLE : SITE LAYOUT

DRAWING No : A 0 2

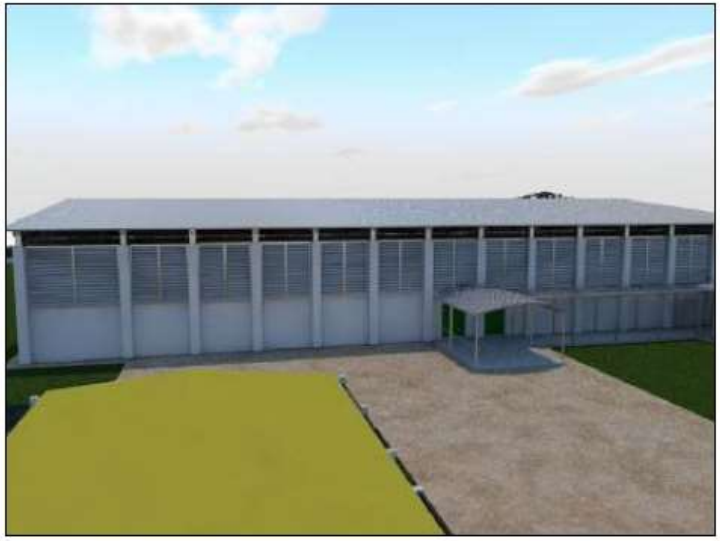
SCALE A3: NTS

PROJECTION : NA.

OVERHEAD FRONT VIEW

PUBLIC PARKING IN FRONT

FRONT VIEW OF INDOOR SPORTS COMPLEX



OVERHEAD FRONT VIEW OF INDOOR SPORTS COMPLEX



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| | | REVISION | DATE: |
|---|---|---|---|
| DESIGNED BY: | BI CONSULTING | 1 | |
| DRAWN BY : | R.B | 2 | |
| CHECKED BY : | B. IEREMIAH | 3 | |
| CLIENT NAME : | PBRP PROJECT | | |
| DATE : | 19.06.17 | | |

NOTES :

ALL DIMENSIONS ARE TO BE VERIFIED ON SITE BY CONTRACTOR

PROJECT : EX-FOL RENOVATION

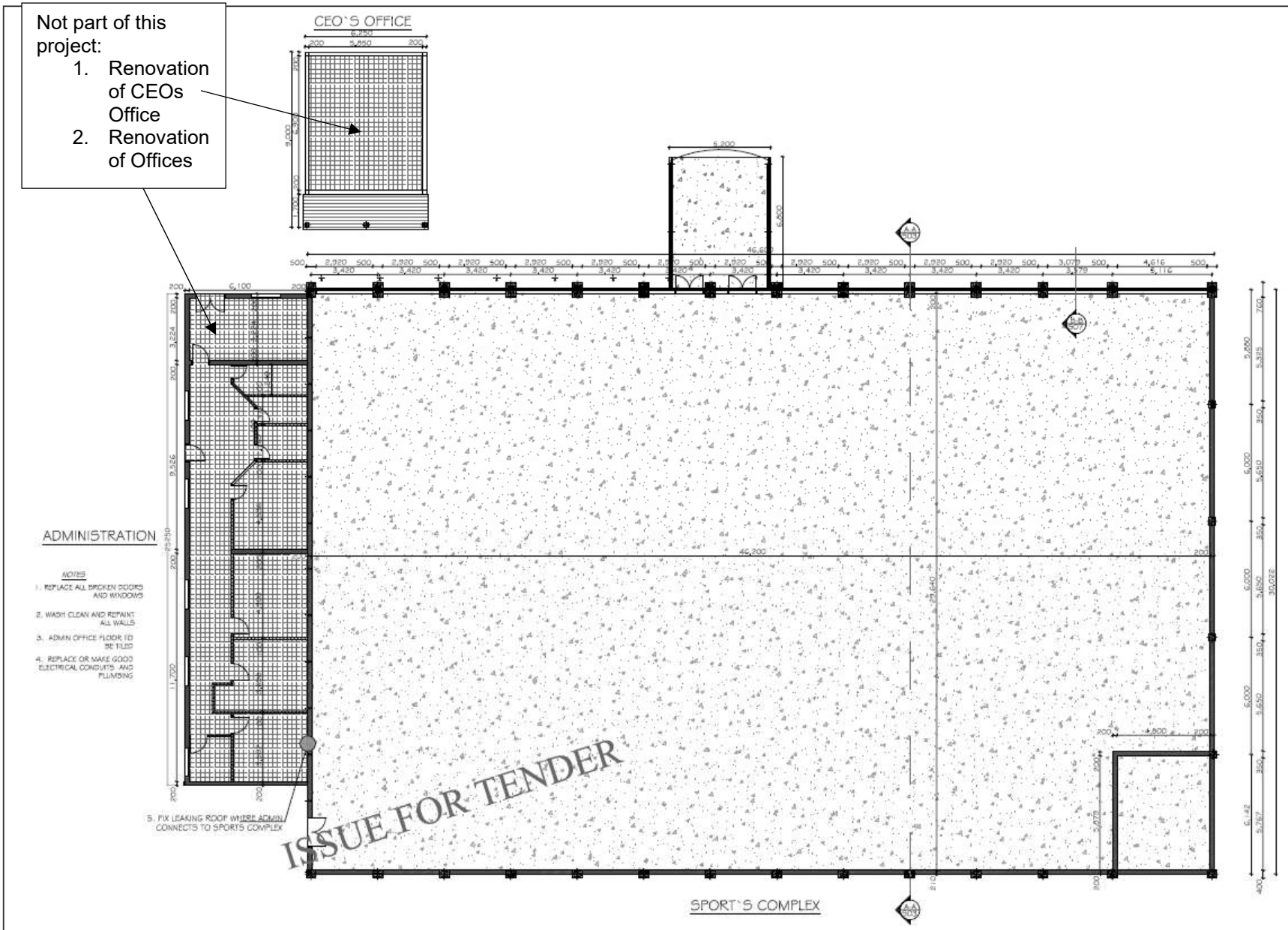
DRAWING TITLE : PERSPECTIVE 1

DRAWING No : A 0 4 — SCALE A3:

PROJECTION : NA. — NTS

Not part of this project:

1. Renovation of CEOs Office
2. Renovation of Offices

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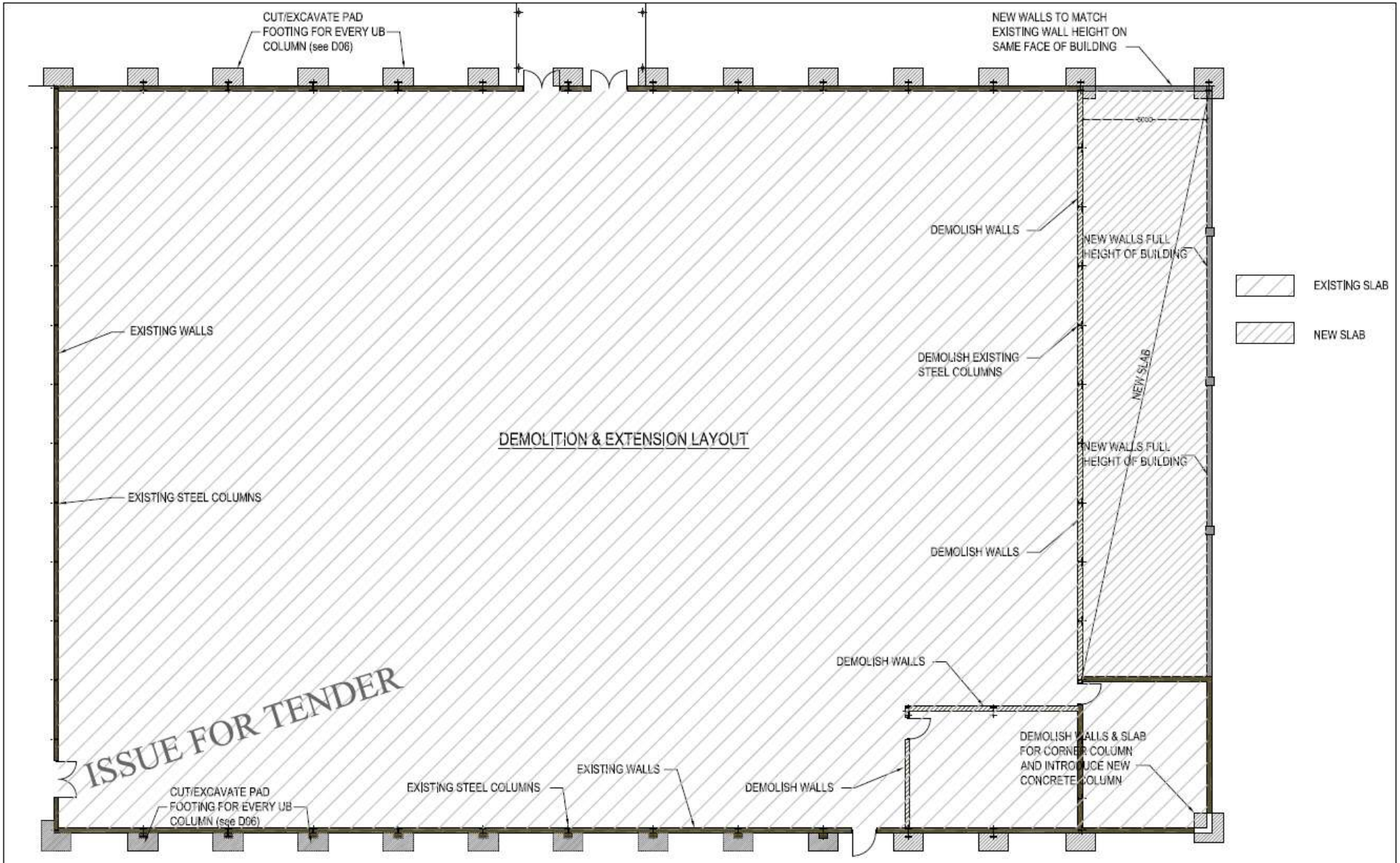
| | | REVISION | DATE: |
|---|---|---|---|
| DESIGNED BY: | BI CONSULTING | 1 | |
| DRAWN BY : | R.B | 2 | |
| CHECKED BY : | B. IEREMIAH | 3 | |
| CLIENT NAME : | PBRP PROJECT | | |
| DATE : | 05.06.17 | | |

NOTES :

| | |
|---|---|
| PROJECT : | EX-FOL RENOVATION SPORTS COMPLEX |
| DRAWING TITLE : | SPORTS COMPLEX AND ADMIN BUILDING LAYOUT |
| DRAWING No : | A 0 1 |
| SCALE A3: | NTS |
| PROJECTION : | NA. |

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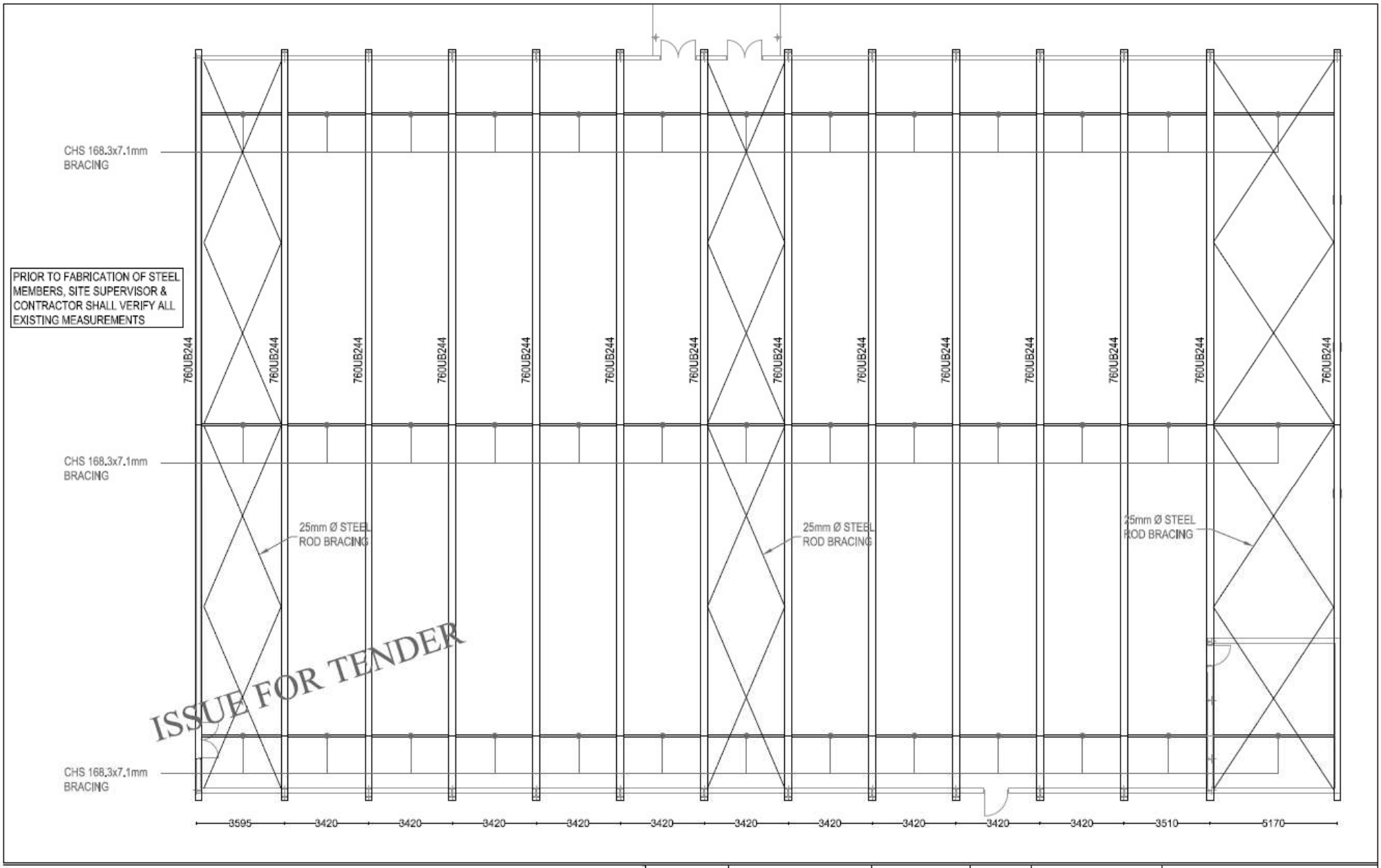
| | | REVISION | DATE: |
|---|---|---|---|
| DESIGNED BY: | BI CONSULTING | 1 | |
| DRAWN BY : | R,B | 2 | |
| CHECKED BY : | B. IEREMIAH | 3 | |
| CLIENT NAME : | PBRP PROJECT | | |
| DATE : | 19.06.17 | | |

**NOTES :**
ALL DIMENSIONS ARE TO BE VERIFIED ON SITE BY CONTRACTOR

| | |
|---|---|
| PROJECT : | EX-FOL RENOVATION |
| DRAWING TITLE : | DEMOLITION LAYOUT & EXTENSION |
| DRAWING No : | S 0 1 |
| SCALE A3: | NTS |
| PROJECTION : | NA. |




PRIOR TO FABRICATION OF STEEL MEMBERS, SITE SUPERVISOR & CONTRACTOR SHALL VERIFY ALL EXISTING MEASUREMENTS

ISSUE FOR TENDER

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| | | REVISION | DATE: |
|---|---|---|---|
| DESIGNED BY: | BI CONSULTING | 1 | |
| DRAWN BY : | R,B | 2 | |
| CHECKED BY : | B. IEREMIAH | 3 | |
| CLIENT NAME : | PBRP PROJECT | | |
| DATE : | 19.06.17 | | |

NOTES :

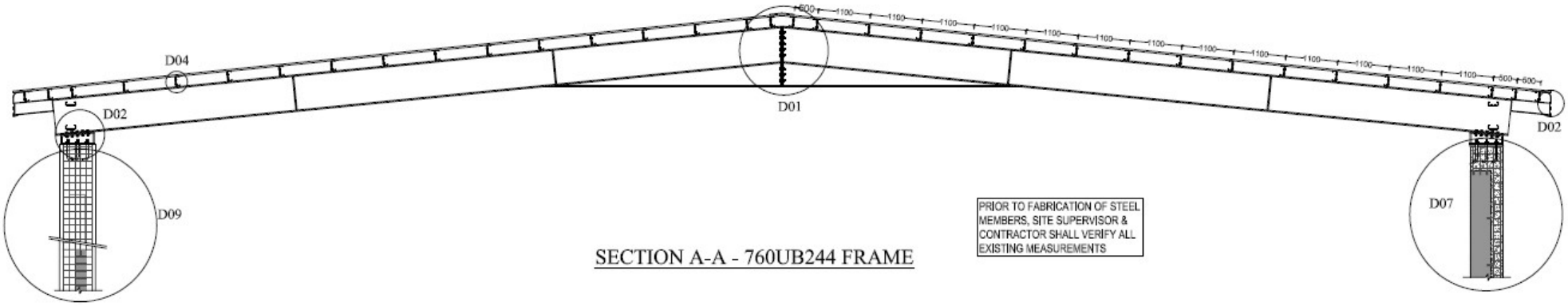
ALL DIMENSIONS ARE TO BE VERIFIED ON SITE BY CONTRACTOR

PROJECT : EX-FOL RENOVATION

DRAWING TITLE : UB STEEL TRUSS LAYOUT

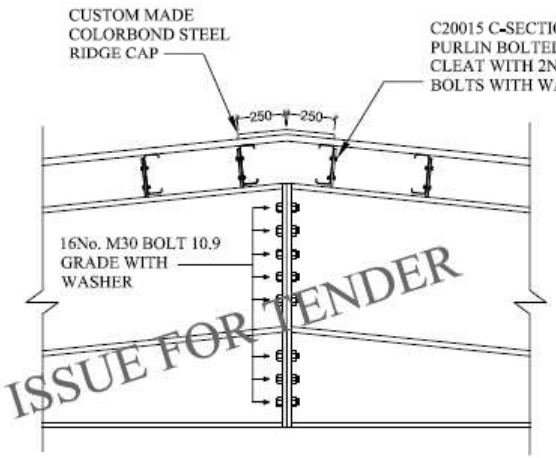
DRAWING No : S 0 2 SCALE A3:

PROJECTION : NA. NTS

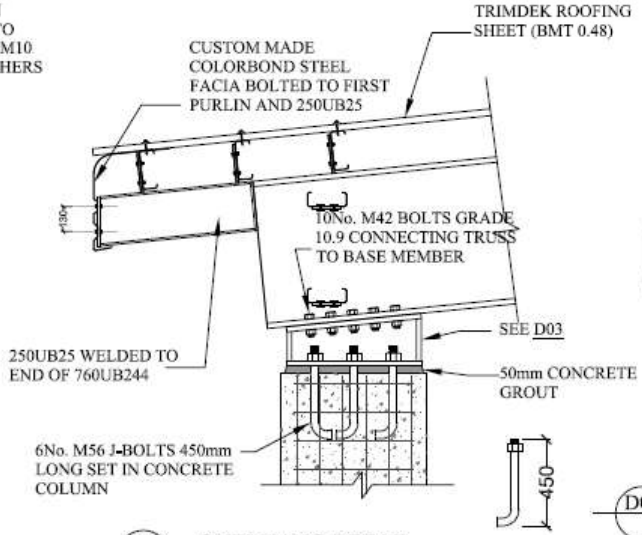



PRIOR TO FABRICATION OF STEEL MEMBERS, SITE SUPERVISOR & CONTRACTOR SHALL VERIFY ALL EXISTING MEASUREMENTS

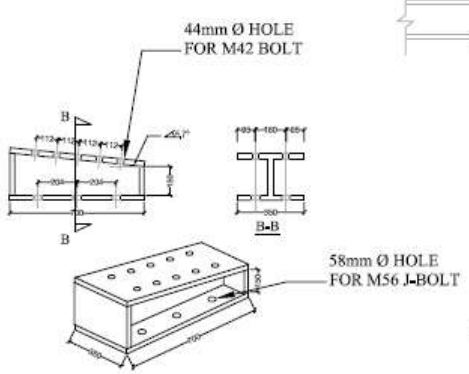
## SECTION A-A - 760UB244 FRAME



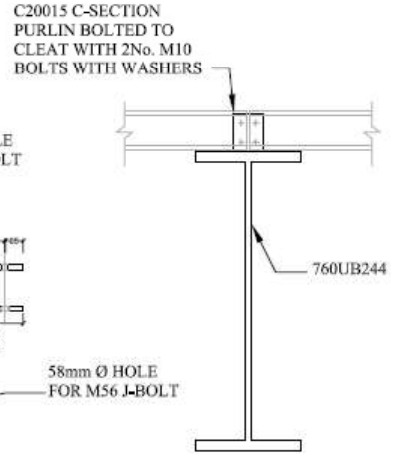

D01 RIDGE CONNECTION DETAIL
NTS




D02 OVERHANG DETAIL
NTS




D03 BASE MEMBER DETAIL
NTS




D04 C20015 CONNECTION DETAIL
NTS

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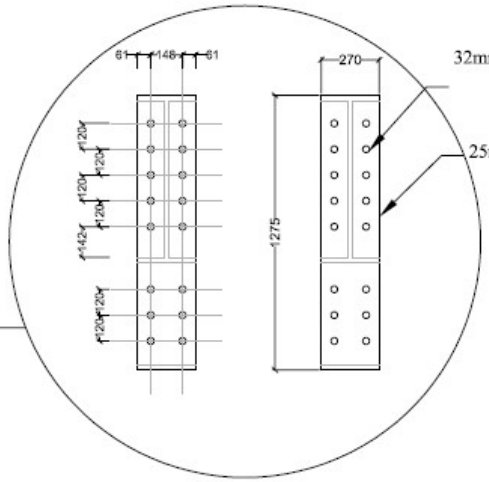
| DRAWN BY : | R,B | 2 | |
| CHECKED BY : | S. IEREMIAH | 3 | |
| CLIENT NAME : | PBRP PROJECT | | |
| DATE : | 19.06.17 | | |

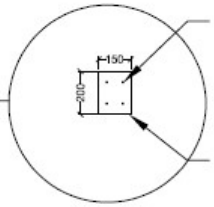
NOTES :
ALL DIMENSIONS ARE TO BE VERIFIED ON SITE BY CONTRACTOR

PROJECT : EX-FOL RENOVATION
DRAWING TITLE : SECTION A & DETAILS
DRAWING No : S 0 3
SCALE A3:
PROJECTION : NA.
NTS



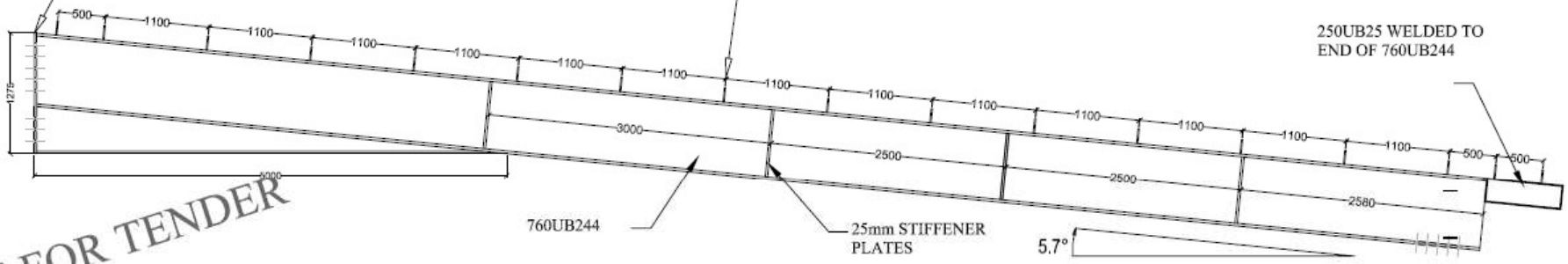

32mm Ø HOLE FOR M30 BOLTS

25mm PLATE




12mm Ø HOLE FOR M10 BOLT

150x200x12mm CLEAT PLATE




250UB25 WELDED TO END OF 760UB244

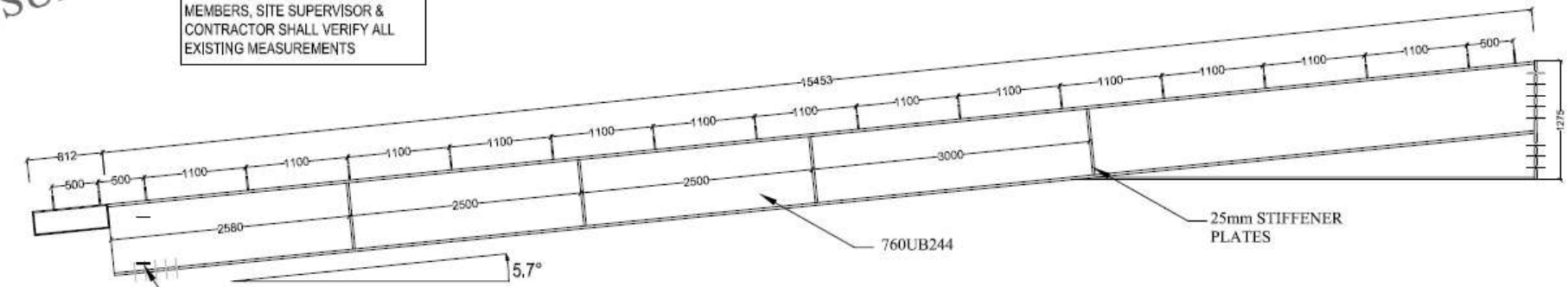
760UB244

25mm STIFFENER PLATES

5.7°

ISSUE FOR TENDER

PRIOR TO FABRICATION OF STEEL MEMBERS, SITE SUPERVISOR & CONTRACTOR SHALL VERIFY ALL EXISTING MEASUREMENTS




760UB244

25mm STIFFENER PLATES

2No 150x100x10mm PLATE WELDED TO TRUSS FOR GIRDING

D05 760UB244 TRUSS MEMBER DETAIL

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| CHECKED BY : | B. IEREMIAH | 3 | |
| CLIENT NAME : | PBRP PROJECT | | |
| DATE : | 19.06.17 | | |

NOTES :

ALL DIMENSIONS ARE TO BE VERIFIED ON SITE BY CONTRACTOR

PROJECT : EX-FOL RENOVATION

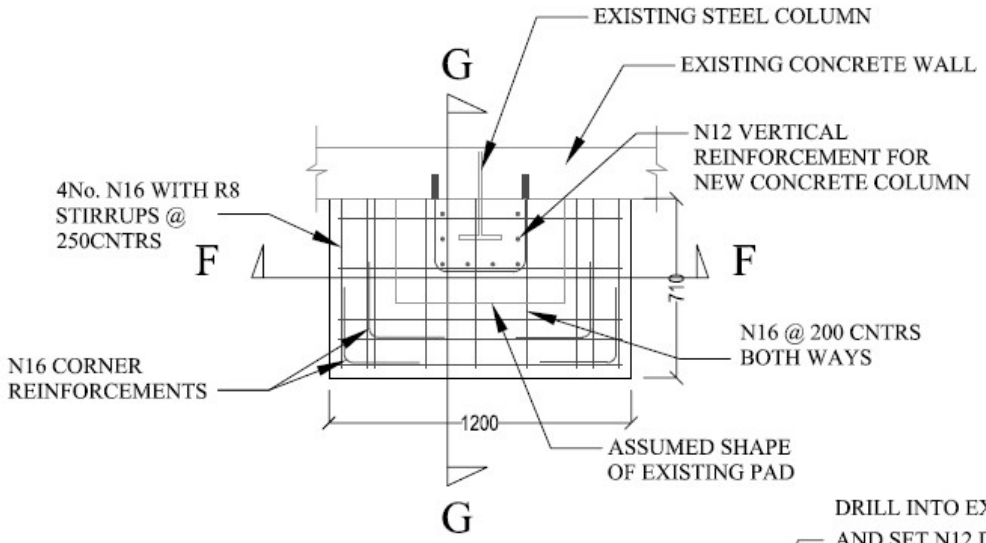
DRAWING TITLE : TRUSS DETAILS

DRAWING No : S 0 4

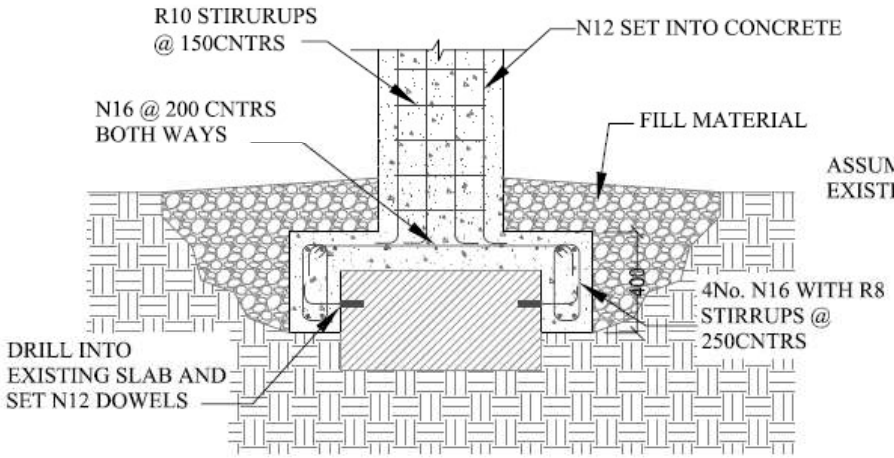
SCALE A3:

PROJECTION : NA.

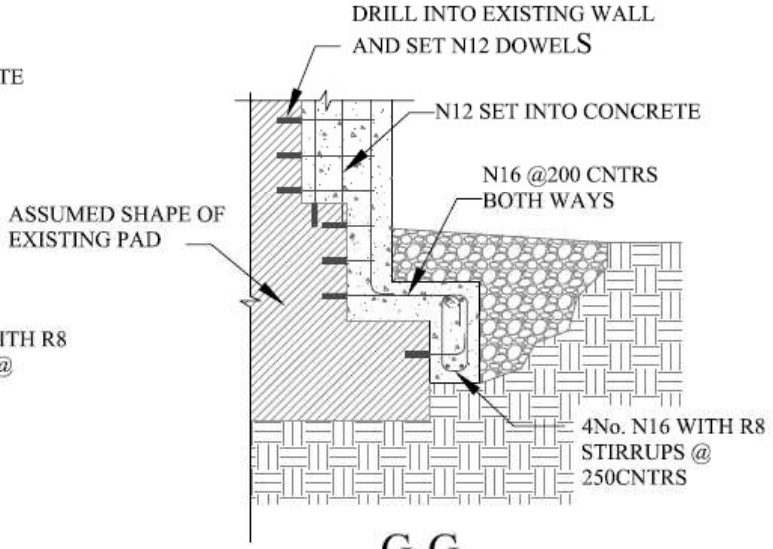
NTS




NOTE: SINCE THE EXISTING PAD IS BASED ON ASSUMED DESIGN, ONE SECTION OF THE PAD MUST BE EXCAVATED SO SUPERVISING ENGINEER CAN CONFIRM DETAILS




F-F




G-G

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D06 PAD FOOTING DETAILS

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| CLIENT NAME : | PBRP PROJECT | | |
| DATE : | 19.06.17 | | |

NOTES :

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PROJECT : EX-FOL RENOVATION

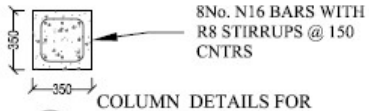
DRAWING TITLE : FOOTING DETAILS

DRAWING No : S 0 5

SCALE A3:

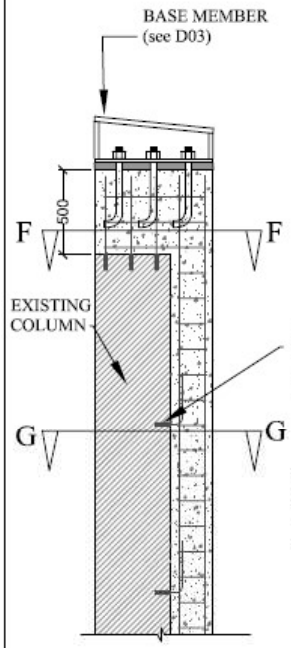
PROJECTION : NA.

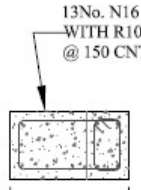
NTS




D10 COLUMN DETAILS FOR EXTENSION WALL
NTS

EXISTING STEEL COLUMN HEIGHT TO BE CUT SHALL BE VERIFIED BY ENGINEER ON STE

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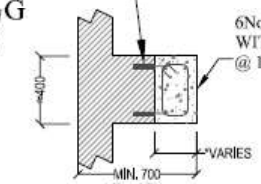
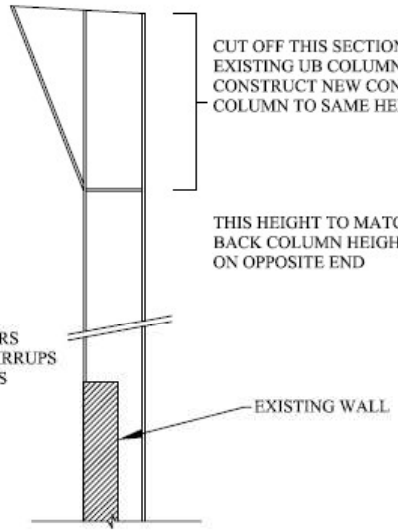
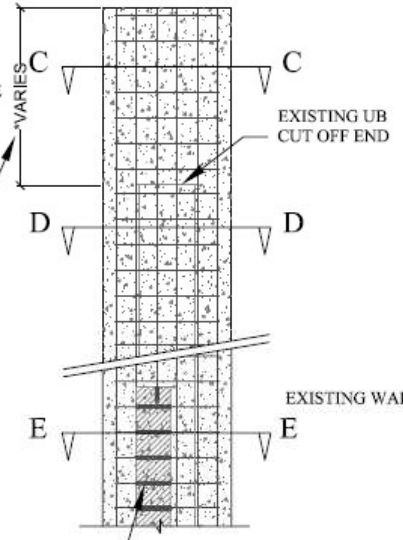


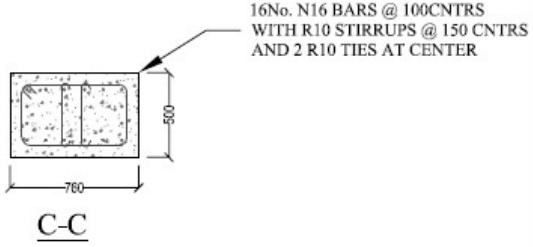

G-G



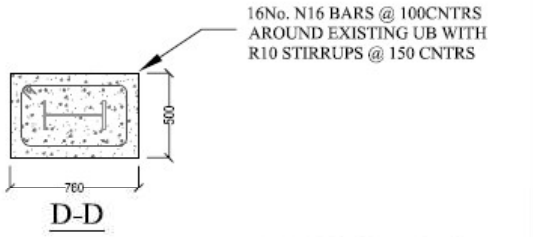

D07 BACK COLUMN DETAILS
NTS

D08 EXISTING FRONT COLUMN
NTS

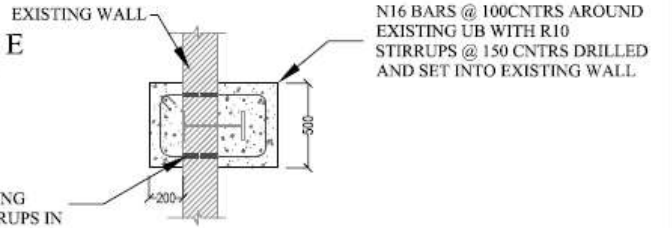



C-C




D-D




E-E

D09 FRONT COLUMN DETAILS
NTS

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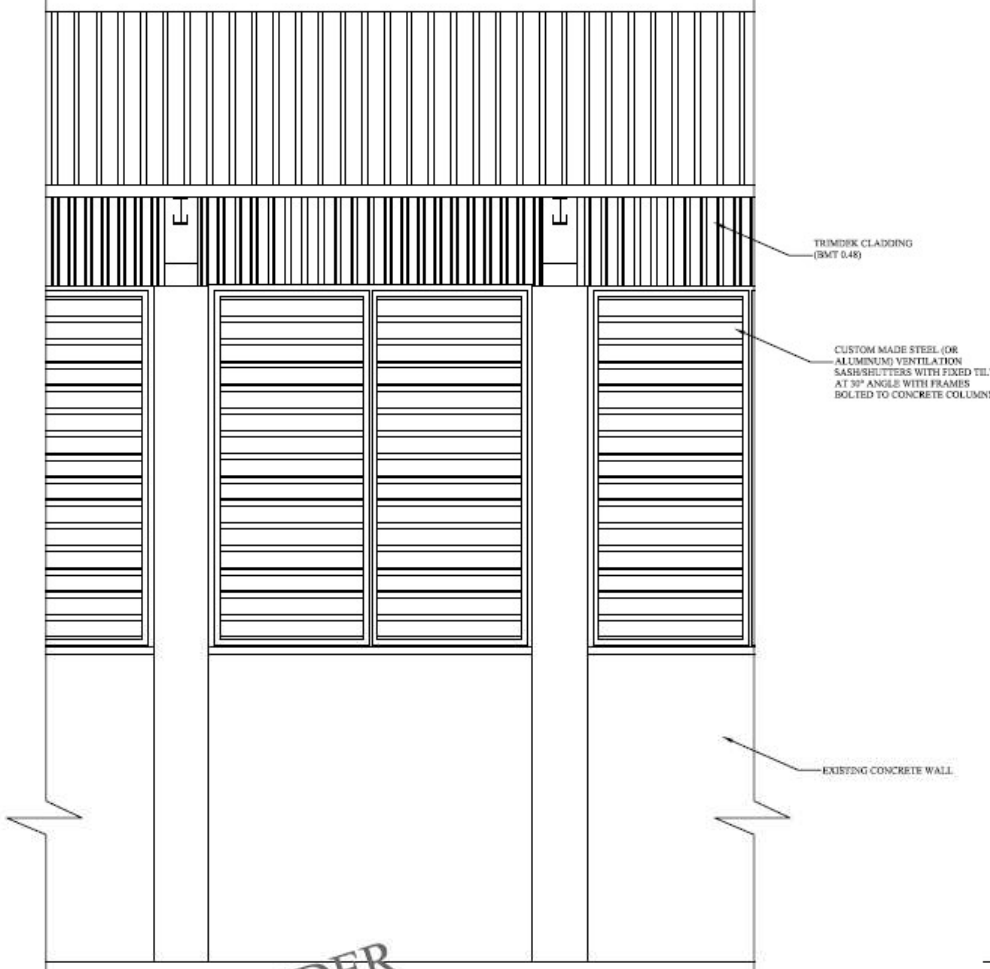
| CHECKED BY : | B. IEREMIAH | 3 | |
| CLIENT NAME : | PBRP PROJECT | | |
| DATE : | 19.06.17 | | |

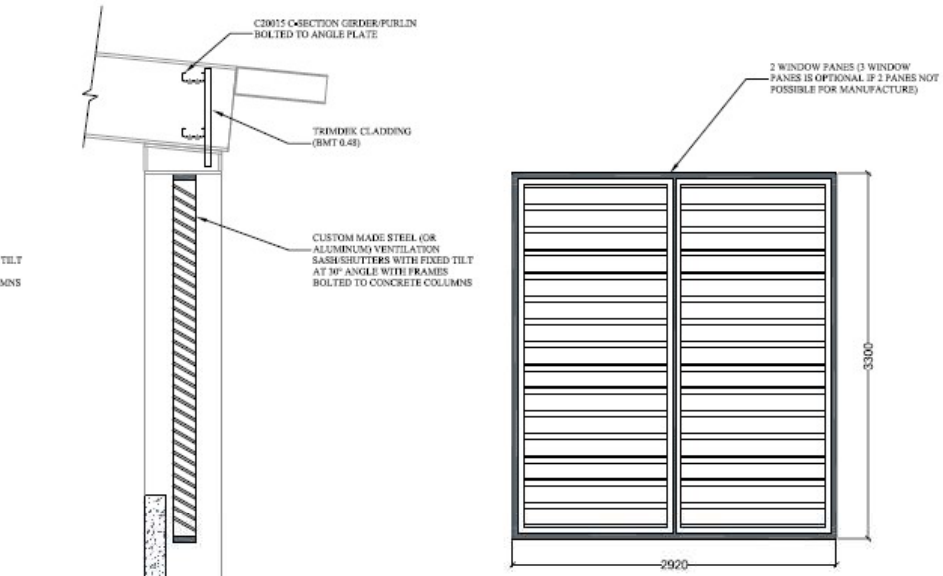
NOTES :
ALL DIMENSIONS ARE TO BE VERIFIED ON SITE BY CONTRACTOR

PROJECT : EX-FOL RENOVATION
DRAWING TITLE : COLUMN REINFORCEMENT DETAILS
DRAWING No : S 0 6
SCALE A3:
PROJECTION : NA.
NTS




D10 WINDOW ELEVATION

NTS




D11 WINDOW SECTION B

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| DRAWN BY : | R,B | 2 | |
| CHECKED BY : | B. IEREMIAH | 3 | |
| CLIENT NAME : | PBRP PROJECT | | |
| DATE : | 19.06.17 | | |

NOTES :

ALL DIMENSIONS ARE TO BE VERIFIED ON SITE BY CONTRACTOR

PROJECT : EX-FOL RENOVATION

DRAWING TITLE : WINDOW AND CLADDING

DRAWING No : S 0 7 SCALE A3:

PROJECTION : NA. NTS

## GENERAL NOTES

G1. THE BUILDER IS TO CHECK AND BE RESPONSIBLE FOR THE CORRECTNESS OF ALL DIMENSIONS AND ANY DISCREPANCY TO BE REPORTED IMMEDIATELY.
G2. STABILITY OF THE BUILDING DURING CONSTRUCTION AND EXCAVATION IN THE VICINITY OF OF NEIGHBOURING BUILDINGS IS THE RESPONSIBILITY OF THE BUILDER. APPROVAL OF ALL PROPOSED WORKS MUST BE GRANTED BY THE CONSULTING ENGINEER PRIOR TO COMMENCEMENT OF WORK.
G3. DO NOT SCALE DRAWINGS.
G4. ALL WORKMANSHIP AND MATERIALS ARE TO BE IN ACCORDANCE WITH THE CURRENT AUSTRALIAN STANDARDS AND LOCAL GOVERNMENT REQUIREMENTS.
G5. FOOTINGS HAVE BEEN DESIGNED TO BEAR ON ALLUVIAL SOIL WITH A SAFE BEARING WORKING CAPACITY OF 150KPA.
G6. ROOF DECKING TO BE FIXED BY TYPE 17 SCREWS AT ALTERNATE CREST INTERVALS OVER WHOLE ROOF.

## BLOCKWORK NOTES

B1. ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH AS 3700.
B2. MORTAR ADMIXTURES SHALL NOT BE USED WITHOUT THE WRITTEN APPROVAL OF THE SUPERINTENDENT.
B3. ALL LOAD BEARING BLOCKWORK SHALL HAVE A MINIMUM CRUSHING STRENGTH OF 10-12 MPA U.N.O.
B4. ALL BLOCKS TO BE CLEAN AND FREE FROM OILS, ETC.
B5. ALL BLOCKWORK SHALL BE REINFORCED VERTICALLY AT 800 CENTRES U.N.O.
B6. ALL CORES CONTAINING VERTICAL REINFORCEMENT SHALL BE FILLED WITH 15MPa CONCRETE AND COMPACTED.
B7. COREFILL BLOCKWORK EVERY THIRD LAYER.
B8. NO CHASES SHALL BE CUT INTO LOAD BEARING BLOCKWORK AND BLOCKWORK SHALL BE LEVEL AND SMOOTH.
B9. THE TOP COURSE OF ALL LOAD BEARING BRICKWORK AND BLOCKWORK SHALL BE LEVEL AND SMOOTH AND COVERED WITH AN APPROVED SLIDING MATERIAL UNLESS NOTED OTHERWISE.
B10. NO MASONRY TO BE CONSTRUCTED ON PROPPED SLABS OR BEAMS.
B11. MAXIMUM HEIGHTS OF BLOCKWORK WALLS BETWEEN POINTS OF LATERAL SUPPORT AS DEFINED IN AS 3700 SHALL BE 2.7 m U.N.O.
B12. ALL BLOCKWORK SHALL BE REINFORCED HORIZONTALLY EVERY THIRD LAYER.
B13. ALL BLOCKWORK REINFORCEMENTS SHALL BE CONNECTED AT THE ENDS BY HOOKS OR COGS TO TANGENTIAL REINFORCEMENTS.
B14. ALL SPLICES IN BLOCKWORK REINFORCEMENTS SHALL BE 500mm MIN AND SHALL BE TIED.

## TIMBER NOTES

T1. ALL TIMBER FOR THE ROOF TRUSSES SHALL BE F7 GRADE AND TREATED FOR TERMITES.
T2. ALL JOINTS SHALL BE NAILED BY SUITABLE GALVANISED NAILS AND SHALL HAVE NAIL PLATES ON THE TWO OPPOSITE FACES. GALVANISED NAIL PLATES SHALL BE SELECTED TO MATCH THE LOCATION OF THE JOINTS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
T3. TRUSSES MANUFACTURED ON SITE SHALL BE STORED UNDER COVER SO THAT NO WARPING, CRACKING, TWISTING ETC SHALL BE NOTICEABLE ON THE TIMBER MEMBERS.
T4. TIMBER WITH SERIOUS KNOTS IN THEM SHALL NOT BE USED AS STRUCTURAL MEMBERS.
T5. NAILPLATES, NAILS ETC USED IN THE FABRICATION OF TRUSSES SHALL BE HOT DIPPED GALVANISED.
T6. PURLINS SHALL BE SPACED AS SHOWN AND NOTED ON DRAWINGS. THEY SHALL BE NAILED IN PLACE AND THEN STRAPPED WITH GALVANISED STRAPS AND FIXED BY AT LEAST 5 NAILS PER LEG.
T7. PURLIN JOINTS SHALL NOT BE ALLOWED BETWEEN TRUSSES UNLESS AGREED BY THE SUPERVISOR'S REPRESENTATIVE.

## CONCRETE NOTES

C1. ALL CONCRETE SHALL BE HANDLED, PLACED, COMPACTED, FINISHED AND CURED IN ACCORDANCE WITH AS 3600 SO THAT THE HARDENED CONCRETE WILL SATISFY THE DESIGN REQUIREMENTS FOR STRENGTH, SERVICEABILITY AND DURABILITY.
C2. UNLESS SPECIFIED OTHERWISE, ALL CONCRETE SHALL BE NORMAL-CLASS, & MANUFACTURED & SUPPLIED IN ACCORDANCE WITH AS 1379.

| ELEMENT | MAXIMUM AGGREGATE SIZE | SLUMP | COMPRESSIVE STRENGTH GRADE |
|---|---|---|---|
| FOOTINGS | 20mm | 80mm | 20 MPa |
| INTERNAL SLABS ON GROUND | 20mm | 80mm | 20 MPa |
| EXTERNAL SLABS ON GROUND | 20mm | 80mm | 25 MPa |
| SUSPENDED SLABS | 20mm | 80mm | 32 MPa |
| BEAMS & COLUMNS | 20mm | 80mm | 25 MPa |
| BLOCKWORK GROUT | 10mm | 230mm | 15 MPa |

C3. CONCRETE COVER TO ALL REINFORCEMENT U.N.O.

| ELEMENT | SURFACES FORMED & FULLY ENCLOSED IN INTERIOR ENVIRONMENTS | SURFACES FORMED & EXPOSED IN EXTERIOR ENVIRONMENTS | SURFACES CAST ON OR AGAINST GROUND |
|---|---|---|---|
| FOOTINGS | - | - | 100mm |
| SLABS | 20mm | 50mm | 100mm |
| BEAMS | 30mm | 50mm | - |
| WALLS | 20mm | 50mm | - |
| COLUMNS | 30mm | 50mm | - |

- HIGH FIRE RESISTANCE RATINGS OR SEVERE EXPOSURE CONDITIONS MAY REQUIRE GREATER COVERS, REFER AS 3600.
- ADDITIONAL THICKNESS PROVIDED BY TOPPINGS & COATINGS SUCH AS TILES OR MEMBRANES SHALL NOT BE INCLUDED OR DEEMED TO CONTRUBUTE THE REQUIRED COVER.
- WHERE SURFACES CAST ON OR AGAINST GROUND ARE PROTECTED BY A DAMP-PROOF MEMBRANE, THE COVER MAY BE REDUCED BY 10 mm.

C4. SPLICES IN REINFORCEMENT SHALL BE MADE ONLY IN THE POSITION SHOWN AND SHALL BE SUFFICIENT TO DEVELOP THE FULL STRENGTH OF THE REINFORCEMENT OR AS DETERMINED BY THE SUPERVISOR.
C5. THE DESIGN, CERTIFICATION, CONSTRUCTION AND PERFORMANCE OF THE FORMWORK AND FALSE WORK IS THE RESPONSIBILITY OF THE BUILDER, DESIGN, CONSTRUCTION AND STRIPPING TIMES TO COMPLY WITH AS 3610 AND AS 3600 OR AS APPROVED BY THE ENGINEER.
C6. CONCRETE SIZES SHOWN DO NOT INCLUDE THICKNESS OF APPLIED FINISHES.
C7. ALL REINFORCEMENT SHALL BE ACCURATELY PLACED IN THE POSITION SHOWN, TIED AND SUITABLY SUPPORTED TO MAINTAIN THE SPECIFIED COVER.
C10. MEMBERS SHALL BE INITIALLY CURED CONTINUOUSLY FOR AT LEAST 3 OR 7 DAYS UNDER AMBIENT CONDITIONS, AS SPECIFIED BY AS 3600. 50 mm WET SAND BLANKET MAY BE USED ON APPROVAL.
C11. CONDUITS, PIPES, ETC. MUST NOT BE PLACED IN CONCRETE COVER. NO HOLES OR CHASES OTHER THAN THOSE SHOWN ON THE DRAWINGS SHALL BE ALLOWED.
C12. ALL CONCRETE TO BE MECHANICALLY VIBRATED AND THE VIBRATOR SHALL NOT BE USED TO SPREAD CONCRETE.
C13. ALL TIE RODS, WHERE NOT SHOWN ON PLANS, SHALL BE R10 AT 300 CENTRES, LAPS TO TIE RODS SHALL BE NO LESS THAN 450 mm.
C14. FORMWORK STRIPPING TIME SHALL BE 7 DAYS MIN FOR SUSPENDED MEMBERS AND 3 DAYS MIN FOR OTHERS U.N.O.

## STEEL REINFORCEMENT NOTES

S1. ALL REINFORCEMENTS SHALL COMPLY WITH AS/NZ 4671.
S2. UNLESS SPECIFIED, ALL REINFORCEMENT BARS SHALL BE 300E OR 500E GRADE AND SHALL BE CHECKED BY THE SUPERVISING ENGINEER FOR CORRECT GRADE MARKINGS.
S3. REINFORCEMENT DRAWINGS ARE INDICATIVE AND NOT NECESSARILY DRAWN TO SCALE.
S4. REINFORCEMENT SPACING'S ON DRAWINGS ARE FROM CENTER LINES OF REINFORCEMENTS.
S5. UNLESS SPECIFIED, REINFORCEMENT BARS SHALL OVERLAP BY A MINIMUM OF 500MM.
S6. UNLESS SPECIFIED, STARTER BARS FOR VERTICAL STRUCTURAL COMPONENTS SHALL OVERLAP BY A MINIMUM OF 800MM.
S7. REINFORCEMENT FOR HORIZONTAL STRUCTURAL COMPONENTS SHALL BE HELD IN CORRECT POSITION BY PLASTIC SUPPORT CHAIRS OR OTHER APPROVED SUPPORTS.
S8. BENT BARS SHALL NOT BE RE-BENT UNLESS CHECKED AND PERMITTED BY THE ENGINEER.
S9. ALL REINFORCEMENT BARS WITH BREAKAGES, FRACTURES, DEFECTS, ETC, SHALL NOT BE USED FOR CONSTRUCTION.
S10. REINFORCEMENT BARS SHALL BE KEPT CLEAN AND FREE FROM RUST, DUST, EARTH, PAINT, OIL, GREASE AND OTHER MATERIAL WHICH MAY COMPROMISE THE BOND BETWEEN CONCRETE AND STEEL REINFORCEMENT.
S11. ALL LAID/POSITIONED REINFORCEMENTS BARS IN A STRUCTURAL COMPONENT MUST BE CHECKED BY THE ENGINEER BEFORE POURING CONCRETE.
S12. CONTRACTOR SHALL SEEK CLARIFICATION FROM THE ENGINEER IMMEDIATELY BEFORE LAYING WHEN POSITION OF REINFORCEMENTS ARE NOT UNDERSTOOD.
S13. WHERE NECESSARY, TOP REINFORCEMENT SHALL BE SUPPORTED BY 12MM DIAMETER BARS AT 300 CENTERS ON A BAR CHAIN AT 1000MM CENTERS.
S14. BARS WHICH ARE LEFT PROJECTING FOR LONGER THAN THREE DAYS SHALL BE PAINTED WITH HEAVY COAT OF NEAT CEMENT GROUT.
S15. UNLESS SPECIFIED, TIE WIRES USED SHALL BE ANNEALED IRON WIRE NOT LESS THAN NO/16 GAUGE, OR OTHER APPROVED FASTENERS.
S16. WITH THE APPROVAL OF THE ENGINEER, SPOT WELDING BY ELECTRIC ARC PROCESS IS PERMITTED TO BE USED IN LIEU OF THE WIRE FOR SELECTED LOCATIONS

## STRUCTURAL STEEL

ST1. ALL STEEL WORKS SHALL COMPLY TO AS 4100, AS/NZS 1554, AS/NZS 4680, AS/NZS 1252
ST2. UNLESS SPECIFIED ALL STEEL MEMBERS SHALL BE OF MINIMUM GRADE 300
ST3. STEEL MEMBERS MUST BE FREE FROM ALL LAMINATION, SCALING AND ALL DEFECTS
ST4. ALL WELDING SHALL BE CARRIED OUT BY QUALIFIED WELDERS WITH EXPERIENCE IN SUCH AREAS
ST5. THE SURFACE OF ALL WELDS SHALL BE SMOOTH AND FREE FROM MAJOR DEFORMITIES BEFORE GALVANIZATION
ST6. ALL SURFACES TO BE GALVANIZED SHALL BE FREE FROM ALL GREASE, OIL, DIRT, RUST, MILL SCALE, RESIDUE OR OTHER FOREIGN MATERIAL USING SOLVENT CLEANING, SAND OR GRIT BLASTING, HAND SANDING OR SCRAPING, WIPING OR OTHER
ST7. ALL EXPOSED STEEL MEMBERS SHALL BE COATED WITH CORROSION RESISTANT COAT, MOST COMMONLY ZINC OR OTHER.
ST8. GALVANIZED ITEMS SHALL NOT BE CUT, WELDED, OR DRILLED AFTER THE GALVANIZATION
ST9. PAINT SHALL CONSIST OF ONE PRIMER COAT AND ONE OR TWO COATS OF PAINT AS SPECIFIED
ST10. ALL FASTENERS INCLUDING RIVETS, SCREWS, NUTS, AND BOLTS SHALL BE STAINLESS STEEL OR GALVANIZED
ST11, BOLT GRADE USED AS SPECIFIED (GRADE 4.6, GRADE 8.8, GRADE 10.9) WITH HEAVY DUTY GALVANIZED WASHERS
ST12. ALL MEMBERS SHALL BE CAREFULLY CUT AND HOLES ACCURATELY LOCATED FOR MEMBERS TO FIT WELL WHEN CONSTRUCTING
ST13. RIVETING, BOLTING AND WELDING SHALL BE DONE ONCE STEEL MEMBERS ARE ALIGNED AND BRACED WELL
ST14. DIAMETER OF THE HOLE FOR BOLT SHALL NOT EXCEED THAT OF THE BOLT BY MORE THAN 2.0 MM UNLESS SPECIFIED
ST15. THE CONSTRUCTION SUPERVISOR MAY INDEPENDENTLY INSPECT AND TEST MATERIALS DURING FABRICATION AND GALVANISING
ST16. CARE MUST BE TAKEN DURING TRANSPORTATION, LOADING AND UNLOADING AND TAKE APPROPRIATE MEASURES TO PREVENT LOSS OF, OR DAMAGE TO THE STEELWORK OR GALVANIZING.

ISSUE FOR TENDER

Australian Aid

REPUBLIC OF VANUATU
PUBLIC WORKS DEPARTMENT
HEAD OFFICE
PMB 9044, PORT VILA
VANUATU
TEL: (678) 23300/33400 Email: PWDHeadOffice@vanuatu.gov.vu

REPUBLIQUE DE VANUATU
SERVICE DES TRAVAUX PUBLICS
LE SIEGE SOCIAL
B.P.B. 9044, PORT VILA
VANUATU


BI CONSULTING
PO Box:3504
Ph:(678) 27313
Mob:(678) 5984474
Freswota 4
Port Vila
Vanuatu
Email: bikeni@blc.com.vu


| | | REVISION | DATE: |
|---|---|---|---|
| DESIGNED BY: | BI CONSULTING | 1 | |
| DRAWN BY : | R.B | 2 | |
| CHECKED BY : | B. IEREMIAH | 3 | |
| CLIENT NAME : | PBRP PROJECT | | |
| DATE : | 06.06.17 | | |

NOTES :

PROJECT : EX - FOL RENOVATION
DRAWING TITLE : SPECIFICATIONS
DRAWING No : A 0 8
SCALE A3: NTS
PROJECTION : NA.

**Attachment 3: Site Photographs**

Photo 1 – Sports Center

Photo 2 – Sports Center existing roof to be demolished

Photo 3 – Shutters for gym damaged

Photo 4 – Sisalation peeling for gym building

## SECTION 4 - TENDER RESPONSE SCHEDULES

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**Schedule**

**RESPONSE TO**
**REQUEST FOR TENDER WORKS**

| |
|---|
| **[Tenderer to enter name of Government of Vanuatu Procuring Entity (the "Employer")]** |

| | |
|---|---|
| **RFT NUMBER:** | **[Tenderer to enter tender number, as per Invitation to Tender]** |
| **DESCRIPTION:** | **[Tenderer to enter brief description of requirements, as per Invitation to Tender]** |
| **EMPLOYER:** | **[Tenderer to enter name of Employer, as per Invitation to Tender]** |
| **SUBMISSION ADDRESS:** | **[Tenderer to enter submission address, as per Invitation to Tender]** |
| **SUBMISSION DATE & TIME:** | **[Tenderer to enter date and time, as per Letter of Invitation to Tender]** |

**TENDER RESPONSE SCHEDULE 1**
**TENDER SUBMISSION FORM**
**[To be completed on Tenderer's letterhead]**
The completed Tender form and attachments together will comprise the Tenderer's offer

**To:**

We agree to be bound by the **General Conditions of Tender, Special Conditions of Tender, General Conditions of Contract, Special Conditions of Contract**, for the Contract **511/17/WK/RFT/EF/SH/BU/PBRP/PWD - Reconstruction and Renovation of Ex FOL Stadium Building in Port Vila** and we hereby offer to perform the Works, in conformity with the Request for Tender (RFT) and in accordance with the Technical Specifications including the ~~Bill of Quantities /~~ Schedule of Activities, for a Total tender price of:

| | CURRENCY & AMOUNT | |
|---|---|---|
| [Total tender price and currency in words] | | [Total tender price in figures] |

This amount is
☐ Exclusive of VAT and duties
☐ Inclusive of VAT and duties

We confirm receipt of the Addenda and Variations to the Invitation to Tender listed below:

| Addendum | Dated | Date Received |
|---|---|---|
| | | |

Our Tender shall be valid for the period of time specified in the RFT, and it shall remain binding upon us and may be accepted at any time before the expiration of that period. If our Tender is accepted, we commit to obtaining a Performance Security in accordance with the RFT for the due performance of the Contract. Furthermore we warrant that we comply with all the eligibility criteria specified in the RFT.

We have no conflict of interest, and our firm, its affiliates and subsidiaries have not been declared ineligible under the laws of the Republic of VANUATU or in accordance with the RFT.

We further warrant that:

(i) We are free from insolvency, bankruptcy or similar status;
(ii) We have the legal capacity to enter into contract;
(iii) We are current with payment of taxes;
(iv) We and any director, officer, manager or supervisor of ours has not, within a period of three years preceding the date of issuance of the invitation to tender, been convicted of any criminal offence, whether in VANUATU or elsewhere:
    a. Relating to professional conduct
    b. Relating to the making of false statements or misrepresentations as to his eligibility or qualifications to enter into a procurement contract;
    c. Involving dishonesty;
    d. Under anti-corruption legislation;
(v) We have not been suspended or disbarred by administrative or judicial proceedings from participating in procurements, whether in Vanuatu or elsewhere.

We understand that you are not bound to accept the lowest evaluated Tender or any other Tender that you may receive.

Signed:
Name:
Title/Position:
Authorised for and on behalf of Contractor:
Address:

## SCHEDULE 1.1: SCHEDULUE OF ACTIVITIES

### PREAMBLE TO THE SCHEDULE OF ACTIVITIES

1. The Schedule of Activities shall be read in conjunction with the General Conditions of Tendering, Special Conditions of Tendering, General Conditions of Contract, Special Conditions of Contract, Technical Specifications and Drawings.

2. The Tenderer shall provide a tender in accordance with the format of the Schedule of Activities.

3. Payment for all of the Works will be the tendered Lump Sum either exclusive of VAT and duties. The payment of the Lump Sum will be spread over the period of implementation. It shall be calculated on the basis of the percentage of implemented Works at the time of the Interim Certificate.

4. A breakdown of the Works is provided in the Schedule of Activities. This breakdown of the tendered Lump Sum over the major activities of the Contract constitutes the means by which the amount payable for the Works is apportioned for Interim Payments.

5. This is the extent of the purpose of the Schedule of Activities. It is not to be regarded or construed as placing or constituting any limit on the Contractor's obligations to provide all the Works described in the contract documentation against the tendered Lump Sum.

6. The whole cost of complying with the provisions of the Contract shall be included in the Lump Sum, and where no item is provided in the Schedule of Activities, the cost shall be deemed to be distributed among prices entered for the related items of Work.

7. Provisional Sums included and so designated in the Schedule of Activities shall be expended in whole or in part at the direction and discretion of the Employer in accordance with the Conditions of Contract.

8. A Contingency Sum of 10% is included in the Schedule of Activities for use by the Employer to cover such contingencies as commissioning additional Works or carrying out Variations. When commissioning additional works or carrying out variations the value of these shall be calculated using the quoted unit prices. In the event that the contingency is not used or only partially used the sum remaining is to be deducted from the overall Contract Price.

9. In the case of Arithmetic Errors, the Lump Sum will govern. The sums entered for the individual items in the Schedule of Activities will be adjusted by the Employer to accord with the Lump Sum tendered.

**Activity Schedule**

| Serial | Item | Unit | Amount (Vatu) |
|---|---|---|---|
| 1 | Mobilisation / Establishment | Lump Sum | |
| 2 | Project / Contract Management | Lump Sum | |
| 3 | Work Health & Safety and Environmental Management | Lump Sum | |
| 4 | Insurances | Lump Sum | |
| **Nominate:**<br>**OPTION A: Implement Design as included in the Tender Document**<br>**Or**<br>**OPTION B: Construct new building as specified** | | | |
| 5 | Penetrations and Demolition Works | Lump Sum | |
| 6 | New Footings (including extension) | Lump Sum | |
| 7 | Construct concrete floor extension | Lump Sum | |
| 8 | Repair and Strengthening columns | Lump Sum | |
| 9 | Construct walls and fixed windows | Lump Sum | |
| 10 | Supply and install new roof structure | Lump Sum | |
| 11 | Construct new grandstand seating | Lump Sum | |
| 12 | Doors and Windows | Lump Sum | |
| 13 | Painting | Lump Sum | |
| 14 | Electrical | Lump Sum | |
| 15 | Demobilisation | Lump Sum | |
| **16** | **Contingency – 10%** | Lump Sum | |
| **17** | **Total for Sports Facility** | Lump Sum | |

This amount is

☐ Exclusive of VAT and duties

☐ ~~Inclusive of VAT and duties~~

Signed:
Name:
Title/Position:
Authorised for and on behalf of Contractor:
Address:

**TENDER RESPONSE SCHEDULE 2**
**ELIGIBILITY AND QUALIFICATION INFORMATION**
**[The Tenderer must complete this schedule and attach any relevant supporting documents]**

**2.1 Status of Tenderer:**

| | |
|---|---|
| Tenderer's Legal Name: | |
| Country of Registration: | |
| Address in Country of Registration: | |
| Year of Registration; | |
| Business Certificate Number | |
| VAT Registration Number (if applicable) | |
| Registration No. in Vanuatu | |

**2.2 Annual turnover of Works contracts for the last three completed years**

| Year | Total Amount for the Year in VUV or equivalent |
|---|---|
| | |
| | |
| | |
| Average Annual Construction Turnover for these 3 years | |
| ***Current Commitments.*** Please provide a list of current projects, their value, supervisor, labour requirements and start and finish dates | |

**2.3 Balance Sheet Information and Income Statement for the past financial year (or last 3 financial years if required e.g. international tender)**

| Information from Balance Sheet<br>Amounts in VUV Equivalent (exchange rates as per Reserve Bank of Vanuatu as at 30 June 2017) | | | |
|---|---|---|---|
| Years | 2015 | 2016 | 2017 |
| Total Assets | | | |
| Total Liabilities | | | |
| Net Worth | | | |
| Current Assets | | | |
| Current Liabilities | | | |
| Information from income statement<br>Amounts in VUV Equivalent (exchange rates as per Reserve Bank of Vanuatu as at 30 June 2017) | | | |
| Total Revenues | 2015 | 2016 | 2017 |
| Profits before Tax | | | |
| Profits after Tax | | | |

**2.4 Access to financial resources**

| Source of financing | Total amount in VUV equivalent (exchange rates as per Reserve Bank of Vanuatu as at 30 June 2017) | Amount actually available after taking into account other commitments Amount in VUV equivalent (exchange rates as per Reserve Bank of Vanuatu as at 30 June 2017) |
|---|---|---|
| | | |
| | | |

**2.5 Works of a similar nature and volume over the past 3 years** (3 examples)

| | | |
|---|---|---|
| **Contract No 1 of 3** | | |
| Contract Identification: | | |
| Award Date:<br>Completion Date: | | |
| Role in Contract: | [State Contractor, or Subcontractor) | |
| Brief Description of Work undertaken | | |
| Total Contract Amount in VUV equivalent (exchange rates as per Reserve Bank of Vanuatu as at 30 June 2017) | | |
| If partner in a JV or subcontractor, specify participation of total contract amount: | Percentage of Total: | |
| Employer's Name<br>Address<br>Telephone Number<br>Fax Number<br>E-mail address | | |
| **Contract No 2 of 3** | | |
| Contract Identification: | | |
| Award Date:<br>Completion Date: | | |
| Role in Contract: | [State Contractor, or Subcontractor) | |
| Brief Description of Work undertaken | | |
| Total Contract Amount in VUV equivalent (exchange rates as per Reserve Bank of Vanuatu as at 30 June 2017) | | Amount |
| If partner in a JV or subcontractor, specify participation of total contract amount: | Percentage of Total | |
| Employer's Name<br>Address<br>Telephone Number<br>Fax Number<br>E-mail address | | |
| **Contract No 3 of 3** | | |
| Contract Identification: | | |
| Award Date:<br>Completion Date: | | |
| Role in Contract: | [State Contractor, or Subcontractor) | |
| Brief Description of Work undertaken | | |
| Total Contract Amount in VUV equivalent (exchange rates as per Reserve Bank of Vanuatu as at 30 June 2017) | | Amount |

| | | |
|---|---|---|
| If partner in a JV or subcontractor, specify participation of total contract amount: | Percentage of Total | |
| Employer's Name<br>Address<br>Telephone Number<br>Fax Number<br>E-mail address | | |

**2.6 Proposed Site Manager and other Key Staff**

| Name | Role/Responsibility | Qualifications & General experience in Construction (years) | Experience in proposed post (years) |
|---|---|---|---|
| | Site Manager | | |
| | | | |
| | | | |
| **[Complete and attach CV for the nominee(s)]** | | | |

**2.7 Contractor's proposed key Plant / Equipment**

| Description of equipment<br>Brand, model | Age (years)<br>Condition (new, good, poor) | Owned, leased or to be purchased<br>No of units available and location |
|---|---|---|
| | | |
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| | | |

**2.8 Method Statement and Works Programme**

Proposed Work Method Statement and Construction Programme, giving descriptions, drawings, charts, as necessary, to comply with the requirements of the Employer's Technical Specifications to be attached to this TRS.

Provide detail of the Steel Supplier and quality control systems of the manufacturer.

If proposing a new building, **Option B**, provide the following information:

- A concept design for the building
- Nominate a design company / engineer
- Provide a schedule that includes design and construction phases

**2.9 Documentation attached:**

| Attached with this TRS are the Originals of the following documents: | Type |
|---|---|
| Power of Attorney for the signatory to sign the Tender | Original |

| | |
|---|---|
| Tender Security | NA |
| Proposed Work Method Statement and Construction Programme | Original |
| Completed ~~Bill of Quantities~~ or Schedule of Activities | Original |
| Completed Schedules | Original |
| **Enclosed with this TRS are copies of the following documents:** | |
| Business Registration Certificate in the Tenderer's country of registration | Copy |
| Latest Income Tax Clearance Certificate (if applicable – refer SCT) | Copy |
| In case of government owned entity in Vanuatu, documents establishing legal and financial autonomy and compliance with commercial law. | Copy |
| Details of name, address, contact data of banks that may provide references if contacted by the Employer. | Copy |
| Financial statement (balance sheet including all related notes, and income statements) for the past 3 financial years complying with the following conditions:<br>• The financial statement must reflect the financial situation of the Tenderer and not sister or parent companies;<br>• The financial statement must be complete, including all notes to the financial statement<br>The financial statement must correspond to the 3 financial years already completed and audited (no statements for partial periods shall be requested or accepted). | Copy |
| Documents proving access to financial resources | Copy |
| Documents proving the qualifications and experience of the Site Manager | |
| Any other documents requested by this RFT | Copy |

### 2.10 Safety and Environmental Management

Company demonstrates that it can manage Safety on the project site in compliance with Government of Vanuatu Work Health and Safety regulations. Company has a Safety Policy and Management Plan – provide evidence.

Company demonstrates that it can undertake environmental management on the project site in compliance with Government of Vanuatu Work Environmental legislation and regulations – provide evidence (eg Environmental Plan).

Signed:
Name:
Title/Position:
Authorised for and on behalf of Contractor:
Address:

## SECTION 5 - GENERAL CONDITIONS OF CONTRACT

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## SECTION 5 - GENERAL CONDITIONS OF CONTRACT

### 5.1 GENERAL PROVISIONS

(1) The Employer is the Government of Vanuatu Procuring Entity stated in the Contract, represented by the person named in the 'Special Conditions of Contract' (SCC).

(2) The Contractor is the entity stated in the Contract Agreement, represented by the person named in the **SCC.**

(3) The Contract Documents listed in the Contract Agreement represent the entire and integrated Contract between the Employer and the Contractor. The Contract is governed by and shall be construed in accordance with the Laws of the Republic of Vanuatu, and the ruling language of the Contract is English.

(4) All prior negotiations, representations and agreements, both oral and written, are superseded by the Contract. All correspondence and documents relating to the Contract between the parties and their representatives shall be in English.

(5) Neither the Employer nor the Contractor shall assign, in whole or in part, their obligations under the Contract, except with the prior written consent of the other party.

(6) In these Conditions of Contract, unless the context otherwise requires:

**Bill of Quantities** means the priced and completed Bill of Quantities forming part of the Tender;
**Construction Supervisor** means the person named in the **SCC** who, on behalf of the Employer, supervises the Construction and certifies the completion of the Works
**Contingency Sum** means a sum specified by the Employer to meet unforeseeable costs likely to be incurred during the contract;
**Contract** means the signed Contract Agreement, and the documentation specified therein, as entered into between the Employer and the Contractor for the provision of the Works;
**Contractor** means the person or organisation stated in the Contract Agreement whose Tender to provide the Works and Services has been accepted by the Employer;
**Contract Price** means the price stated in the Contract;
**Date for Commencement** means the date by which the Contractor shall commence the execution of the Works as defined in the **SCC**;
**Date for Completion** means the date by which the Works are expected be completed as defined in the **SCC**;
**Days** mean calendar days;
**Day works** are varied work inputs subject to payment on a time basis for the Contractor's employees and equipment, in addition to payments for associated Materials and Plant;
**Defect** is any part of the Works not completed in accordance with the Contract;
**Defects Liability Certificate** is the certificate issued by the Construction Supervisor upon verification of the completion of notified defects;
**Defects Liability Period** means the period stated in the **SCC** following the issuance of the Practical Completion ("Taking Over") Certificate, during which the Contractor shall rectify any defects arising as a result of the performance of the Works;
**Drawings** include calculations and other information provided or approved by the Construction Supervisor for the execution of the Contract;
**Employer** means the Government of Vanuatu procuring entity stated in the Contract Agreement;
**Equipment** is the Contractor's machinery and vehicles brought temporarily to the Site to construct the Works;
**Force Majeure** means an event or situation beyond the control of either party that is not foreseeable, is unavoidable, and its origin is not due to negligence or lack of care on the part of either party. Such events may include, but not be limited to, wars or revolutions, natural disasters (such as earthquakes, tsunamis, fires, floods etc.), epidemics, quarantine restrictions, and freight embargo;
**In writing** means communicated in written form (e.g. by letter, e-mail or fax);

**Months** mean calendar months;
**Practical Completion ("Taking Over") Certificate** means the Certificate issued by the Construction Supervisor on acceptance of the works by the Employer and its date of issue is the date from which the Defects Liability Period commences;
**Provisional Sum** means a sum specified by the Employer and included in the contract for the execution of any part of the Works, which sum may be used in whole, or in part, or may not be used at all, on the instructions of the Employer;
**Schedule of Activities** means a breakdown of the Works to be provided and includes the lump sum price of the Works;
**Site** means the place of performance of the Works as specified in the Contract;
**Site Manager** means the person appointed by the Contractor to act as the Contractor's representative on Site during the performance of the Works;
**Specifications** means the Specification of the Works included in the Contract and any modification or addition made or approved by the Construction Supervisor;
**Subcontractor** means any person or organisation that supplies goods, materials or services to the Contractor;
**Variation** is an instruction given by the Employer which varies the Contract;
**Works** means what the Contract requires the Contractor to construct, install and hand over to the Employer.
Clause headings shall not be used in the interpretation of these Conditions.
Words in the singular also include the plural and vice versa when the context so requires.
Words indicating a gender include either gender.

## 5.2 OBLIGATIONS OF THE EMPLOYER

### 5.2.1 Access to the Site and Payments

1) The Employer will arrange to place the site and access thereto at the disposal of the Contractor as provided for under the Contract.
2) The Employer shall pay to the Contractor sums due under the Contract.

### 5.2.2 Construction Supervisor

(1) The Employer shall appoint a Construction Supervisor, as named in the **SCC**, for the Works and shall provide written notice to the Contractor of such an appointment. The Employer may from time to time replace the Construction Supervisor by giving written notice to the Contractor of such replacement.

(2) The duties and powers of the Construction Supervisor are to:

(a) Issue written instructions which the Contractor shall carry out without delay, notwithstanding the provisions of Clause 0. Such instructions may include, but are not limited to, those which in the opinion of the Construction Supervisor may be necessary to resolve ambiguities or discrepancies in the various documents forming the Contract. If instructions are given orally they shall within 7 days be confirmed in writing;
(b) Issue instructions as to the expenditure of the provisional sum, if any. The Construction Supervisor on a fair and reasonable basis shall value any costs arising out of such instruction;
(c) Supply details of lines, levels and/or reference points to enable the Contractor to set out the works;
(d) Order the removal or the rectification of defects; and/or
(e) Instruct the Contractor to delay the start of or the progress of any activity on the Works Programme (refer to Clause 5.4.4). Any claims or costs that may arise out of such an instruction shall be forwarded by the Contractor to the Construction Supervisor and shall include therein details and supporting documentary evidence. The claim(s) shall be submitted within 7 days from the date of the instruction. The Construction Supervisor shall evaluate and determine the appropriate form of the compensation for the delay, so as to advise the Contractor within 14 days and forward a copy of the advice to the Employer. However, the Construction Supervisor shall prior to the issue of the instructions under this Clause obtain approval from the Employer.

(f) Any other duties and powers assigned to the Construction Supervisor, in addition to the above, are stated in the **SCC**.

(3) The Construction Supervisor may appoint a Representative to supervise the Contract and delegate any or all of the duties and powers of the Construction Supervisor to that Representative. If such an appointment is made the Construction Supervisor shall provide written notice to the Contractor and the Employer and specify the duties and powers that are delegated to the Construction Supervisor's Representative.

(4) The Construction Supervisor may require the instant dismissal from the Works of any agent, foreman or other person employed on the Works, or in connection with the Works, whether employed by the Contractor or not, where in the reasonable view of the Construction Supervisor that person breached any regulation or obligation in connection with the Works or applicable at the Site, or in connection with other persons involved with the works, or is negligent, or incompetent, or behaves in any other way inappropriate. The Contractor shall immediately comply with, or ensure immediate compliance with, such requirement for dismissal, and the Contractor shall not again employ a person so dismissed on or in connection with the Works.

## 5.3 OBLIGATIONS OF THE CONTRACTOR

### 5.3.1 General Obligations

(1) The Works to be performed shall be as specified in the Drawings and Specifications and the Contractor with due diligence and in a good workmanlike manner shall carry out and complete the Works to the reasonable satisfaction of the Construction Supervisor.

(2) The Contractor shall check and verify dimensions on Drawings on Site before proceeding with the Works, and shall bring any ambiguities in the Drawings and Specifications to the attention of the Construction Supervisor for clarification.

(3) The Contractor shall comply with all notices required by statute, statutory instrument, rule, order, regulation, or by-law applicable to the Works and shall pay all fees and charges in connection therewith.

(4) The Contractor shall at all times keep upon the Site a Site Manager acceptable to the Construction Supervisor, to supervise and direct the performance of the Works.

(5) The Contractor shall allow the Construction Supervisor and any person authorised by the Construction Supervisor access to the Site and to any place where work in connection with the Contract is being carried out or is intended to be carried out.

(6) The Contractor shall carry out all instructions of the Construction Supervisor which comply with the applicable laws of the Republic of Vanuatu.

(7) The Contractor is responsible for acts and omissions of all employees of the Contractor and other persons performing portions of the Work under contract with the Contractor.

(8) The Contractor shall not subcontract any part of the Works without the written consent of the Construction Supervisor. If requested, the Construction Supervisor shall not unreasonably withhold such consent.

### 5.3.2 Sufficiency of Tender Prices

(1) The Contractor shall be deemed to have inspected and examined the site and its surroundings and to have satisfied himself as to the nature of the ground and the subsoil before submitting his tender. He shall also be deemed to have taken into account the form and nature of the site, the extent and nature of the work and materials necessary for the completion of the works, the means of communication with and access to the site, the accommodation he may require and in general to have obtained for himself all necessary

information as to the risks, contingencies and any other circumstances influencing or affecting his tender.

(2) The Contractor shall be deemed to have satisfied himself before submitting his tender as to the correctness and sufficiency of the tender and of the rates and prices stated in the Bill of Quantities or Schedule of Activities, which shall cover all his obligations under the contract.

(3) Since the Contractor is deemed to have determined his prices on the basis of his own calculations, operations and estimates, he shall, at no additional charge, carry out any work that is the subject of any item whatsoever in his tender for which he indicates neither a unit price nor a lump sum.

### 5.3.3 Safety, Health and Welfare and Environment

(1) The Contractor shall be responsible for all activities on the Site and shall comply with all relevant provisions of the laws of the Republic of Vanuatu.

### 5.3.4 Copyright

(1) The intellectual property and copyright (IP) in all drawings, documents and other materials containing data and information furnished to the Employer by the Contractor shall remain vested in the Contractor, or, if they are furnished to the Employer directly or through the Contractor by any third party, including Suppliers of materials, the copyright in such materials shall remain vested in such third party save insofar as the Contractor shall grant to the Employer a world-wide, non-exclusive, irrevocable and royalty-free licence to use the IP to give effect to the provisions of this agreement.

## 5.4 PERFORMANCE OF THE WORKS

### 5.4.1 Site of the Works, Date for Commencement and Completion

(1) The Site of the Works, Expected Site Possession Date, Date for Commencement and Date for Completion are provided in the **SCC**, unless the dates are otherwise agreed in writing with the Construction Supervisor. However, the Contractor cannot take possession of the Site until the Contractor has provided copies of the relevant Insurance policies to the Construction Supervisor.

(2) If it becomes apparent that the Works will not be completed within the Time for Completion for reasons beyond the control and without fault of the Contractor, the Contractor shall so notify the Construction Supervisor who shall extend the Time for Completion by a period reasonably supported by detailed particulars provided by the Contractor.

(3) Every delay in the completion of the Works that is not caused by the Contractor shall not constitute non-compliance with this Contract by the Contractor.

### 5.4.2 Adverse Weather Conditions

(1) In the event that unforeseeable adverse weather conditions affect the Contractual Works Programme, the Contractor may require an extension of time and, in such an event, shall notify the Construction Supervisor who shall extend the Date for Completion by a period determined by him/her without additional costs accruing to the Contract, provided the Contractor has supportive documentary evidence to substantiate that the inclement weather conditions prevailing at the time are worse than the average conditions normally prevailing in that locality and are, therefore, deemed to be unforeseeable.

### 5.4.3 Working Hours

(1) The working hours shall be 07:30 Hours to 16:30 Hours with a break of one (1) hour around mid-day for weekdays and 07:30 Hours to 12:00 Hours (noon) on Saturdays. No work shall be carried out outside these working hours unless a written request has been submitted and approval given in writing by the Construction Supervisor, whose consent shall not be unreasonably withheld.

### 5.4.4 Contractual Works Programme and Communications

(1) Within 14 days of signing the contract the Contractor shall update the proposed Work Programme, including a revised methods statement (as included in the tender), and this will constitute the first Contractual Works Programme

(2) The Contractual Works Programme shall be revised, as required by the Construction Supervisor, showing the modifications to such programme necessary to ensure completion of the Works within the Time for Completion.

(3) Communications between parties that are referred to in these Conditions shall be effective only when made in writing, and only when having been delivered and acknowledged in writing between one party and the other.

### 5.4.5 Contractor's Risks

(1) From the Time of Commencement until the Time of Completion the risks of personal injury, death, and loss of or damage to property (including, without limitation, the Works, materials and equipment) which are not the Employer Risks are Contractor's Risks.

### 5.4.6 Protection of Works and Property

(1) The Contractor shall, throughout the execution and completion of the Works and the remedying of any defects therein, take reasonable precautions for safety and protection to prevent damage, injury or loss to:

(a) Employees of the work site and other persons who may be affected;
(b) The Works and materials to be incorporated therein, whether in storage on or off the site, under the care, custody or control of the Contractor or any sub-contractor of the Contractor;
(c) Other property at or adjacent to the site including but not limited to trees, shrubs, lawns, walkways, pavement, roadways, structures and utilities not designated for removal, relocation or replacement in the course of the construction.

(2) Any damage caused to existing buildings, structures, services, roads and other site features shall be made good at the sole expense of the Contractor.

## 5.5 INDEMNIFICATION AND INSURANCE REQUIREMENTS

### 5.5.1 Indemnification

(1) The Contractor shall keep the Employer and employees or agents of the Employer indemnified against any legal liability, loss, claim, action or proceeding for personal injury to or death of any person or damage to any property arising from the carrying out of the Works (except loss or damage caused by any negligent act, omission or default of the Employer or employees or agents of the Employer) and from any costs and expenses that may be incurred in connection with any such loss, claim, action or proceeding.

(2) The Contractor shall indemnify the Employer at all times against any compensation paid or any action, claim, demand or expense arising from or incurred by reason of the existence of any patent, design, trademark or copyright or other protected right in respect of any machine, plant, work material or thing, system or method of using, fixing, working or arrangement, used or fixed or supplied by the Contractor in connection with carrying out the Works.

### 5.5.2 Insurances

(1) The Contractor shall provide, in the joint names of the Employer and the Contractor, such insurances as are necessary to cover the liability of the Contractor and subcontractor(s) in respect of (a) personal injuries or deaths and damage to real or personal property arising out of or in the course of the carryout of the Works; (b) all unfixed materials and goods intended for the Works, delivered to, or placed on or adjacent to the Works and intended for the Works, and for an amount not less than the full Contract value and against all risks or physical loss or damage.

(2) The Contractor shall not cancel, cause to be cancelled, or alter the terms and conditions of any insurance policy covering this Contract without the express permission of the Employer.

### 5.5.3 Amounts and Evidence of Cover

(1) Such indemnification and insurances shall be in the type and amounts specified in the **SCC,** shall cover the period from the Date for Commencement to the end of the Defects Liability Period and shall be effected within fourteen (14) days of the date of contract signature, and in terms approved by the Employer.

(2) Prior to commencement of the Works, the Contractor, and any subcontractor, shall produce such evidence as the Construction Supervisor may reasonably require that the indemnification and insurances referred to in this Clause have been taken out and are in force for the duration required under the Contract.

(3) If the Contractor does not provide any of the policies and certificates required, the Employer may effect the insurance which the Contractor should have provided and recover the premiums the Employer has paid from payments otherwise due to the Contractor or, if no payment is due, the payment of the premiums shall be a debt due.

## 5.6 MATERIALS AND WORKMANSHIP

### 5.6.1 Conforming to Contract

All materials used in the Works and the standards of workmanship shall conform to the provisions of the Contract. In the absence of such provisions, materials and standards of workmanship shall be of a kind that is suitable for their purpose and consistent with the nature and character of the Works. Any material not otherwise specified shall be new and, where applicable, material and workmanship shall be to the satisfaction of the Construction Supervisor.. If the Construction Supervisor is of the opinion that any materials or the work or any part thereof, whether fixed or not, is unsatisfactory he may direct its replacement, removal or correction at the Contractor's expense.

### 5.6.2 Proprietary Items

Unless specifically stated to the contrary, it is not intended to give any preference to the manufacturer or brand mentioned wherever a proprietary item is specified. If the Contractor proposes to use a substitute proprietary item, he must provide full details of the item proposed to the Construction Supervisor for approval and the Construction Supervisor shall decide whether or not the proposed substitute may be used. If approved, the substitution shall be recorded in writing by the Construction Supervisor, and the substitution shall only be used after the Contractor has received such written approval.

### 5.6.3 Storage of Material

The Contractor's materials and plant shall only be stored in the location approved by the Construction Supervisor. If no storage facilities are available it shall be the responsibility of the Contractor to provide storage facilities.

### 5.6.4 Access to Works and Materials

(1) The Construction Supervisor or any other person authorised by him, shall have free and uninterrupted access at all times to the Works and during working hours to any workshop or premises not on the site of the Works where materials may be in preparation or stored for the purpose of the Contract.

(2) The Contractor, if so required by the Construction Supervisor, shall give the Construction Supervisor all particulars as to the mode and place of manufacture of any of the materials proposed to be used in connection with the Contract and shall facilitate inspection of the materials.

### 5.6.5 Defects and Tests

(1) The Construction Supervisor shall check the Contractor's work and notify the Contractor of any Defects that are found. Such checking shall not affect the Contractor's responsibilities. The Construction Supervisor may instruct the Contractor to search for a Defect and to uncover and test any work that the Construction Supervisor considers may have a Defect.

(2) If the Construction Supervisor instructs the Contractor to carry out a test not specified in the Specification to check whether any work has a Defect and the test shows that it does, the Contractor shall pay for the test and any samples. If there is no Defect, the cost of testing will be compensated by the Employer to the Contractor.

(3) The Construction Supervisor shall give notice to the Contractor of any Defects before the end of the Defects Liability Period, which begins at the date of the issue of the Practical Completion ("Taking Over") Certificate, and is defined in the **SCC**. The Defects Liability Period shall be extended for as long as Defects remain to be corrected.

(4) Every time notice of a Defect is given, the Contractor shall correct the notified Defect within the length of time specified by the Construction Supervisor's notice. If the Contractor has not corrected a Defect within the time specified in the Construction Supervisor's notice, the Construction Supervisor will assess the cost of having the Defect corrected, and the Contractor will pay this amount.

## 5.7 COMPLETION AND CERTIFICATES

### 5.7.1 Practical Completion ("Taking Over") Certificate

(1) When, in the opinion of the Contractor, the whole of the Works have been substantially completed and have satisfactorily passed any tests on completion prescribed by the Contract, he shall request the Construction Supervisor to issue a Practical Completion ("Taking Over") Certificate in the format provided.

(a) The Construction Supervisor shall within 14 days of the date of such request, issue to the Contractor, with a copy to the Employer, a Practical Completion ("Taking Over") Certificate, stating the date on which, in his opinion the Works were substantially completed in accordance with the Contract; or

(b) The Construction Supervisor shall within 14 days of the date of such request, reject the application, giving reasons and specifying the work to be done in order for a Practical Completion ("Taking Over") Certificate to be issued; or

(c) If the Construction Supervisor fails either to issue the Practical Completion ("Taking Over") Certificate or to reject the Contractor's request within a period of twenty eight (28) days of the date of such request, and if the Works are substantially complete in accordance with the Contract, the Practical Completion ("Taking Over") Certificate shall be deemed to have been issued on the last day of that period.

(2) Upon the issue of the Practical Completion ("Taking Over") Certificate 50% of the Retention money shall be certified by the Construction Supervisor for payment by the Employer to the Contractor;

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(3) The Construction Supervisor may, at the request of the Contracting Authority or Contractor and if the natures of the works so permits proceed with partial taking over, provided that the structures, parts of structures or sections of the works are completed and suited to the use as described in the contract. In the cases of partial taking over, the defects liability period for the works taken over shall, unless the **SCC** provide otherwise, run from the date of such partial taking over.

### 5.7.2 Defects Liability Certificate

(1) Any defects which appear within the Defects Liability Period stated in the **SCC** after the date of substantial completion of the Works (as recorded in the Practical Completion ("Taking Over") Certificate) shall be made good by the Contractor entirely at his own cost.

(2) The Defects Liability Certificate shall be issued by the Construction Supervisor once the Defects Liability Period has been completed and all defects that have been notified to the Contractor have been rectified.

(3) The Contract shall not be considered as completed until a Defects Liability Certificate has been signed and issued by the Construction Supervisor to the Employer, with a copy to the Contractor, stating the date when the Contractor shall have completed his obligations to execute and complete the Works and remedy any defects to such work to the satisfaction of the Construction Supervisor.

(4) Upon issuance of the Defects Liability Certificate and no later than the Final Payment Certificate, the Construction Supervisor shall certify the remaining fifty (50) percent of the Retention money for payment by the Employer to the Contractor.

### 5.8 VARIATION ORDERS

(1) The Construction Supervisor may prepare a Variation Order making changes to the Works, specifications, timing and/or cost of the Contract and submit it to the Employer, with a brief justification for the variation, for approval to issue the Variation Order.

(2) The Contractor may submit a written proposal to the Construction Supervisor requesting a variation in the Works. The proposal shall include a reasonable estimate of the time and/or cost of the variation, as well as a brief justification for the variation. If the Construction Supervisor agrees to the proposal he shall submit it to the Employer for approval to issue a Variation Order.

(3) After receiving approval from the Employer, the Construction Supervisor shall issue the Variation Order to the Contractor within 3 days. By signing and returning a copy of the Variation Order the Contractor agrees to the terms and conditions of the Variation Order.

(4) The Contractor shall, in writing and within 7 days of receiving the Variation Order, notify the Construction Supervisor of any disagreement with the Variation Order. Any disagreement shall be settled in accordance with Clause 5.14.

### 5.9 TERMS OF PAYMENT

#### 5.9.1 Contract Price

(1) Unit Costs / Lump Sum charged by the Contractor for the Works performed under the Contract shall not vary from the Unit Costs / Lump Sum offered by the Contractor in its Tender. The total payments to be made against the Contract shall not exceed the Contract Price stated in the Contract Agreement, except for changes made to the Contract as provided for in Clause 5.8.

(2) The Rates in the ~~Bill of Quantities /~~ Schedule of Activities, shall not be subject to adjustment during the Contract to take into account any change in cost to the Contractor of any plant, equipment, materials, service, labour or any other thing necessary for the completion of the Works.

#### 5.9.2 Provisional Sum

The Contractor shall be entitled only to such amounts in respect of the work to which the Provisional Sum relates as the Employer shall determine.

#### 5.9.3 Advance Payment

(1) If specified in the **SCC,** the Employer will make an advance payment to the Contractor in the percentage stated in the **SCC** against submission of an unconditional Bank Guarantee for the full value of the advance, in the format provided.

(2) The advance payment shall be repaid by deducting amounts as specified in the **SCC** from payments otherwise due to the Contractor. The total advance payment to be recovered during the period of the Contract.

### 5.9.4 Interim Payments

(1) The Contractor shall submit, at the intervals stated in the **SCC**, an Interim Payment Statement to the Construction Supervisor, in the form approved by the Construction Supervisor, showing:

(a) The value of the Works executed on the Site, including any materials and goods delivered to the Site for incorporation in the Works, for the period covered by the Statement;
(b) Any other sums to which the Contractor considers himself to be entitled under the Contract (if applicable);
(c) Less the total of interim progress payments made by the Employer;
(d) Less the amount to be deducted for Retention, at the rate stated in Clause 5.9.6;
(e) Less the amount, if any, to be recovered from the Contractor due to an advance payment having been made to the Contractor.

(2) The Construction Supervisor shall satisfy himself that the Works accomplished for the respective period have been completed without defects in pursuance of the Contract, and any statutory Acts regulating construction Works in Vanuatu, and within 7 days shall certify the interim payment which he considers due and payable to the Contractor in respect of the above mentioned items. The Employer shall pay to the Contractor the amount so certified within 30 days of the date of the Payment Certificate issued by the Construction Supervisor. The basis for calculation of payments shall be that specified in the ~~Bill of Quantities~~ / Schedule of Activities.

(3) When defects are detected in the Works accomplished for the respective period they shall be priced and their cost shall be retained from the amount due for that period. If the defects are not completed by the time of submission of the next Interim Payment Statement the costs shall be retained until the completion of the defects and the issuance of the Practical Completion ("Taking Over") Certificate.

### 5.9.5 Final Payment

(1) Within 30 days of issuance of the Defects Liability Certificate, the Contractor shall submit a Final Payment Statement to the Construction Supervisor, in the form approved by the Construction Supervisor, showing:

(a) The value of all the work done in accordance with the Contract;
(b) Any further sums which the Contractor considers to be due to him under the Contract (if applicable);
(c) Less any sums due to the Employer under the provisions of Clause 5.12 – Liquidated Damages;
(d) Less the amount to be deducted for Retention, at the rate stated in Clause 5.9.6;
(e) Less the total of all interim payments received under the Contract and any sums that might be due from the Contractor to the Employer.

The basis for calculation of the value of the work done shall be that specified in the ~~Bill of Quantities~~ / Schedule of Activities.

(2) Provided the Contractor shall have provided all documents reasonable necessary for the computation of the amount to be certified, the Construction Supervisor shall within 30 days of receiving the Contractor's Final Payment Statement, issue a Final Payment Certificate certifying the amount due to the Contractor or to the Employer, as the case may be, and such sums shall be a debt payable within 30 days of the date of the Final Payment Certificate.

(3) In the event that the Contractor fails or neglects to submit a Final Payment Statement, the Construction Supervisor may nevertheless issue a Final Payment Certificate provided he has sufficient information to calculate the value of such Certificate.

(4) The Employer shall within 30 days from the date of the Final Payment Certificate pay to the Contractor the amount due to the Contractor.

(5) If on the Final Payment Certificate a payment is due to the Employer the Contractor shall within 30 days from the date of the Final Payment Certificate pay the Employer that amount due.

(7) The Employer shall not be liable to the Contractor for any matter or thing arising out of or in connection with the Contract or the execution of the Works, unless the Contractor shall have included a claim in respect thereof in his Final Payment Statement.

### 5.9.6 Payment Retention and Release

(1) In order to take into account any list of outstanding Works at the time of taking over of the Works and the obligation of the Contractor to complete the proper execution of the Works a Payment Retention of 10% shall be deducted from the payments due to the Contractor with respect to each interim payment and the final payment of the Contract.

(2) 50% of the sum retained shall be paid by the Employer to the Contractor within 30 days following the issue of the Practical Completion ("Taking Over") Certificate.

(3) The substitution of the Payment Retention by a Bank guarantee or security bond may be provided by the Contractor on the date of issue of the Practical Completion ("Taking Over") Certificate. The remaining 50% shall be released within 30 days upon the issue of the Final Payment Certificate.

## 5.10 PAYMENTS ON TERMINATION

(1) Upon termination of the Contract, 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 this Clause; and
(b) Any sums to which the Employer is entitled.

### 5.10.1 Taxes and Duties

(1) Refer to the **SCC**.

## 5.11 PERFORMANCE SECURITY

(1) The proceeds of the Performance Security provided by the Contractor shall be payable to the Employer as compensation for any loss resulting from the Contractor's failure to complete its obligations under the Contract.
(2) The Performance Security shall be discharged by the Employer and returned to the Contractor not later than 30 days following the date of Completion of the Contractor's obligations under the Contract, including any defects liability obligations.

## 5.12 LIQUIDATED DAMAGES

(1) Liquidated damages as applicable are as stated in the **SCC**.

## 5.13 TERMINATION AND SUSPENSION

### 5.13.1 Termination for Default

(1) The Employer may, without prejudice to any other remedy for breach of Contract or written notice of default sent to the Contractor, terminate the Contract in whole or in part if the Contractor:

(a) Abandons the works, refuses or fails to comply with a valid instruction of the Employer or fails to proceed expeditiously and without delay: or
(b) Persistently or repeatedly refuses or fails to supply sufficient properly skilled workers or proper materials; or
(c) Persistently disregards laws, ordinance, or rules, regulations or orders, of a public authority having jurisdiction; or
(d) Otherwise is guilty of substantial breach of a provision of the Contract; or
(e) Has engaged in corrupt, fraudulent, coercive or obstructive practices in competing for or in executing the Contract. Termination for Insolvency

(2) The Employer may at any time terminate the Contract by giving notice to the Contractor if the Contractor becomes bankrupt or otherwise insolvent. In such event, the Contractor shall be compensated for the Works completed and materials supplied up to the date of termination only, provided that such termination will not prejudice or affect any right of action or remedy that has accrued or will accrue thereafter to the Employer.

### 5.13.2 Termination for Convenience

(1) The Employer may, without cause, by written notice order the Contractor to terminate its engagement under the Contract. Upon such termination, the Contractor shall be paid for the Work performed up to the date of termination, provided that any such uncompleted Works were not late or otherwise overdue for completion at the date of termination. The Contractor shall promptly make every reasonable effort to procure cancellation upon terms acceptable to the Employer of all outstanding subcontracts.

### 5.13.3 Termination by the Contractor

(1) In the event the Employer fails to comply with the requirements under Clause 5.9.3 and 5.9.4 within a period of 30 days after the payments became due, the Contractor may after a further 7 days serve a notice to the Employer to terminate this Contract and any costs shall be determined in accordance with the provisions of Clause 5.9.4.

### 5.13.4 Property

(1) All materials, plant, equipment on the Site, and Works shall be deemed to be the property of the Employer if the Contract is terminated because of the Contractor's default.

### 5.13.5 Suspension of Funding

(1) In the event that funding from which part of the payments to the Contractor are being made is suspended the Employer is obliged to notify the Contractor of such suspension within 7 days of having received advice of the suspension of funding.

### 5.13.6 Suspension of the Works

(1) In the event that the Works are suspended due to circumstances beyond the control of the Employer or the Contractor, the Employer shall after due consultation with the Contractor, determine any extension of time to which the Contractor is entitled and the amount that shall be added to the Contract Price (if any) under Clause 5.8. The Contractor shall make all reasonable effort to find alternative arrangements for plant that is idle due to the suspension of Works.

## 5.14 DISPUTES AND SETTLEMENT

### 5.14.1 Negotiated Settlement

(1) The Parties agree that the avoidance or early resolution of disputes is crucial for a smooth execution of the Contract and the success of the assignment. The Parties shall use their best efforts to negotiate all disputes arising out of, or in connection, with this Contract or its interpretation. Failing successful negotiation the courts in Vanuatu will settle any disputes in line with the laws of the Republic of Vanuatu.

## 5.15 FORCE MAJEURE

### 5.15.1 No Breach of Contract

(1) The failure of a Party to fulfil any of its obligations under the contract shall not be considered to be a breach of, or default under, this Contract insofar as the inability arises from an event of Force Majeure, provided that the Party affected by such an event (a) has taken all reasonable precautions, due care and reasonable alternative measures to carry out the terms and conditions of this Contract, and (b) has informed the other Party as soon as possible about the occurrence of such an event.

### 5.15.2 Extension of Time

(1) Any period within which a Party shall, pursuant to this Contract, complete any action or task shall be extended for a period equal to the time during which such Party was unable to perform such action as a result of Force Majeure.

### 5.15.3 Payments

(1) During the period of its inability to complete the Works as a result of an event of Force Majeure the Contractor shall be entitled to continue to be paid under the terms of this Contract, as well as to be reimbursed for additional costs reasonably and necessarily incurred by them during such period for the purposes of the Contract and in reactivating the Contract after the end of such period.

## 5.16 INTEGRITY/ PROBITY

(1) Neither the Contractor, nor any Representative of the Contractor will engage in fraud, corruption, collusion, coercion and/or obstructive practises in competing for, or in executing the contract. Should the Contractor, or any Representative of the Contractor engage in the above, they could face any, or all, of the following sanctions:

(a) Immediate termination of contract (refer Termination and Suspension above);
(b) Liability for damages to the Government of Vanuatu and other competing bidders;
(c) Debarment (blacklisting) for five years from engaging in any further contract with the Government of Vanuatu; and
(d) Public Prosecution under the Penal Code Act.

(2) The Contractor, or any Representative of the Contractor, shall immediately report to the Police, Public Prosecutor and Chairman of the Public Service Commission any attempt by the Employer, or the Employer's Representative, to demand bribes or gifts in relation to this contract.

## SECTION 6 - SPECIAL CONDITIONS OF CONTRACT

These Special Conditions (SCC) of Contract supplement and/or amend the General Conditions of Contract. The SCC will be updated and included in the Contract Documents when these are prepared for issue to the successful Tenderer.

| GCC Ref. | Heading | Description |
|---|---|---|
| **5.1 (1)** | Employer's Representative | The Employer is represented by:<br>Harold Allanson<br>Acting Principal Architect<br>Public Works Department<br>Nasiutan Building<br>George Pompidou<br>Port Vila<br>Tel: +678 22888/33460<br>Email: hallanson@vanuatu.gov.vu |
| **5.1 (2)** | Contractor's Representative | The Contractor is represented by:<br>**[EMPLOYER to enter name of person]**<br>**[EMPLOYER to enter contact address]**<br>Tel: **[EMPLOYER to enter telephone number]**<br>Fax: **[EMPLOYER to enter fax number]**<br>Email: **[EMPLOYER to enter e-mail address]** |
| **5.1(6)**<br>**5.2.2(1)** | Construction Supervisor | The Construction Supervisor appointed by the Employer to supervise the construction and certify completion is:<br>*To be advised* |
| **5.1(6)**<br>**5.4.1(1)** | Date for Commencement | *July 2018* |
| **5.1(6)**<br>**5.4.1(1)** | Date for Completion | *30 January 2018* |
| **5.1 (6), 5.6.5 (3) & 5.7.2 (1)** | Defects Liability Period | The Defect Liability Period shall be 6 months from the issue of the Practical Completion ("Taking Over") Certificate. |
| **5.2.2(2)(f)** | Other duties and powers assigned to the Construction Supervisor | The other powers and duties assigned to the Construction Supervisor under this contract are as follows:<br>*Supervisor cannot authorise any change in Contract Price or extension of time; these responsibilities rest with the Employer.* |
| **5.4.1 (1)** | Site of the Works | The exact location of the Site is:<br>Ex FOL, Port Vila (as per Attachment 1 in the Scope of Work) |
| **5.4.1 (1)** | Expected Site Possession Date | *14* days after signing contract |
| **5.5.3 (1)** | Insurances | Public Liability: *50million vatu*<br>Workers Compensation – as required under Vanuatu Law<br>Equipment, vehicle and general insurance |
| **5.7.1 (3)** | Partial Practical Completion ("Taking Over") Certificates | *No deviation from Clause 5.7.1* |
| **5.9.3 (1)** | Advance Payment | The Amount of the Advance Payment will be up to 20% of the Contract price paid only upon the receipt of an unconditional bank guarantee |

| GCC Ref. | Heading | Description |
|---|---|---|
| | | made out to the Employer to an equivalent Value. The bank guarantee shall be returned to the Contractor upon completion of 50% of the works.<br><br>The Formula for Recovery of Advance payment will be determined in the payments schedule (as per below). 20% will be deducted from each payment made |
| **5.9.4 (1)** | Interim Payment Statements | The Contractor shall submit Interim Payments Statements as follows:<br><br>Interim Payments shall be based on the works completed as per the Schedule of Activities Pricing less any Advance Payment repayment and retention.<br><br>1. Submission of correctly rendered invoice noting deductions for retention and any advance payments and,<br>2. Submission of Schedule of Activities conformant with the invoice amount and,<br>3. Submission of monthly reports to Construction Supervisor and,<br>4. Invoices are to be clearly marked: Public Buildings Recovery Program, PWD, Attn: Dick Abel |
| **5.9.6** | Payment Retention and Release | • Retention of 10% to be deducted from payment certificates<br>• 5% to be returned upon issue of Completion Certificate<br>• 5% retained until Defects Liability Certificate is issued and paid according to the clause. |
| **5.10.1** | Taxes and Duties | Exclusive of all taxes and duties |
| **5.12.1** | Liquidated Damages | 0.1% per day |

## SECTION 7 - FORMS

Sample forms are attached for use as applicable:

FORM 1 TENDER SECURITY (BANK GUARANTEE)

FORM 2 PERFORMANCE SECURITY (BANK GUARANTEE)

FORM 3 ADVANCE PAYMENT SECURITY (BANK GUARANTEE)

FORM 4 CONTRACT AGREEMENT

FORM 5 PRACTICAL COMPLETION (“TAKING OVER”) CERTIFICATE

FORM 6 DEFECTS LIABILITY CERTIFICATE

## Form 1 - Tender Security (Bank Guarantee)

**[To be provided on headed notepaper of the bank issuing the guarantee]**

**To:**

**Beneficiary:** **[Enter beneficiary]**

**Date:**
**[Enter date]**

**TENDER SECURITY No:** **[Enter Bank Guarantee Number]**

We have been informed that **[enter name of the Tenderer]** ("the Tenderer") intends to submit to you its Tender ("the Tender") for the execution of **[enter name of contract]** under RFT Works No. **[enter Tender number]** ("the RFT").

Furthermore, we understand that, according to your conditions, the Tender must be supported by a Tender Security.

At the request of the Tenderer, we **[Enter name of Bank]** hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of **[Enter name of currency and amount in figures and in words]**[1] upon receipt by us of your first demand in writing accompanied by a written statement stating that the Tenderer is in breach of its obligation(s) under the Tender conditions, because the Tenderer:

(a) Has withdrawn its Tender during the period of Tender validity as specified in the Tendering Document; or
(b) Does not accept the correction of arithmetical errors as specified in Tendering Document; or
(c) Having been notified of the acceptance of its Tender during the period of Tender validity, (i) fails to furnish the performance security, in accordance with the Tender Document or, (ii) fails or refuses to execute the Contract Agreement.

This guarantee will expire: (a) if the Tenderer is the successful Tenderer, upon our receipt of copies of the signed contract; or (b) if the Tenderer is not the successful Tenderer, upon the earlier of (i) our receipt of a copy of your notification that the Tenderer's Tender has not been successful; or (ii) thirty days after the expiration of the Tenderer's Tender.

Consequently, we must receive any demand for payment under this guarantee at our offices on or before that date.

This guarantee is subject to the Uniform Rules for Demand Guarantees, ICC Publication No. 458.

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**[Seal of Bank and Signature(s)]**

## Form 2 - Performance Security (Bank Guarantee)

**[To be provided on headed notepaper of the bank issuing the guarantee]**

**To:**

**Beneficiary:** **[Enter beneficiary]**

**Date:**
**[Enter date]**

**PERFORMANCE SECURITY No.:** **[Enter Guarantee Number]**

We have been informed that **[Enter name of the Contractor]** ("the Contractor") was awarded a Contract for the Execution of **[Enter name of contract and brief description of Works]** ("the Contract"), as a result of RFT Works No. **[Enter number]**.

Furthermore, we understand that, according to the conditions of the Tender, a Performance Guarantee is required.

At the request of the Contractor, we **[Enter name of the Bank]** hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of **[Enter name of the currency and amount in figures] [Enter name of currency and amount in words]**[1] upon receipt by us of your first demand in writing accompanied by a written statement stating that the Contractor is in breach of its obligation(s) under the Contract, without your needing to prove or to show grounds for your demand or the sum specified therein.

This guarantee shall expire no later than **[Enter date]** [2] and any demand for payment under it must be received by us at this office on or before that date. We agree to a one-time extension of this guarantee for a period not to exceed **[Enter number in words]** months, in response to your written request for such extension, such request to be presented to us before the expiry of the guarantee.

This guarantee is subject to the Uniform Rules for Demand Guarantees, ICC Publication No. 458, except that subparagraph (ii) of Sub-article 20(a) is hereby excluded.

_____

**[Seal of Bank and Signature(s)]**

Note:

[1] Insert the amount representing 10% of the Contract Price and denominated in the currency (ies) of the Contract, or a freely convertible currency acceptable to the Beneficiary.

[2] Insert the date twenty-eight days after the expiry of the defects liability obligations, as provided for under the Tender Document / Contract. The Beneficiary should note that in the event of an extension of the time for completion of the Contract (and therefore of the Defects Liability Period), the Beneficiary will need to request an extension of this guarantee from the Bank, accordingly. Such request must be in writing and must be made prior to the expiration date established in the guarantee.

## FORM 3 - Advance Payment Security (Bank Guarantee)

**[To be provided on headed notepaper of the bank issuing the guarantee]**

**To:**

**Beneficiary:** **[Enter beneficiary]**

**Date:**
**[Enter date]**

**ADVANCE PAYMENT GUARANTEE No.:** **[Enter Guarantee Number]**

We have been informed that **[Name of the Contractor]** ('the Contractor') has entered into Contract No. **[Enter Contract Number]** dated **[enter date]** with you, for the Execution of **[Enter description of Works]** ('the Contract').

Furthermore, we understand that, according to the Terms and Conditions of the Contract, an advance payment in the sum of **[Enter name of currency and amount in figures and words]** [1] is to be made against an advance payment guarantee.

At the request of the Contractor, we **[Enter name and address of the Bank]** hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of **[Enter name of the currency and amount in figures and in words]**[1] upon receipt by us of your first demand in writing accompanied by a written statement stating that the Contractor is in breach of its obligations under the Contract.

It is a condition for any claim and payment under this guarantee to be made that the advance payment referred to above must have been received by the Contractor in its account number **[enter Contractor's account number]** at **[Enter name and address of the Bank]**.

The maximum amount of this guarantee shall be progressively reduced by the amount of the advance payment repaid by the Contractor as stated in copies of submitted invoices which shall be presented to us. This guarantee shall remain valid and in full effect from the date the advance payment is received by the Contractor in its bank account until **[Insert date]**[2]. Consequently, any demand for payment under this guarantee must be received by us at this office on or before that date. We agree to a one-time extension of this guarantee for a period not to exceed **[insert number]** months, in response to the Beneficiary's written request for such extension, such request to be presented to us before the expiry of the guarantee.

This guarantee is subject to the Uniform Rules for Demand Guarantees, ICC Publication No. 458.

_____

**[Seal of Bank and Signature(s)]**

Notes:

[1] Insert the amount representing the amount of the advance payment, and denominated in the currency (ies) of the Contract, or a freely convertible currency acceptable to the Beneficiary.
[2] Insert the date stipulated in the Contract for completion of works..

| FORM 5 - Contract Agreement | |
|---|---|
| **Contract No:** | |
| **Brief Description:** | |

This Contract is made the day of **[Enter date]** by and between **[Enter name and address of Employer]** (the 'Employer') on the one part and **[Enter name and address of Contractor]** (the 'Contractor') on the other part;

Whereas the Employer has accepted the Tender of the Contractor **[enter reference number and date]** for the execution of such Works in the sum of:
**[Employer to enter currency and amount in words and figures]**

In this Agreement, words and expressions shall have the same meanings as are respectively assigned to them in the Conditions of Contract hereinafter referred to.

The documents constituting the Contract are as shown below in order of precedence and shall be deemed to form and be read as part of this Agreement.

(a) This Contract Agreement
(b) The Special Conditions of Contract
(c) The General Conditions of Contract
(d) Technical Specifications, Bill of Quantities
(e) The Contractors Tender and Response Schedules
(f) Other documents **[EMPLOYER to enter as required]**;

In consideration of the payments to be made by the Employer to the Contractor as hereinafter mentioned, the Contractor hereby covenants with the Employer to execute and complete such Works in conformity in all respects with the provisions of the Contract.

The Employer hereby agrees to pay the Contractor in consideration of the execution and completion of the Works and the remedying of defects therein the Contract Price or other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.

IN WITNESS of the aforesaid, the parties hereto have caused this Contract to be executed in accordance with the laws of the Republic of Vanuatu.

| **For the Employer** | | **For the Contractor** | |
|---|---|---|---|
| **Signature:** | | **Signature:** | |
| **Date:** | | **Date:** | |

## FORM 5 – Practical Completion ("Taking Over") Certificate

| | |
|---|---|
| **CONTRACT No.:** | |
| **CONTRACT TITLE/ DESCRIPTION:** | |
| **CONTRACTOR:** | |
| **LOCATION OF WORKS:** | |
| **CONTRACT START DATE:** | |
| **CONTRACT COMPLETION DATE:** | |
| **TOTAL COST OF WORKS** | |

| **DESCRIPTION OF WORKS COVERED BY THIS CERTIFICATE** | |
|---|---|
| 1. | |
| | |
| | |
| | |

In accordance with the provisions set forth in the Contract Agreement and on the basis of the verification/inspection of completion of the works undertaken by the Employer's Representative on **[Enter date of inspection]**, we hereby certify that the Contractor has satisfactorily and fully completed the scope of works **[Employer to enter, including variations, if any]** as called for in the Contract Agreement, in accordance with the Schedule of Requirements and associated Construction Schedule, approved plans and technical specifications, and the Price Schedule (whether based on unit prices or lump sum).

The defects liability period commences from the date of Practical Completion and shall remain in effect for **[Employer to enter defects liability period]** thereafter.

| **SCHEDULE OF DEFECTS AND/OR OUTSTANDING WORKS AT DATE OF ISSUE OF NOTICE** | |
|---|---|
| **LOCATION** | **DESCRIPTION** |
| | |
| | |
| | |
| | |

This Certificate likewise provides approval for the release of 50% of the Retention due to the Contractor in accordance with the terms and conditions of the Contract.

| | |
|---|---|
| Practical Completion Date: | Date of Issuance of this Certificate: |
| For and on behalf of: **[Employer to enter]** | Confirming Acceptance for and on behalf of: **[Contractor]** |
| By: **[Employer to enter name]** | By: **[Contractor to enter name]** |
| **[Enter signature]** | **[Enter signature]** |

## Form 6 – Defects Liability Certificate

**Contract No.** [EMPLOYER to insert]

| | |
|---|---|
| **Description of Works** | |
| **Location of Works** | |
| **Name of Contractor** | |
| **Total Cost of Works** | |
| **Date Started** | |
| **Date Completion of Defects Liability Period** | |

In accordance with the provisions set forth in the Contract and on the basis of the verification of the completion of notified defects undertaken by the Construction Supervisor on **[insert Date of inspection]**, we hereby certify that the Contractor has satisfactorily and fully completed the Contract as called for in the Contract and in accordance with the Works Programme, approved plans and technical specifications, and any other contractual documents.

This Certificate likewise provides approval for the release of the Performance Security and remaining Retention Monies due to the Contractor in accordance with the terms and conditions of the Contract.

Issued **[Enter date]**.

By:

**[EMPLOYER to enter name]**
Construction Supervisor

**[Enter signature]**

**[EMPLOYER to enter name of recipient who will also sign to confirm acceptance of the works]**

**[Enter signature]**


# PUBLIC WORKS DEPARTMENT

# VANUATU

# GENERAL TECHNICAL SPECIFICATION

# BUILDING WORKS

UPDATED FEBRUARY 2017

## INTRODUCTION

This General Technical Specification has been developed to assist the Public Works Department (PWD), Ministry of Infrastructure and Public Utilities (MPIU), Vanuatu and contractors in the delivery of building works contracts. The Technical Specification forms part of the Tender and Contract documents where listed in the schedule of documents. The Technical Specification is to be read in conjunction with the Drawings, Statement of Requirement / Scope of Work, Schedules (finishing, fixtures, furniture, etc) and other documents included in or listed in the Tender Documents (General Conditions of Contract, Specific Conditions of Contract, etc). Where there is confusion between the documents the Drawings and Statement of Requirements / Scope of Works are to take priority.

These Technical Specifications include Social Safeguards, Work Health and Safety Management, Environment Management and other mandatory requirements to assist in the successful implementation of building works contracts in Vanuatu. Compliance with this Specification and suitable remuneration can be included as separate items in the Schedule of Activities, be included under 'Project Management' provisions or be taken to be included under 'Construction Activities' (unless otherwise stated). If these Technical Specifications are listed in the Schedule of Documents than all ***relevant requirements*** are to be carried out by the Contractor and should only be paid upon verification of performance of the tasks and duties listed.

The Design and Construction of Buildings in Vanuatu, and for all projects implemented by the PWD, are to comply with the 'National Building Code for Vanuatu' (2000) and the associated document the 'Home Building Manual' (1990).

These Technical Specifications have been developed by the PWD Built Environment Unit with assistance from the PWD/DFAT Roads For Development Program, Vanuatu Ministry of Health and has also included provisions from the and DFAT Child Protection Guidance Note for Infrastructure Activities (February 2017).

For the purpose of this Technical Specification the terms 'Client', 'Project Manager', 'Construction Supervisor' and 'Architect' are considered interchangeable where the intent is to reference the entity who is representing the 'Client' as nominated under the contract conditions. This may be a direct representative of the 'Client' or an entity appointed in writing (such as a project management company).

This Technical Specification – Building is administered by the Principal Architect, PWD. If there are any questions or comments, please contact the Principal Architect. This Technical Specification should be reviewed on an annual basis to check compliance.

This Technical Specification is released with the approval of the Director of Public Works Department, dated 23 February 2017.

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## WORK HEALTH AND SAFETY

### 1 GENERAL

The Contractor is responsible for the Work Health and Safety (WHS) of all activities and personnel on the project / contract site.

The Contractor's Work Health and Safety Management shall be covered under a Lump Sum Payment item and shall be paid on a monthly basis based on percentage of contract complete (additional will not be paid if there are schedule over-run). Payment will also be dependent on compliance and performance with this specification.

### 2 LEGISLATION

The Contractor is to comply with all relevant provisions of the Vanuatu Health and Safety at Act [2 Feb 1987 Cap 195] and the Workers Compensation Act Amendment 21 (May 2014). The duties of employers and employees under the Act are outlined below.

[extract from Health and Safety at Work Act]

*2. Duties of employers to their employees*
*(1) It shall be the duty of every employer to ensure, so far as is reasonably practicable, the health, safety and welfare at work of all his employees.*
*(2) Without prejudice to the generality of an employer's duty under the preceding subsection, examples of that duty are –*
*(a) the provision and maintenance of plant and systems of work that are, so far as is reasonably practicable, safe and without risks to health;*
*(b) arrangements for ensuring, so far as is reasonably practicable, safety and absence of risks to health in connection with the use, handling, storage and transport of articles and substances;*
*(c) the provision of such information, instruction, training and supervision as is necessary to ensure, so far as is reasonably practicable, the health and safety at work of his employees;*
*(d) so far as is reasonably practicable as regards any place of work under the employer's control, the maintenance of it in a condition that is safe and without risks to health and the provision and maintenance of means of access to and egress from it that are safe and without such risks;*
*(e) the provision and maintenance of a working environment for his employees that is, so far as is reasonably practicable, safe, without risks to health, and adequate as regards facilities and arrangements for their welfare at work.*

*3. Duties of employers and self-employed to persons other than their employees*
*(1) It shall be the duty of every employer to conduct his undertaking in such a way as to ensure, so far as is reasonably practicable, that persons not in his employment who may be affected thereby are not thereby exposed to risks to their health or safety.*
*(2) It shall be the duty of every self-employed person to conduct his undertaking in such a way as to ensure, so far as is reasonably practicable, that he and other persons (not being his employees) who may be affected thereby are not thereby exposed to risks to their health or safety.*

*4. Duties of employees at work*
*It shall be the duty of every employee while at work –*
*(a) to take reasonable care for the health and safety of himself and of other persons who may be affected by his acts or omissions at work; and*
*(b) as regards any duty or requirement imposed on his employer by this Act or by health and safety regulations, to co-operate with him so far as is necessary to enable that duty or requirement to be performed or complied with.*

## 3 CONTRACTORS WHS PLAN

The Contractor shall submit a WHS Plan to the Project Manager within 14 days of signing the contract which shall include the following information:

(a) Contractor's Safety Policy;

(b) Description of Contractor's organization structure, identifying supervisory and safety personnel, job descriptions, responsibilities, authority and functions;

(c) Programme for the dissemination of safety information, material safety data and the conduct of safety awareness, on site from the Date for Commencement to the intended completion date;

(d) Programme for the regular safety inspection of all plant and equipment and for ensuring the Contractor's operators are appropriately licensed;

(e) Identification of all work activities on site with clear descriptions of safety procedures and measures to be implemented during each work activity, including the use of necessary protective equipment for each work activity;

(f) Description of emergency procedures, including responses to accidents and injury, emergency evacuation plans, the supply, use and locations of first aid kits, provisions for rescue and other emergency equipment and personnel, as may be required by the Construction Supervisor;

(g) Description of fire prevention measures and the supply and location of fire fighting equipment;

(h) Description of the safety programme administrative arrangements, including the flow of and filing of communications and correspondences, record keeping, investigating and reporting procedures for incidents resulting in death, injury, loss of work-time, damage to equipment and or property.

Additional to the above minimum requirements, the Contractor shall undertake the following:

(a) Provide an appropriately equipped first-aid 'station' on site and in the construction camp. Arrangements for emergency medical services shall be made to the satisfaction of the Construction Supervisor;

(b) Keep records of all safety and protective equipment and clothing provided by the Contractor to workers and staff;

(c) Safety induction courses for all Contractor's Personnel. All such workers and staff shall attend a safety induction course within their first week on Site. The information and instructions and attendees at each induction course shall be recorded for monitoring purposes;

(d) Periodic safety training courses conducted not less than once every three (3) months. All Contractor's Personnel shall participate in relevant training courses appropriate to the nature, scale and duration of the Project Works. The material provided and attendees at each of the training courses shall be recorded for monitoring purposes;

(e) Abbreviated safety induction course which shall be attended by visiting Employer's Personnel and other authorised visitors on their first visit to the site and at appropriate intervals thereafter;

(f) For new work activities the Contractor shall conduct the equivalent of 'tool box' talks at the start of the activity covering the methodology of the proposed work and in particular shall address all safety aspects including the proper use of any associated machinery and safety equipment associated with the proposed work. The material provided and attendees at each of the training courses shall be recorded for monitoring purposes;

(g) For more complex work activities that may or may not be included within the scope of Works – e.g. scaffolding works over 4m high, crane-age operations, roofing works over 4m elevation - the Employer through the Construction Supervisor may specifically instruct the Contractor to undertake a formal Job Safety Analysis (JSA) and an associated Work Method Statement (WMS) which shall be submitted and approved by the Construction Supervisor prior to the work activities being undertaken. In such instances an approved format proforma for both JSA and WMS shall be supplied by the Employer.

(h) Safety meetings shall be conducted on a monthly basis. The minutes of all safety meetings will be recorded and forwarded to the Construction Supervisor within seven (7) days of the meeting. The Contractor shall inform the Construction Supervisor seven (7) days in advance of the dates of these meetings and the Construction Supervisor may attend at their discretion.

(i) All vehicles (construction equipment, trucks, 4x4s and cars) should have basic first aid kits and fire extinguishers, and all operators/drivers should have undergone a basic first aid training course. Records of training shall be available for review by the Construction Supervisor if requested.

(j) All stores and offices should have at least one chemical fire extinguisher mounted on the wall in close proximity to the entrance. The extinguisher(s) should be checked regularly. Empty or partially used extinguishers shall be refilled immediately. All store personnel, operators/drivers, and administration staff are required to have been trained in the proper use of a fire extinguisher. Records of training shall be available for review by the Construction Supervisor if requested.

## 4 PERSONAL PROTECTIVE EQUIPMENT

The Contractor's personnel are to be provided with and wear at all times on site:

- High visibility vest
- Safety boots
- Hard hat
- Gloves when working with metal, CCA treated timber and tasks where there is a risk of hand injury
- Hearing protection when operating noisy machinery or equipment
- Dust masks when working on tasks that produce large quantities of dust including sanding, paint removal
- Other special protective equipment as required

## 5 SIGNAGE

Safety signage is to be used around the site to communicate WHS messages to visitors and site personnel, including:

- 'Restricted Access' signs
- PPE signs
- Contractor details (name, site supervisor / construction manager, contact telephone number, etc)
- Warning signs (asbestos, electrical services (below ground, cables above, etc)
- Location of site office

## 6 DELINEATION OF THE WORK SITE

The worksite is to be delineated from the surrounding areas to keep separation between the construction activities and the community.

### Site Within Existing Perimeter Fence

Where the site has an existing perimeter fence and no other activities occurring within the perimeter fence then this fence can form the boundary of the worksite and keep the worksite separate from the surrounding community. All project signage relating to visitors and site safety is to be located on, or adjacent to, the perimeter fence.

### Site Where There is No Perimeter Fence

Where the worksite has no perimeter fence, or is located within a larger compound where other activities are occurring within the perimeter fence, the contractor is to delineate / separate the worksite from the larger area. This separation is to consist of a temporary fence constructed from start pickets (posts), two plain strands of wire and high visibility barrier tape.

## 7 Site Facilities

The contractor is to provide the following site facilities;

- A site office
- A lunch and eating area for staff / workers
- Access to drinking water
- Washing facilities
- Toilet facilities

The site facilities are to be in proportion to the size and the period of the project.

## SOCIAL SAFEGUARDS

## community liaison

### 1 General

This section relates to projects carried out in communities or in close proximity to communities. If the project is located in the municipal areas of Port Vila or Luganville or solely on Government of Vanuatu (GoV) land then the requirements within this section can be amended accordingly. However, the Contractor is to work with GoV officials to ensure that the project does not affect the surrounding communities, that there is no conflict with local communities and that employment opportunities (for men and women) are presented to the local community. Dispute resolution is to be carried out in conjunction with the GoV Ministry who is implementing the project.

The Contractor has an obligation to respect the rights, expectations, culture and property of local communities, and to work in harmony so as to avoid conflict with the communities at all times.

The Contractor shall at all times take all reasonable precautions to prevent any unlawful, riotous or disorderly conduct by and/or amongst Contractor's Personnel and for the preservation of peace and protection of all persons and property in the neighbourhood of the Works against the same.

The Social Safeguards are considered to be covered under the Project or Construction Management cost schedule items and if there is non-compliance the Project Manager reserves the right to make deductions in payments against this item commensurate with the level of the non-compliance.

The Contractor shall:

1. Visit any/all affected communities before commencing work on Site to explain construction activities in company with the Provincial Planner, a representative of the PWD Divisional Office, a representative of the Provincial Council of Chiefs and the relevant Community Chief(s) or his/their nominated liaison persons - whose names shall be advised to the Contractor by the Construction Supervisor.
2. Treat all chiefs, elders, landowners and villagers with respect and ensure that all Contractor's Personnel do likewise.
3. Treat all persons equally including women, girls and persons with disabilities (see below) and not discriminate against anybody either employed or seeking work provided that they would be able to adequately perform the duties of the position.
4. Encourage employment of women where possible.
5. Provide training to community members in building skills where possible.

### 2 Community Liaison Officer (CLO)

The Contractor shall appoint a Community Liaison Officer who shall be responsible for liaison with the Provincial Planner, the Island Council of Chiefs and community chiefs or their nominated liaison persons for undertaking community liaison management tasks as required herein.

The CLO shall liaise, meet, discuss, negotiate, discuss and resolve issues and/or potential issues, and undertake any other duties as may be necessary to maintain a professional and cooperative working relationship with each Community group.

The responsibilities of the CLO shall include, but not be limited to, the following:

(a) Coordinate the induction of all Contractor's Personnel concerning social behaviour, relevant cultural practices, gender awareness, relations with local people (especially women and children), and health and safety issues.

(b) Coordinate the formation of a Stakeholder Committee to provide an open forum to discuss the Works and its effect upon the communities.

(c) Coordinate the implementation of the HIV / AIDS Awareness and Information Program if required by the Contract.

(d) Enhance public awareness of the works related to: the benefits to community; start and finish days and working hours; measures taken to minimise traffic and access disruptions, erosion and sedimentation and other environmental impacts.

(e) Assisting to resolve community related issues, with the aim of preventing disputes.

(f) Develop and implement a formal Grievance Redress Procedure.

(g) Assisting the implementation of the Contractor's Environmental Management Plan (EMP).

(h) Assisting in the social and general awareness for the Contractor's personnel, as required by the Contract.

(i) Assisting the implementation of the Gender Awareness requirements of the Contract.

(j) Assisting in the employment of Local Labour as per the Contract.

(k) Assisting to enhance road safety and disability prevention awareness among the Contractor's Personnel and communities affected by the Contract.

## 3 Induction

The Contractor shall induct all Contractor's Personnel concerning social behaviour, relevant cultural practices, gender awareness, relations with local people (especially women and children), and health and safety issues. The format and contents of the induction program shall be approved by the Construction Supervisor. The Contractor shall maintain records of the Induction to demonstrate that all Contractor's Personnel on the site have been inducted.

## 4 Local Labour

The Contractor shall, to the extent reasonable and practical, sub-contract local community and women's groups (from within the boundaries of relevant Nakamal) for suitable aspects of the Works.

Where reasonable and practical, the Contractor should not sub-contract labour for Works outside their Nakamal boundaries. In circumstances where this is unavoidable approval from the associated Community Chiefs shall be first obtained.

All unskilled labour contracted and/or employed for the Works shall be Ni-Vanuatu unless it can be proven by the Contractor that the necessary numbers of unskilled labourers required for the Works cannot be reasonably obtained. In this case, the Contractor shall present to the Construction Supervisor for his approval, a written submission supporting his case for the use on non-indigenous unskilled personnel.

Any foreign personnel included within the Contractor's Personnel shall be specifically nominated. Including sub-contractors, the residency status of all foreign Personnel shall fully comply with the requirements of the Immigration and Labour Act of the Government of Vanuatu.

## 5 Grievance Resolution

The Contractor shall immediately verbally inform the Construction Supervisor of any incident and/or complaint and/or situation that may potentially result in conflict or otherwise threaten

good relationships with the local population. The Contractor shall also inform the Construction Supervisor in writing of each and every such event within three (3) days of occurrence or awareness of any such incident and/or complaint and/or situation.

The Contractor through its nominated CLO shall develop and implement a formal Grievance Redress Procedure with clear mechanisms for dealing with the resolution of complaints.

The Contractor shall set up and maintain a Register of Complaints, which shall include:

- Time and date of complaint;
- Type of communication (face to face, telephone, written, etc);
- Person(s) to whom the complaint is directed;
- Name, address and contact details of complainant;
- Details of complaint;
- Action planned and taken to settle the matter;
- Confirmation that resolution has been reached to the satisfaction of all parties.

The Register of Complaints shall be available at all times for inspection by the Construction Supervisor during the Works and shall be submitted to the Employer at the conclusion of the Contract.

In the event that a complaint cannot be resolved in discussions with the complainant, the Contractor shall prepare a report for the Construction Supervisor who will direct the Contractor as to the course of action to be followed. The Construction Supervisor and the Contractor shall participate bona fide in any meetings and discussions that take place as part of the said Dispute Resolution Process but shall be bound only by the terms of the Contract.

**GRIEVANCE REPORT FORM**

**Received by:** _____ **Date Received:** _____

**Reported by:** _____ **Database ID:** _____

**Responsible Agency:**_____ **Staff Name:** _____

**Location:**_____

| | **Village** | **First Name, Last Name** | **Contact Details** |
|---|---|---|---|
| Complainant(s) | | | |
| Suco Chief | | | |

**Acknowledged by:** _____ **Date Acknowledged:** _____

**Description of Concern:**

……

**Category:**

Compensation / Land Access / Inadequate Notification/ Disruption to Business or Property / Property Damage / Irrigation / Boundary Dispute / Environmental Damage / Construction Activities / Safety Risk /Traffic / Other

**Proposed Resolution or Feedback:**

……

Complainant satisfied with process? Yes ☐No ☐ Why not?……

Complainant satisfied with outcome? Yes ☐No ☐ Why not? ……..

Print Name (Complainant): _____

Signed (Complainant): _____ Date:_____

Signed (Recipient): _____ Date:_____

Copied to: _____

## MANAGING CHILD SAFETY

### 1 Risks

There is a risk with all infrastructure projects that children will be adversely effected by the project either through:

1. Child is abused, or injured or killed due to unsafe construction site.
2. Changes to regular routes increase dangers to children and young people (such as abuse, harassment or increased heavy vehicle traffic).
3. Child labour is used on the construction site or in the supply chain for the project (materials production such as producing stone for aggregate or sand).

### 2 Mitigation

Mitigation Strategies to be used by the Contractor to ensure that Child Safety is paramount during the project include:

1. No child under the age of 18 years old (as per Vanuatu Labour Laws) is to be employed in the project or in supporting the project through transport assistance or sourcing or making materials.
2. The WHS plan is to include child safety measures including:
    a. No child is to enter the construction site.
    b. The site is to be barricaded in such a way that it is clear what is construction site and what is outside the construction site. This barricade may take the form of a fence or barrier tape in rural areas. In urban areas this should include a fence that children cannot fit through.
    c. Security guards should be employed to ensure that children do not enter the site.
3. No child is to enter the accommodation being used by workers involved in the project.
4. No worker is to form a relationship with a child during the duration of the project and no worker should be alone with a child (who is not a family member) at any time.
5. If there is any incident or complaint involving any of the Contractors workers, it is to be documented and reported to the Project manager within 24 hours.
6. Site briefings are to include child safety rules.
7. Educate the community (through visits to schools and community meetings) about the dangers if children visit project sites or bars, or when crossing roads, etc.

### 3 Penalties

Penalties for not complying with these requirements include:

1. Individual worker: abuse of a child – report to police immediately and worker dismissed from project site. Contractor to provide full report to the Project manager.
2. Contractor: unsafe work practices, children on site, employment of underage staff, etc – The Project Manager is to assess the situation and discuss with Contractor. For serious breaches of this Section of the Technical Specification the Contract may be terminated under Contract Conditions relating to

Termination for beaches of provisions under the Contract (specifically General Conditions of Contract clause 15.13.1(d) for Standard GoV Works RFT documents).

## 4 Program Child Protection Code of Conduct

As a condition of any procurement contact awarded by this program the contactor will be required to sign and return to the project team the following Child Protection Code of Conduct:

I, [insert name], acknowledge and agree that in the course of my association with the Contract [insert number and name of contract], I must:

1. treat children with respect regardless of race, colour, gender, language, religion, political or other opinion, national, ethnic or social origin, property, disability, birth or other status;
2. not use language or behaviour towards children that is inappropriate, harassing, abusive, sexually provocative, demeaning or culturally inappropriate;
3. not engage children under the age of 18 in any form of sexual intercourse or sexual activity, including paying for sexual services or acts;
4. use any computers, mobile phones, video cameras, cameras or social media appropriately, and never to exploit or harass children or access child exploitation material through any medium;
5. not use physical punishment on children;
6. not hire children under 18 years for work;
7. comply with all relevant legislation, including labour laws in relation to child labour;
8. immediately report to the Public Works Department concerns or allegations of child exploitation and abuse and policy non-compliance in accordance with appropriate procedures;
9. Immediately disclose all charges, convictions and other outcomes of an offence, which occurred before or occurs during my association with the Public Works Department that relate to child exploitation and abuse.

I understand that the onus is on me, as a contractor to the Public Works Department, to use common sense and avoid actions or behaviours that could be construed as child exploitation and abuse.

Signed:

Date:

# ENVIRONMENTAL MANAGEMENT

## 1 GENERAL

The Environmental Management shall be either covered under a Lump Sum Payment item or shall be included under a Construction / Project Management payment item and shall be paid on a monthly basis based on percentage of contract complete (additional will not be paid if there are schedule over-run). Payment will also be dependent on compliance and performance with this specification.

## 2 Environmental Management Plan

The Contractor is to prepare an environmental management plan that addresses the following:

1. Public awareness and community relations
2. Workforce training
3. Erosion and sediment control
4. Topsoil removal and stockpiling
5. Vegetation clearance and protection
6. Water management
7. Waste management including hazardous materials
8. Management of asbestos containing materials
9. Management of CCA treated timber
10. Noise control
11. Traffic management

The environmental management plan is to be submitted to the Project manager within 14 days of signing the contract.

Guidance on some of these issues is included in the following pages.

## 3 Erosion and Sediment Control

The Construction Contractor shall implement the following control measures prior to, during and following the construction of the works, as indicated below:

1. Restrict vehicle access onto/from the site to sealed surfaces and / or designated earth access tracks. An agreed access point shall be determined with the site manager and this shall be the only access point.
2. Schedule construction so that the ground disturbance does not occur during the highest rainfall months.
3. Minimise the area of site clearance and ground disturbance by surveying and marking out work sites prior to site disturbance,
4. Instruct workers involved in site clearance and earthworks to restrict construction activities to the marked out sites.
5. Minimise the period of site disturbance by staging site clearance. Do not clear a site before two weeks of the scheduled bulk earthworks.
6. Strip and stockpile all available topsoil as per EMG 5 prior to land forming earthworks.
7. Control run off onto, through and from the site via stable temporary and / or permanent drains and / or banks installed early in the construction program. Drains shall collect and convey clean water around the site and direct on-site run off into sediment traps.
8. Install sediment controls prior to earthworks, including sediment fences, traps and basins as necessary. Locate controls in order to divide each site into manageable sub-catchments.
9. Clean out sediment fences / traps / basins when 60% or more of the capacity is full.

10. Maintain erosion and sediment controls during the period of soil disturbance and until the site is stable (i.e. equal to or greater than 70% ground cover).
11. Progressively revegetate disturbed areas as soon as construction is completed.
12. Backfill and compact pipeline trenches as soon as possible after pipes have been bedded. Avoid long lengths of exposed trenching.
13. Undertake restoration / revegetation of pipeline routes as soon as pipelines have passed pressure and compliance tests. (See also EMG 4 and 10).
14. Maintain records of locations where excess spoil has been disposed of.

## 4 Topsoil Removal and Stockpiling

The Construction Contractor shall save all available topsoil for reuse in site revegetation and minimise impacts from topsoil stockpiling by:

1. Stripping all available topsoil from earthwork sites prior to the commencement of earthworks. If the site is only vegetated with ground cover grasses, grass shall be stripped with the topsoil.
2. Stockpiling topsoil on existing cleared sites on flat land and located at least 10m away from open drains, trenches, watercourses, the STP and buildings.
3. If the stockpile is to remain bare for long in a high rainfall period, it should be covered to prevent erosion and sediment run off; and
4. Installing a sediment fence of low earth bank on the down slop side of the stockpile to retain sediment where a grass filter strip does not exist, or where the site is over a 3% grade.

The establishment of weeds in topsoil stockpiles shall be managed by engaging members of the local community to hand weed topsoil stockpiles. No herbicides or other chemicals shall be used to control weeds.
Where excess topsoil results from the works, topsoil should be used to backfill waste disposal sites.

## 5 Air Quality Protection

The Construction Contractor shall minimise the deterioration of air quality by:

1. Maintaining a zero dust standard at all times. Particularly during demolition and removal of asbestos materials
2. Spraying water one exposed surfaces, including earth access roads and exposed rock surfaces. If conditions are dry and windy, work may have to cease as large volumes of dust may be generated.
3. Earth or soil being transported in trucks is to be covered or wetted to prevent loss during transit.
4. Establish wind speed monitoring: stop all excavation work when wind speed exceeds agreed threshold.
5. Installing wind breaks or fences around cement batching plants; or demolition sites where there is a danger of contamination from dust.
6. Ensure all construction machinery used on site is running efficiently and not producing excessive exhaust emissions.
7. Ensure no burning-off of waste is undertaken.

## 6 Hazardous Material Storage / Handling

The construction Contractor shall store and handle hazardous materials in accordance with the following measures:

1. Store bitumen emulsion, kerosene, diesel, petrol and lubricants in a bunded area with an impervious surface and with stormwater drainage provisions as approved by the Engineer.
2. Store paint and chemicals in a hazardous materials storage shed with walls, roof, ventilation and a bunded floor with an impervious surface.

3. Ensure that the storage capacity of each bunded area is at least 105% of the total volume of the hazardous materials stored.
4. Secure the areas and sheds used to store hazardous materials by erecting a security fence of minimum height 1.80m around each facility with the fence located outside the bund
5. Locate the hazardous materials storage areas at least 10.0m away from any watercourse
6. Contain and mop up spills of hazardous materials in accordance with manufacturer's specifications.

## 7 Waste Management

The following measures shall be implemented:

1. All stores waste shall be contained within construction sites:
2. Solid waste: all site waste is to be collected and disposed of in an approved registered landfill. Where possible segregation of waste (paper, glass, metal) should be undertaken and recycling opportunities identified.
3. Compost of use as animal food, all green or organic wastes: and
4. Sewerage shall be disposed of into sealed pit latrines or into a septic tank system, or other approved sanitation devices.
5. CCA treated timber to follow procedure included within this Specification.

## 8 Site Commissioning / Stabilisation / Demobilisation

The Construction Contractor shall prepare and implement a site rehabilitation / restoration plan for all areas disturbed by the work. The Contractor shall rapidly stabilise sites and provide long-term surface stability by progressively revegetating discrete areas of each work site as they are completed. The sites shall be revegetated by:

1. Raking or loosening any over-compacted ground surface areas identified fir vegetation cover;
2. Re-spreading stockpiled topsoil evenly across completed, disturbed sites (including any permanent fill stockpiles) immediately following construction works. As the vegetation cover of all areas to be stabilised will be grass, there will be no need to undertake any planting or weeding. Regular mowing of the stabilised areas should ensure that only grasses become established.

Sites shall be cleaned-up by:

1. Removing all disabled machinery and construction debris from the works area: and
2. Disposing of any oils in an approved manner

## 9 Traffic Management

The Construction Contractor shall:

1. Undertake a dilapidation survey of all roads in the area of the site to record pre-construction conditions.
2. Construct all haul, internal, and access roads in accordance with the designs.
3. On allow licensed drivers to operate vehicles
4. Maintain all roads to ensure safe conditions exist on site

Install signs, signals, or provide personnel to control traffic at intersections between site roads and public roads.

**Environmental Assessment Checklist**

| Site Name | |
|---|---|

The aim of this checklist is to draw attention to issues where positive or negative impacts could occur as a result of the actions taken when performing the works described in the project Work Package. The questions are designed to direct the attention of the Program Manager and contractors towards issues that should be considered at the early stages of development planning and during construction.
Consider each question in relation to this project. The checklist is presented under environmental theme headings. If their answer is yes to any question on the checklist then these issues need to be considered and managed accordingly. In the event that an impact is not covered by an EMP then appropriate actions should be agreed upon with the Program Manager after consultation with the Department of Environment in Port Vila.

| Checklist Item | Yes | No | Comment / Action | Comments |
|---|---|---|---|---|
| **HUMAN IMPACTS** | | | | |
| 1. Is the local population carrying on their normal day to day activities on and around the construction site during the construction period? | | | The effect on normal activities should be minimised. If there is going to be an effect the Provincial Government should be contacted to develop a plan with the surrounding community. | |
| 2. Is the area culturally or archaeologically sensitive? Are there burial sites or reverence on the construction site? | | | If YES, the contractor should advise the Project Manager who should refer the matter to the Provincial Government or PWD for appropriate action. | |
| 3. Will the project disrupt the flow of traffic in adjacent roads? | | | If YES then a comprehensive plan for mitigation must be developed with the local Police and Provincial Government department responsible for roads. | |
| 4. Will traditional cultural (men and women's) or archaeological sites be affected by the project? | | | An important aspect will be to develop a communication plan with local communities for advice on which sites are important prior to commencing any works. | |

| Checklist Item | Yes | No | Comment / Action | Comments |
|---|---|---|---|---|
| 5. Will the project require the relocation of any resident? Will the surrounding community be disrupted during construction? | | | If YES then the contractor and PWD should engage with the Provincial Government and give all possible assistance to anybody affected by the project to minimize any impacts. | |
| 6. Will the project require construction workers to be accommodated on the site? | | | How will the increase in population impact on the use and availability of local resources and facilities? | |
| 7. Will the project create jobs locally? | | | If YES, it is a project priority that where possible employment opportunities should be directed towards the local community. | |
| 8. Will the project provide a safe environment during construction for the construction workers, client personnel and others? | | | Every effort must be made to work with PWD and surrounding community to develop and maintain a safe environment. | |
| 9. Will the project require the use of heavy or noisy machinery or equipment? | | | Heavy equipment used should take note of surrounding community families and children's work and play areas when developing access plans. | |
| **LOCAL RESOURCES** | | | | |
| 1. Will there be additional demands on local resources, facilities or services? Especially water and electricity supplies. | | | Liaise with Provincial Government | |
| 2. Will the project affect downstream users of resources? Especially water. | | | All catchment users must be considered. | |
| 3. Will the project cut off or restrict future resource use? | | | If YES, the Contractor should advise the PWD and Provincial Departments responsible. A prerequisite for participation in this project will require PWD to indemnify construction contractors and the project against compensation claims. Where there is the possibility of compensations, the project will not proceed. | |
| **LOCAL HABITAT IMPACTS** | | | | |
| 1. Is the local vegetation mainly:<br>• Mangroves? | | | All effort must be made to limit effect on these areas. Consider relocation of system | |

| Checklist Item | Yes | No | Comment / Action | Comments |
|---|---|---|---|---|
| • Swamp or coastal vegetation? | | | | |
| 2. Is the area (immediately on or adjacent to the site) ecologically sensitive or fragile? | | | Are there important or endangered species, habitats or ecosystems in the area of the project or likely to be affected by project works, including cartage, storage and disposal sites and routes? If YES, can construction areas be located to avoid these areas? | |
| 3. Will the immediate or downstream effects of the project change the vegetation cover? | | | Impacts of erosion and siltation should be considered. | |
| 4. Are any unmodified forested areas locally important? | | | These must be protected totally. No impact is considered acceptable. | |
| 5. Will dumping of spoil or removal of timber and vegetation, rock or soils alter the present landscape? | | | If YES<br>Special consideration needs to be given to the management of erosion and prevention of sedimentation burying vegetation, entering local streams or reaching the shoreline.<br>Clearing can affect slope and soil stability, especially if heavy machinery is used during construction. | |
| 6. Will the immediate or downstream effects of the project impact on coastal areas (beaches, seabed, coral reefs, and sea grass beds) wetlands lagoons or swamps? | | | Consideration must also be given to the potential for amplification of minor impacts by storms or tidal effects. | |
| 7. Will the immediate or downstream effects of the project affect marine species? Fisheries resources? Fisheries habitat? | | | Where no official information exists, local fishermen must be consulted, including women. | |
| 8. Will the project involve discharge of nutrients or other effluents to coastal wetlands or mobile coastal landforms? | | | A policy of total containment on the site is the only acceptable option | |

| Checklist Item | Yes | No | Comment / Action | Comments |
|---|---|---|---|---|
| 9. Are there areas of limestone karsts (including Coronus or compacted coral) or wetlands? | | | If the contractor lacks technical knowledge then they should obtain the opinion of a qualified scientist | |
| 10. Will the project involve extraction of materials from rivers or disturbance of the near-shore area? | | | The contractor must obtain appropriate extraction licenses or provide copies of licenses from registered site owners and operators. | |
| **NATURAL AND ENVIRONMENTAL HAZARDS** | | | | |
| 1. Will the project generate waste products? Including:<br>• Increased sewerage?<br>• Solid waste?<br>• Rock or soil waste?<br>• Chemically contaminated waste?<br>• Asbestos materials? | | | | |
| 2. Will any machinery or construction materials be brought onto the site from another region or country | | | | |
| 3. Will waste products be treated / disposed of locally? | | | | |
| 4. Will the project or waste disposal affect the quality of local streams and ground water through sedimentation, erosion or contamination? | | | | |
| 5. Will hazardous substances (including pesticides, fertilizers, petrol, oils, tar, paints or industrial chemicals) be used or stored in the project area? | | | | |
| 6. Will the project require concrete or bitumen batching areas? | | | | |
| 7. Is the local environment naturally unstable (prone to coastal erosion, | | | | |

| Checklist Item | Yes | No | Comment / Action | Comments |
|---|---|---|---|---|
| likely to be affected by a rise in sea level, in an area of known earthquake or landslip activity, cyclones or severe storms, floods or droughts?) | | | | |
| 8. Will there be a need to repair environmental damage (Especially following completion of the project)? | | | | |

*Extract from MoH Environmental Management Plan*

**CONSTRUCTION WORK SITE CHECKLIST**

Contract Name and work site(s): _____

Contract No: _____ Date: From ……to……..

Contractor's Representative: _____Tel: _____

This Checklist must be completed by the Contractor's Representative and provided to the Project Manager at each site meeting.

**All non-conformances must be rectified immediately and action documented.**

**(Please place your initials in the boxes DO NOT use ticks or crosses)**

| BASIC POINTS | YES | NO | COMMENTS & ACTIONS |
|---|---|---|---|
| 1. Have all personnel on site had safety induction training (including visitors)? | | | |
| 2. Does the Contractor have a Work Health and Safety Plan? | | | |
| 3. Do all operators have appropriate certification to operate plant and equipment | | | |
| 4. Are Safety Helmets being worn by all (including visitors)?(if required) | | | |
| 5. Is Hi-viz safety clothing being worn? | | | |
| 6. Are safety boots being worn? | | | |
| 7. Is hearing protection being worn whilst doing or working near noisy operations? | | | |
| 8. Is other safety equipment being worn as required? | | | eg. hand, eyes, skin, respiratory |
| 9. Is there a fully stocked first aid box on site? | | | |
| 10. Is there a qualified first aid person on site? | | | |
| 11. Have there been any accidents on site? If so provide details. | | | How many:<br>To Whom:<br>Nature: |
| 12. Have there been any incidents on site | | | Eg security, alcohol / drug consumption |

| SITE AREA | YES | NO | COMMENTS & ACTIONS |
|---|---|---|---|
| 1. Is the site area clear of rubbish, and or scattered materials, etc? | | | |
| 2. Is there a rubbish / waste container on site? | | | |
| 3. Are environmental controls erected and maintained such as sediment / erosion controls, dust controls? | | | |
| 4. Is traffic control signage relevant to the work and inspected / maintained daily? | | | |
| 5. Are there construction warning signs displayed? | | | |
| 6. Are barriers / fences, along / around trenches / work areas in good order and maintained daily? | | | |
| 7. Are excavations correctly shored, benched or battered? | | | |

| | | | |
|---|---|---|---|
| 8. Are there suitable fire extinguishers on site? | | | |
| 9. Where is the nearest telephone in case of an emergency? | | | |

| HAZARDOUS SUBSTANCES | YES | NO | COMMENTS |
|---|---|---|---|
| 1. Does the site have a Hazardous Substances Register, (with MSDS's available) for the chemicals used on site? | | | |
| 2. Have site workers using chemicals been trained in how to use the chemicals safely? | | | If yes who conducted the training? |
| 3. Are all containers of chemicals adequately labelled (including Decanted ones)? | | | |
| 4. Are there any asbestos materials on site? If so is it being managed correctly? | | | |
| 5. Is CCA treated timber being used on site? If so are handling and waste disposal procedures being followed? | | | No timber is to be burnt on site or left for surrounding community to burn. All CCA treated timber is to be disposed of in a approved landfill. |

| ELECTRICAL / MECHANICAL HAND TOOLS | YES | NO | COMMENT & ACTIONS |
|---|---|---|---|
| 1. Are electrical leads and plugs in good condition? | | | |
| 2. Are the extension leads off the ground? | | | |
| 3. Are electrical works being implemented by a licenced and trained person? | | | |
| 4. Are plumbing works being implemented by a licenced and trained person? | | | |

| COMMUNITY, SURROUNDS & SAFEGUARDS | YES | NO | COMMENTS & ACTIONS |
|---|---|---|---|
| 1. Are children working on the site? | | | |
| 2. Is the local community engaged in the project. | | | How many men:<br>How many women: |
| 3. Are there good relations between the worksite and community? | | | |
| 4. Have any grievances been lodged?<br>5. Has the grievance report form been completed? | | | How many?<br>By who?<br>Have the grievances been resolved? |
| 6. Are basic hygiene practices being used to minimize spread of tropical diseases | | | |
| 7. Has the child protection form been signed and being complied with? | | | |

| ENVIRONMENTAL CONTROLS | YES | NO | COMMENT & ACTIONS |
|---|---|---|---|
| 1. Is site waste being collected and disposed of according to project controls? | | | Location of solid waste disposal? |
| 2. No dirty / contaminated water is escaping the site? | | | Erosion and sediment controls |
| 3. No contamination entering local streams? | | | |
| 4. Stockpiles minimised? | | | |
| 5. Bare earth minimised? | | | |
| 6. Material extraction from approved sites? | | | |
| 7. Environmental approval required from Department of Environment? | | | If so has it been approved |
| 8. Dust minimised | | | List controls |
| 9. Noise minimised | | | List controls |
| 10. Site rehabilitated at completion of works | | | |

General comments about this work site(s) (including follow up action)

_____

_____

_____

CONTRACTOR'S REPRESENTATIVE_____ SIGNATURE & DATE _____/_____/_____

CLIENT'S REPRESENTATIVE _____ SIGNATURE & DATE _____/_____/_____

# ASBESTOS MANAGEMENT & REMOVAL

## 1 What is Asbestos?

Asbestos is a generic term for a group of six naturally occurring silicate minerals exploited commercially for their desirable physical properties. The inhalation of asbestos fibres can cause serious illnesses, including malignant lung cancer, mesothelioma (a formerly rare cancer strongly associated with exposure to amphibole asbestos), and asbestosis (a type of pneumoconiosis).

Asbestos became increasingly popular among manufacturers and builders in the late 19th century because of its sound absorption, average tensile strength, and its resistance to fire, heat, electrical and chemical damage. It was used in such applications as electrical insulation for hotplate wiring and in building insulation. When asbestos was used for its resistance to fire or heat, the fibres were often mixed with cement (resulting in fibre cement) or woven into fabric or mats. Some other common uses include; lagging of hot water pipes, spray-on fireproofing (limpet), roofing materials, fencing, floor tiles, gaskets, friction linings, piping and internal and external wall cladding.

## 2 Definitions

***Asbestos*** means the asbestiform varieties of mineral silicates belonging to the serpentine or amphibole groups of rock forming minerals, including actinolite asbestos, grunerite (or amosite) asbestos (brown), anthophyllite asbestos, chrysotile asbestos (white), crocidolite asbestos (blue) and tremolite asbestos or a mixture of any of these.

***Asbestos containing material (ACM)*** means any material or thing that, as part of its design, contains asbestos.

***Asbestos-contaminated dust or debris (ACD)*** means dust or debris that has settled within a workplace and is (or is assumed to be) contaminated with asbestos.

***Friable asbestos*** means material that is in a powder form or that can be crumbled, pulverised or reduced to a powder by hand pressure when dry, and contains asbestos.

***Non-friable asbestos (Bonded Asbestos)*** means material containing asbestos that is not friable asbestos, including material containing asbestos fibres reinforced with a bonding compound.

## 3 Condition and Risk of Asbestos

Non-Friable (bonded) ACM (such as wall sheets) in good condition, left undisturbed and that has a good painted surface presents no health risk.

When non-friable ACM are broken, drilled, demolished, exposed to the weather for long periods of time without protection or the paint covering is in poor condition then the risk increases as the material is able to release dust particles.

All Friable ACM poses a risk due to its ability to release dust fibres into the atmosphere.

If the ACB can be crumbled by hand the material should be considered to be Friable.

## 4 Asbestos Risk Management

The Project Manager and Construction Manager are to conduct a site assessment and determine the type of asbestos and the risk associated with the ACM. The options for management of the ACM includes:

1. **Retain:** the material is in good condition and poses a low/no risk. Paint the sheeting and maintain in current condition.
2. **Remove utilising Contractors resources:** if the material is Non-Friable ACM and is in good condition the material can be removed by the contractor using the procedure and controls included below.
3. **Remove utilising specialist resources:** if the material is Friable ACM or Non-Friable in very poor condition the material must only be removed using specialist personnel trained and accredited in Australia, New Zealand or other suitable international standard.

## 5 Removing Low Risk Non-Friable Asbestos

**Contractors undertaking non-friable (bonded) asbestos removal require:**

1. A Construction Manager or experienced builder who has experience removing asbestos and/or has been trained in the removal of asbestos
2. The Construction Contractor shall:
    a) Familiarise themselves with the type and condition of asbestos cements products that will require removal and disposal at the site.
    b) Obtain prior approval for an appropriate disposal site prior to demolition.
    c) Delineate the site using barrier tape to define contaminated and non-contaminated areas. Only people involved in the removal of the ACM are to enter the site. No exposed AMC materials or PPE can cross into the non-contaminated area without being disposed of (wrapped) or cleaned.
    d) Remove asbestos cement demolition materials immediately from the site to the disposal site without storing it.
    e) Make sure that all staff handling the materials are supplied with the appropriate protection clothing and equipment (PPE), which is:
        i. White disposable overalls to wear during the operation. These overalls will prevent asbestos fibres from clinging to clothes where they could cause contamination.
        ii. Disposable dust mask suitable for work with asbestos (Certified to EN149 or EN405 Protection Factor FFP3); and
        iii. Disposable gloves.
    f) Ensure that the following are available at the site:
        i. A hose and a supply of water for wetting down materials
        ii. A plastic ground sheet that can fully wrap the quantity of asbestos cement sheeting and which will be disposed of with it; and
        iii. Packaging tape to seal the wrapping sheeting as in Serial 5 (b).
    g) Prevent children, or anyone else who may be affected by the work, from entering the immediate work area.
    h) The dust masks, overalls and gloves should be taken off at the site and disposed of with the AC sheet.
    i) Carry out all dismantling operations on form level ground that can be hosed down afterwards.
    j) Wet all sheeting prior to and during any dismantling operations. This will help to prevent asbestos fibres from becoming airborne.
    k) Where panels are to be removed, thoroughly wet the area around the fixings with water and detergent.
    l) If fixings are difficult to undo, try to cut the fixing off rather than break the asbestos.

m) Use a wet disposable rag to clean up and dust residues. (to be disposed of with the AC sheet)
n) Remove all sheets without breakage and lay them flat on the plastic ground sheet.
o) Wrap all asbestos cement waste (including small pieces, rags and used overalls) in a double layer of strong polythene (ground sheet) prior to transport and disposal. Seal the package using parcel tape.
p) Ensure you wash your hands thoroughly before handling foodstuffs.
q) Clean up any residues around the site before proceeding with construction activities or allowing children back onto the site.
r) Retain a record of the ACM removal using the Asbestos Removal Control Plan (see below).

3. **DO NOT:**
   a) Sand down or wire brush the panels.
   b) Deliberately break the panels.
   c) Slide one sheet on top of another.
   d) Use a domestic vacuum cleaner to clean up any asbestos debris.
   e) 'Dry Sweep' any small pieces of asbestos remaining on the ground after dismantling any buildings. Instead use a hose and brush together to move any pieces into one place before using a shovel to pick the asbestos up. You must dispose of the brush with the asbestos.
   f) Under no circumstances should asbestos be water blasted or dry sanded in preparation for painting, coating or sealing, as there is no system of use that can effectively capture or suppress asbestos fibres in such circumstances. An airless sprayer at low pressure is preferred to rollers or brushes on exposed (or unsealed) asbestos, as rollers and brushes may cause abrasion/damage and result in fibres being released from the surface of the material.

## 6 Removing High Risk Friable Asbestos

**Contractors undertaking friable asbestos removal require:**

1. The works are to be planned, managed and carried out by an Asbestos Removal Supervisor (Class A) trained and accredited to Australian, New Zealand or other recognised international standard.
2. All staff assisting with the works are to have undertaken Asbestos Removal Training as a minimum competency
3. To undertake the ACM removal according to international standards such as the 'Safe Work Australia', 'How to Safely Remove Asbestos – Code of Practice' (2016).

## 7 Guides for the Management of Asbestos (ACM)

### Use of Tools

Manually operated (non-powered) hand tools should be used where ever possible. If they will not provide sufficient physical force to perform the required operation, low-speed, battery powered tools that are able to be used in conjunction with wet methods for dust control are preferred. Asbestos vacuum cleaners can also be used.

In addition to any equipment required to complete a particular task, the following equipment may be required on-site before the work begins:

- disposable cleaning rags;
- bucket of water and/or a misting spray bottle;

- sealant;
- suitable asbestos waste container;
- warning signs and/or barrier tape.

Spray equipment includes wet sprays with water mist or wetting solution. A constant low-pressure water supply is required for wetting down asbestos and related items to suppress airborne asbestos fibres.

**Wet and Dry Methods**

An asbestos removalist must use techniques to eliminate or minimise generation of asbestos fibres so far as is reasonably practicable. Wherever possible, dry Asbestos Containing Material (ACM) should not be worked on. The 'wet spray method' is the most preferred for removing ACM. The ACM should be saturated through its full depth and maintained in a wet condition. It may be helpful to add a surfactant, such as detergent, to facilitate more rapid wetting of the ACM. A manually controlled, consistent low pressure, coarse spray, such as from an adjustable pistol-grip garden hose, is recommended for this purpose.

The dry removal method should be used only if the wet spray method is not suitable (e.g. electrical equipment).

**Personal Protective Equipment (PPE)**

An asbestos removalist must provide all workers with Personal Protective Equipment (PPE) that is suitable for asbestos removal work. Workers must also use the PPE given to them by the asbestos removalists. PPE must be worn at all times during the work in the asbestos removal area. PPE includes clothing, for example coveralls, gloves and safety footwear, as well as Respiratory Protective Equipment (RPE). All equipment used for the removal of asbestos should be inspected before the commencement of the asbestos removal work and after any repairs. A register with the details of these inspections, the state of the equipment and any repair details should be maintained.

At the end of the asbestos removal work and upon leaving the asbestos removal work area, all PPE must be disposed of as asbestos waste.

PPE required for the removal of bonded asbestos includes:

**Disposable Coveralls**

1. Of a suitable standard to prevent tearing or penetration of asbestos fibres. Disposable coveralls rated type 5, category 3 (prEN ISO 13982-1) or equivalent would meet this standard;
2. One size too big as this will help prevent ripping at the seams;
3. Fitted with hood and cuffs, ensuring that:
    a. if cuffs are loose they are sealed with tape
    b. coverall legs are worn over footwear as tucking them in lets the dust in
    c. the fitted hood is worn over the respirator straps.

**Gloves**

If significant quantities of asbestos fibres may be present, single-use disposable gloves should be worn. If latex gloves must be used, low protein (powder free) gloves should be used. If latex gloves are not available, disposable nitrile gloves can be used as an alternative. Gloves used for asbestos removal work should be disposed of as asbestos waste and the workers should clean their hands and fingernails thoroughly whenever leaving the asbestos removal work area.

**Footwear**

Safety footwear (rubber-soled work shoes or gumboots) should be provided for all workers removing asbestos. Footwear should be laceless. They should remain inside the barricaded area or dirty decontamination area for the duration of the asbestos removal work.

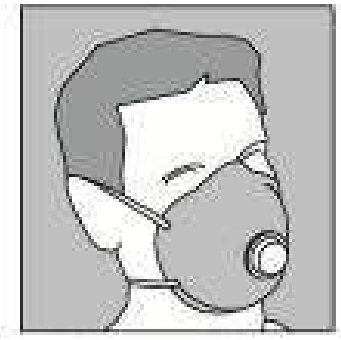
When safety footwear is not in use, it should be stored upside down to minimise asbestos contamination inside the footwear. Storage facilities should be provided to allow for storage of the shoes. At the end of the removal work and each time the worker leaves the asbestos removal work area, safety footwear must be:

- decontaminated;
- sealed in double bags for use on the next asbestos removal site;
- when they have been finished with – disposed of asbestos waste.

**Respiratory Protective Equipment (RPE)**

All workers engaged in asbestos removal work must wear RPE conforming to the following requires:

- When selecting RPE, you should also refer to the AS/NZS 1715:2009 Selection, Use and Maintenance of Respiratory Protective Devices and AS/NZS 1716:2012 Respiratory Protective Devices.
- Sampling and/or Removal of Non-Friable Asbestos: Disposable Half-Face particulate respirator with a P1 or P2 filter or half-face particulate (cartridge) respirator with a P1 or P2 filter.
- **Figure 1** Disposable, half-face particulate respirator



- **Figure 2** Half-face, particulate filter (cartridge) respirator

- Sampling friable asbestos: Disposable Half-Face particulate respirator with a P1 or P2 filter or half-face particulate (cartridge) respirator with a P1 or P2 filter.
- Removal of friable asbestos: full face particulate filter (cartridge) respirator with a P3 filter

  At every asbestos removal job the workers should be reinstructed in the necessity to wear RPE correctly to guard against complacency.

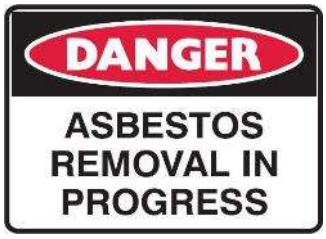
A fit test should be performed to ensure the RPE fits the individual and provides a good face seal between the worker's skin and the face piece. Fit tests should be repeated when changing from different models of RPE or a different sized face piece.

### Limiting Access, Displaying Signs and Installing Barriers

A person who is carrying out asbestos removal work must ensure the signs indicate where the asbestos removal work is being carried out and barricades are erected to delineate the asbestos area and limit access only to those involved in the removal work.

The Asbestos Work Area should be clearly defined to ensure that non-essential people do not enter the work area. Warning signs must be displayed to warn people that asbestos work is being carried out. Potential entry points to the Asbestos Work Area should be signposted or labelled in accordance with the following signs.

**Asbestos Removal Site**




**Asbestos Work Area**


The types of barrier required to secure an Asbestos Work Area will vary depending on the nature of the site and the level of risk. Buildings can be closed or fenced relatively easily. Larger more isolated areas within SRR need to be assessed individually. Tape with the words 'asbestos hazard' along the length can be used to communicate the hazard or restrict access to the site through closing off the section of road providing access to the site. All barriers and warning signs must remain in place until a 'clearance to re-occupy' has been granted.

### Decontamination

Decontamination for the work area, workers, PPE and tools used in asbestos removal work is an important process in eliminating or minimising exposure to airborne asbestos fibres, particularly to persons outside the asbestos removal work area.

To determine the appropriate decontamination procedure, the risks of each individual asbestos removal job should be assessed.

#### Decontamination of the removal work area

There are two (2) types of decontamination processes:

- Wet decontamination (wet wiping) involves the use of damp rags to wipe down contaminated areas. Cleaning rags should only be used once, although they may be refolded to expose a clean surface. The rags should be used flat and not wadded. If a bucket of water is used, the rags should not be re-wet in the bucket, as this will contaminate the water. Care should be taken to avoid any potential electrical hazards when using this procedure.
- Dry decontamination should only be used when wet methods are not suitable or pose a risk because of other hazards such as electricity or slipping. These procedures include carefully rolling or folding up and sealing plastic sheeting and/or vacuuming the asbestos work area with an asbestos vacuum cleaner. Large pieces of asbestos debris should be wetted and picked up by hand rather than vacuumed.

If an item is not able to be decontaminated, or is not suitable for decontamination, it should be placed in a sealed container and disposed of in accordance with these Guidelines. The sealed container must be decontaminated before it is removed from the asbestos removal work area.

**Decontamination of tools**

All tools used during asbestos removal work should be fully dismantled (where appropriate), cleaned under controlled conditions and decontaminated using either the wet or dry decontamination procedures. The method chosen will depend on its practicality, the level of contamination and the presence of any electrical hazards.

If tools cannot be decontaminated in the asbestos removal work area, or are to be reused at another asbestos removal work area, they should be:

- tagged to indicate asbestos contamination;
- double bagged in asbestos labelled bags before removing from the asbestos removal work area.

**Personal Decontamination Procedures**

Personal decontamination involves the removal of all visible asbestos dust/residue from PPE. Personal decontamination must be undertaken each time a worker leaves the asbestos removal work area and at the completion of the asbestos maintenance or service work. Personal decontamination should be done within the asbestos removal work area to avoid recontamination. Asbestos-contaminated PPE must not be transported outside the asbestos removal work area except for disposal purposes.

Personal hygiene and careful washing are essential. Particular attention should be paid to the hands, fingernails, face and head.

**Removal Work Area Waste Containment**

Loose asbestos waste must not accumulate within the asbestos removal work area by containing the waste in labelled asbestos waste bags or wrapped in plastic and storing in a location where the plastic bags will not be damaged.

Asbestos waste must be disposed of at an approved location. The disposal process must be in a manner that eliminates the release of airborne asbestos fibres by ensuring:

- all asbestos should be double bagged/wrapped in the polythene sheeting (heavy-duty 200 micron minimum thickness) and adhesive tape applied to the entire length of every overlap to secure the bundles to minimise the risk of the polythene sheeting tearing or splitting
- bagged asbestos waste is securely packaged in labelled containers;
- waste containers are secure during transport;
- the method of unloading the waste is according to waste disposal procedures so that tearing of the plastic lining at the landfill site is prevented.

The asbestos waste must be disposed of as soon as reasonably practicable, whether that is:

- at the end of the removal job;
- when the waste containers are full;
- at the end of each day if the asbestos waste cannot be secured at the removal site.

**Labels for Waste Containers and Drums**

All containers containing a hazardous chemical such as asbestos must comply with the labelling elements of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS). The waste drums or bins should be lined with plastic (minimum 200µm thickness), and labels warning of the asbestos waste should be placed on the top and side of each drum/bin or on asbestos waste bags.

### Clearance Inspections


Once the asbestos removal work has been completed, a clearance inspection is carried out and a clearance certificate is issued before the workplace can be re-occupied by an independent trained and experienced asbestos assessor, for the following asbestos removal work.

### Record Keeping

The Site Controller will maintain detailed records of all activities and work relating to asbestos undertaken at the site and give them to the RAC to be kept centrally. The records kept will include:

- Asbestos Management Plan;
- Records of people involved in the removal;
- Disposal documentation
- Clearance Certificate indicating the area is safe to reoccupy after asbestos removal works;

## 8 Alternatives to Removal

### Enclosing Asbestos

Where it is not reasonably practicable to remove asbestos, the preferred alternative control measure is enclosure. Enclosure is the creation of a structure built around the asbestos so that it is completely covered to prevent exposure of asbestos to air and other substances and should only be used on non-friable asbestos. This may be determined during the risk assessment by reviewing a range of issues including productivity, the condition of the asbestos, the risk it poses to health and cost. This is an interim control measure and should be supported through regular inspections by a competent person to identify if the asbestos requires removal due to damage or deterioration.

### Encapsulating Asbestos

A person encapsulating asbestos must have a minimum of Asbestos Awareness training.

If the bonded asbestos cannot be removed or enclosed, encapsulation or sealing is the next appropriate control measure. For example, if the asbestos is weathered, damaged or broken it should be removed.

Asbestos that is encapsulated in a resilient matrix has little opportunity to release airborne asbestos unless the matrix is damaged. Examples of resilient matrixes include:

- reinforced plastics;
- vinyls, resins;
- mastics;
- bitumen;
- flexible plasters and cements.

This type of encapsulation will seal any loose fibres into place and should be used only when the original asbestos bond is still intact. Although encapsulation has limited application and can create a health risk for workers undertaking the activity, it is used when it would create a greater risk to remove the asbestos.

Encapsulation helps protect the asbestos from mechanical damage, increases the length of serviceability of the product and may also be used to prevent the release of airborne asbestos during the removal process.

**Sealing Asbestos**

A person sealing bonded asbestos must have a minimum of Asbestos Awareness training.

Sealing is the process of covering the surface of the material with a protective coating over the asbestos to prevent exposure to airborne asbestos. Sealing asbestos is the least effective method for controlling the release of airborne asbestos. It should only be considered as an interim control while a more effective control such as removing or enclosing can be implemented.

It is important to select coating that is appropriate to the material to be sealed and has the required ultraviolet (UV) properties necessary for it to be an effective control. The coating will deteriorate if it is exposed to chemicals, extreme heat or could, wet or dry conditions or physical impacts.

**ASBESTOS REMOVAL CONTROL PLAN – LOW RISK WORKS (NON-FRIABLE ACM)**

| ITEM | COMMENTS |
|---|---|
| **Notification** | |
| Project Manager has been notified | |
| Surrounding / others affected by the asbestos removal have been notified:<br>a. Village,<br>b. Site staff<br>c. Provincial Government | |
| **Identification**: Details of asbestos to be removed | |
| Location | |
| Type of Asbestos<br>a. Non-Friable<br>b. Friable (Only to be removed by trained personnel) | |
| Condition of asbestos (good / poor) | |
| Quantity of asbestos to be removed (square metres) | |
| Risk Decision: does the asbestos pose a:<br>c. low risk or<br>d. High risk | |
| **Preparation** | |
| Consult with relevant parties (Project Manager; workers; person who commissioned the removal work, licensed asbestos assessors) | |
| Assigned responsibilities for the removal<br>a. Removal Manager – Name / qualification<br>b. Workers – name(s) | |
| a. Program start date<br>b. Program completion date | |
| Asbestos removal boundaries, including the type and extent of isolation required and the location of any signs and barriers<br>a. Sketch site layout | |
| Control of other hazards including electrical and lighting installations | |
| PPE to be used:<br>a. Respirator<br>b. Coveralls<br>c. Gloves<br>d. Other | |
| **Removal** | |
| Waste storage and disposal program<br>a. Where is waste to be disposed of - location<br>b. Is there agreement with village for disposal site<br>c. How is waster to be transported to waste disposal site | |
| Method for removing the asbestos (wet and dry methods) – describe:<br>• Access to water; hose or bucket | |

| ITEM | COMMENTS |
|---|---|
| • Spray bottles<br>• Method of removal – how are the sheets being removed<br>• Plastic sheet and tape available for wrapping sheets | |
| Asbestos removal equipment (e.g. spray equipment, asbestos vacuum cleaners, cutting tools) | |
| Other services required:<br>a. lighting and power requirements | |
| Other risk control measures to prevent the release of airborne asbestos fibres from the area where asbestos removal is undertaken | |
| **Decontamination** | |
| Decontamination to be used:<br>• wipe down all surfaces with damp cloth<br>• wipe down all equipment used in works with damp cloth | |
| **Waste Disposal** | |
| Method of disposing of asbestos wastes, including details on:<br>• the disposal of protective clothing<br>• how was | |
| **Inspection and Clearance** | |
| a. Name of person who conducted final inspection / qualification<br>b. Results of final inspection | |
| **Consultation** | |
| Consult with any people who may be affected by the removal work, including neighbours | |
| **Evidence** | |
| Take photographs of the works in progress and after works to show site clearance | |

## CCA Treated Timber

### 1 Introduction

Copper chromium arsenate (CCA) treated timber can pose a health risk to contractors and facility users if not treated correctly and care.

CCA treated timber is wood that has been treated with a preservative containing copper, chromium and arsenic. CCA treatment prolongs the life of the wood.

The main concern with CCA-treated timber is that it contains arsenic, which can be ingested (swallowed) or inhaled (when CCA-treated timber is burnt). Over time, small amounts of chemicals may leach from CCA-treated timber, but research has found that the quantity of leachate is generally very small.

However, the ash from burnt CCA-treated timber can contain up to 10 per cent (by weight) arsenic, chromium and copper. Swallowing only a few grams of this ash can be harmful. Symptoms can include nausea, vomiting, diarrhoea and a 'pins and needles' feeling in the skin.

### 2 Recommendations for Use of CCA Treated Timber

1. CCA-treated timber should not be used to build children's play equipment, patios, domestic decking, handrails, new garden furniture, exterior seating or picnic tables.
2. CCA-treated timber can be used for poles, fencing, landscaping timbers, piling and other structure foundations, residential construction, industrial and commercial construction, rural and farm use, fresh and salt water structures, signage and boat construction.
3. Keep children and pets away from CCA-treated ash until it is removed.

*https://www.betterhealth.vic.gov.au/health/healthyliving/copper-chrome-arsenic-cca-treated-timber*

### 3 Safety Precautions

The Construction Contractor shall:

1. Ensure that all staff involved in the use of CCA-treated materials, are fully aware of the need for standard protection and are equipped with protection clothes. This includes:
    a. Wear Gloves, a dust mask (rated P1 or P2) and goggles when cutting or demolishing a building with CCA-treated timbers
    b. Gloves should be worn to help avoid splinters and surface residues
    c. A dust mask or filter mask should be worn when sawing, machining or sanding, and cuts and abrasions protected from sawdust.
    d. Goggles should be worn when sanding, and during sawing or machining if there is any risk to the eyes from flying particles. If possible, sanding should be performed in a well-ventilated area.
    e. Overalls as well as gloves are recommended in high-dust situations
    f. Wash work clothes separately
    g. The hands and face should be washed free of sawdust before eating or smoking, and food and drink should never be left where sawdust can settle.

h. Dispose of cuts with other household solid waste in an approved landfill – don't burn them or leave them lying around for children or the uninformed community at large to pick up

i. No off cuts are to be stockpiled on site but area to be removed regularly to the municipal land fill

j. All demolition materials to be immediately removed from the site

k. If materials cannot be disposed of at the municipal land fill site then a site shall be arranged with the approval of the Supervising Engineer and local communities. It is important that the site be dry and not close to potable water sources used by communities for water supply

l. Do not burn CCA treated timber. If burning does occur apply dust mask and gloves and place ash in robust plastic bag and dispose of in approved landfill.

**IMPORTANT CONSTRAINTS**

1. Don't burn treated timber or treated timber off cuts
2. Don't cook with it
3. Don't use for animal litter if bedding
4. Don't serve food directly off treated timber
5. Do not let children lick treated timber
6. Children should follow normal hygiene practices after playing on treated timber (e.g. decks, playground equipment) such as washing their hands before eating.

## PROJECT / CONSTRUCTION MANAGEMENT & ADMINISTRATION

### 1 GENERAL

The contractor is to take all steps to ensure that the contract is managed in a professional and cohesive manner. The Contractor's Representative and Construction Supervisor shall comply with the items listed below.

The Contractor's Management (Project / Construction Management) shall be covered under a Lump Sum Payment item and shall be paid on a monthly basis based on percentage of contract complete (additional will not be paid if there are schedule over-run). Payment will also be dependent on compliance and performance with this specification.

### 2 Insurance

The Contractor is to have insurance prior to commencing works including:

- General liability
- Workers compensation
- General insurance for vehicles and equipment.

As specified in the General and Specific Conditions of Contract. If the contractor does not provide evidence of insurance within 14 days the contract may be terminated.

### 3 Pre-Start Meeting

A prestart meeting is to be held on site prior to the commencement of the project works. The objective of the prestart meeting is to confirm the project scope and outcomes, identify project personnel and stakeholders including community representatives (if relevant), confirm responsibilities and relationships, discuss mobilisation and program, identify any technical issues, discuss Work Health and Safety and Environmental controls for the project and any other issues as identified by the Project Manager or Contractor. The Contractor is responsible for minuting the meeting and distributing to nominated personnel.

### 4 Project Meetings

A project meeting is to be held at least once a month and preferably every fortnight on site between the Contractor and the Project Manager. The site meeting is to include discussion of:

- Work Health and Safety
- Environmental issues
- Community and stakeholder liaison
- Issues raised
- Technical
- Construction issues
- Quality monitoring
- Progress / program schedule
- Recording of personnel and equipment on site
- Contract administration (invoices, reports, contract compliance, etc)
- Other issues as raised

### 5 Site Records / Diaries

The Contractor is to maintain a site diary that records:

- Daily activities
- Number and names of supervisors and workers on site
- Work Health and Safety briefings and issues / incidents
- Environmental issues / incidents
- Liaison issues / incidents
- Personal protective equipment being work by workers
- Time start works / time works stopped
- Weather conditions

The contractor is also to take photographs on a daily basis that record the site activities. These photos are to be provided to the Project Manager upon request and/or at the completion of the project in electronic format.

## 6 Reports

The contractor shall submit a monthly report (for major projects) that contains the following:

- Work Health and Safety (issues / incidents)
- Environmental management (issues / incidents)
- Community and stakeholder liaison Issues
- works completed last month,
- works forecast next month,
- progress % against work plan,
- any construction, technical or quality issues
- variation requests or orders (approved),
- photo record of site progress with attached invoice and claim documentation (Schedule of Activities)

## 7 Invoices

Invoices are generally to be presented on a monthly basis; at the end of the month. A draft invoice is to be presented to the Project Manager at least one week prior to the end of the month for verification prior to submission of the final invoice. If there is a discrepancy between the Contractor's claim and the assessment of the Project Manager a suitable compromise is to be reached. If the Project Manager fails to respond within a week the Contractor can submit the final claim as per the draft claim.

## 8 Access To Services

The contractor is responsible for the provision of water and electricity and other services for the works. The contractor can negotiate with the site owner for access to the resources required to complete the works but this relationship is between the site owner and the contractor.

## 9 Work Hours

Work hours are generally to be 7:30am to 5pm Monday to Friday. Work hours on the weekend will be dependent on negotiation with the building owner.

## 10 SUBSTITUTIONS

When item names or type and/or models of materials or equipment and their equivalents are indicated in the Combined Specification, Schedule of Activities and detailed prices per item, or on the drawings, Tenderer shall allow for such quality of items by the most superior specification.

Should the successful Contractor prior to construction wish to offer any substitutes in goods, materials, workmanship or method he shall seek approval from the Project Manager in

writing for any such substitution, giving technical information certifying that the particular item is of equal or better quality and effectiveness than that specified, and the saving of cost to the Principal. In the absence of the Project Manager's written approval, no substitute will be accepted. The Project Manager in conjunction with the Purchaser shall have the sole right of final determination on the use of the substitution.

## 11 HANDOVER & COMPLETION

Upon reaching completion of the project works the contractor is to inform the Project Manager. A joint inspection involving the Project Manager and contractor's representative will be carried out to confirm any outstanding works and/or defects. If the project works comply with the contract drawings, documentation and specification then a Certificate of Completion will be issued. The issue of the Certificate the contractual conditions will be enacted regarding return of guarantees and commencement of Defect Liability Periods and Warranties.

## MOBILISATION / ESTABLISHMENT

### 1 General

The Contractor shall provide and maintain all plant and equipment necessary to carry out the Works, all necessary temporary accommodation, sheds and stores, and remove same from the Site on completion of the Works.

All accommodation, sheds and storage areas shall meet with any relevant Work Health and Safety Regulations, and shall be sufficient in size and comfort to accommodate the Contractor's staff in a manner approved by the Construction Supervisor.

Provision shall be made for the collection and disposal of all wastes generated from the aforementioned facilities in a manner approved by the Construction Supervisor.

### 2 Mobilisation / Establishment Item in Bill

Unless provided for elsewhere in the documentation the item for the Contractor's Site Establishment shall include for the following:

(i) The provision and transportation to site of all plant, vehicles, equipment, stores and materials not to be incorporated into the Works, and all temporary buildings and accommodation for the Contractor's use necessary for the construction of the Works to commence.
(ii) The erection of all temporary buildings and accommodation for the Contractor's use.
(iii) The provision of all buildings services, including electricity, water and appropriate waste disposal facilities necessary for the Contractor's use.
(iv) Any other expense incurred by the Contractor in establishing themselves on site.

Payment for this item shall be a lump sum and will be certified when the mobilisation / establishment is completed to the satisfaction of the Construction Supervisor.

### 3 Establishment Maintenance Item in Bill

Unless provided for elsewhere in the Tender / Contract documentation, the item for Maintenance of the Contractor's Site Establishment / Construction and/or Project Management shall include for the following:

(i) All expenses incurred in maintaining and running the site services of the Contractor's Site Establishment.
(ii) All expenses incurred in maintaining and repairing buildings for the Contractor's use.
(iii) All messing for the Contractor's staff and employees (if applicable).
(iv) All other expenses incurred by the Contractor in running his Site Establishment.

Payment for this item shall be a lump sum for the total number of months of the specified Contract period, and will be paid each month on a pro-rata basis upon the Construction Supervisor's certification of the satisfactory performance.

### 4 Demobilisation

Unless provided for elsewhere in the Tender / Contract documentation the item for Demobilisation of the Contractor's Site Establishment shall include for the following:

(i) The dismantling of all buildings and accommodations.
(ii) Transportation from site of all remaining plant, equipment, stores and materials, buildings and accommodation.
(iii) The disposal on site of any debris approved by the Construction Supervisor for such disposal, in a manner approved by the Construction Supervisor.

(iv) The removal and disposal off site, of all surplus debris and waste not approved for disposal on site. Such disposal to be in a manner approved by the Construction Supervisor.
(v) Restoration of the Establishment site to a neat and tidy condition subject to the Construction Supervisor's approval.
(vi) All other expenses incurred by the Contractor in demobilising from the site.
(vii) Payment for this item shall be a lump sum and is payable upon completion of demobilisation of the Contractor's Site Establishment and site restoration to the Construction Supervisor's satisfaction.

## 5 Notice Boards

If specified, within one month of receiving possession of the Site, the Contractor shall supply and erect Notice Boards at locations directed by the Construction Supervisor.

These Notice Boards shall be as detailed on the Drawings or elsewhere.

These Notice Boards shall be removed, and the site neatly tidied, by the Contractor on completion of the Contract or as directed by the Construction Supervisor.

Payment for provision of the supply and erection of the Notice Boards shall be made at the scheduled rate for the number of signs to the Construction Supervisor's satisfaction.

Payment for provision of the removal of the Notice Boards shall be made at the scheduled rate for the number of signs to the Construction Supervisor's satisfaction.

# QUALITY MANAGEMENT

## 1 GENERAL

The Contractor shall be responsible for the quality of the Works and compliance with the requirements of the Specifications and the Drawings.

The contractor is to prepare Quality Control Plan incorporating an Inspection and Test Plan and submit these documents to the Project Manager within 14 days of signing the contract. The Quality Control Plan and Inspection and Test Plan are to be maintained throughout the project.

If the contractor fails to comply with these requirements a deduction of 5% can be made from claims for payment until the documents are submitted to the Project Manager's satisfaction.

## 2 Contractor's Quality Control Plan

The Contractor shall prepare and submit a Quality Control Plan (QCP) for the Works. The QCP shall include but is not limited to the following:

(a) Contractor's Quality Policy;

(b) Description of the Contractor's and project organization, identifying personnel responsible for the implementation of its QCP, organization structure and job descriptions detailing quality control personnel qualifications, experience, authority, responsibilities and functions;

(c) Description and details of all setting out for construction control requirements;

(d) The development of an Inspection and Test Plan (as per below) which identifies the materials and workmanship to be inspected and tested and arrangements for material storage areas, the management and maintenance of storage areas and procedures for receiving and shipping materials;

(e) The acceptance criteria and standards to be applied for inspection and testing of materials and workmanship and the corrective action in the event of non-compliance, as may be specified in the Specifications or by the Construction Supervisor;

(g) Description of the quality control system administrative arrangements, including the flow of and filing of communications and correspondences, record keeping and reporting procedures.

## 2 Inspection and Test Plan

The Contractor is to submit an Inspection and Test Plan (ITP) for the project within two weeks of signing the contract. The ITP is to be approved by the Project Manager prior to the commencement of site works. The ITP is to include contractor shecks, client checks, signoffs and hold points. The ITP included on the following pages is an example of the items that should be included in an ITP.

## 3 DEFECTS MANAGEMENT

At the time of issuing the Certificate of Practical Completion the building is to be fit for purpose and have minimal defects.

Defects inspections are to commence at least four weeks prior to the programmed handover date.

| Ser | Item | Comments | Hold Point | Contractor | Project Manager | Comments |
|---|---|---|---|---|---|---|

**Inspection and Test Plan (Example)**

The Contractor is to submit an Inspection and Test Plan (ITP) for the project within two weeks of signing the contract.

| | | | |
|---|---|---|---|
| **Project Name:** | | | |
| **Project Number:** | | | |
| **Project Start Date:** | | **Project End Date:** | |
| **Project Manager (Client):** | | **Construction manager (Contractor):** | |
| **ITP to be maintained by:** | | **Position:** | |
| **Approval by Project Manager** | | | |
| Signature | | Date: | |

The ITP is to include contractor shecks, client checks, signoffs and hold points. The following ITP is an example of the items should be included in the ITP (delete items not relevant to scope of works).

| Ser | Item | Comments | Hold Point | Contractor | | Project Manager | | Comments |
|---|---|---|---|---|---|---|---|---|
| | | | | Check By | Date | Checked By | Date | |
| 1 | Construction / Contract Management | Attend site meetings,<br>Reports on monthly basis,<br>Maintain site diary including photographs,<br>Liaison with Project Manager,<br>Contract administration (program tracking, invoices) | | | | | | |
| 2 | Quality Control / Monitoring and Evaluation | Maintain ITP (this document)<br>Maintain site records | | | | | | |
| 3 | Safety controls | Safety plan submitted | | | | | | |
| | | Safety controls in place | | | | | | |
| | | PPE work on site | | | | | | |
| | | Safety controls maintained during works | | | | | | |
| | | Control of hazardous substances. | | | | | | |
| | | Control of CCA treated timber | | | | | | |

| Ser | Item | Comments | Hold Point | Contractor | | Project Manager | | Comments |
|---|---|---|---|---|---|---|---|---|
| 4 | Erosion and sediment controls | Environmental controls established: erosion and sediment control, waste management plan established, | | | | | | |
| 5 | Asbestos Management | If not included in the contract and found on site, stop work in that area, identify site with barrier tape and contact Project Manager asap | | | | | | |
| 5.1 | Before works commence | If included in contract – manage as per specification. Hold/ inspection points:<br>• Inspection prior to asbesots removal. Check supervisor and worker qualification, safety systems, plastic for encapsulation of waste, site control, PPE (overalls and respirators), water for wetting down materials, surfaces and washing, limit damage to in-situ wall cladding, etc | | | | | | |
| 5.2 | At completion of works | Inspection of completed removal – clearance | | | | | | |
| 6 | Set-Out | As per drawings, as approved by Municipal authority and/or project manager | | | | | | |
| 7 | Council Inspections | Required for project (yes/no). If so contact council and coordinate site visits. | | | | | | |
| 8 | Excavation | As per drawings (dimensions) and specification. Close asap – do not leave open. If left open delineate using fence or barrier tape, | | | | | | |
| 9 | Back filling | Material type, compaction | | | | | | |
| 10 | Reinforced Concrete | | | | | | | |
| 10.1 | Reinforcement<br><br>(To be inspected prior to placement of concrete) | Placed as per drawings, size, spacing, cover cover, rigidity, bar chairs | | | | | | |
| | | • Foundation inspection | | | | | | |
| | | • Columns | | | | | | |
| | | • Beams | | | | | | |
| | | • Slabs | | | | | | |
| | | • Septic tank | | | | | | |
| 10.2 | Formwork<br>(To be inspected prior to placement of concrete) | Strength, movement, as specified | | | | | | |
| | | • Foundation inspection | | | | | | |
| | | • Columns | | | | | | |
| | | • Beams | | | | | | |
| | | • Slabs | | | | | | |
| | | • Septic tank | | | | | | |

| Ser | Item | Comments | Hold Point | Contractor | | Project Manager | | Comments |
|---|---|---|---|---|---|---|---|---|
| 10.3 | Placement of embedded steel (eg post bases) | Steel meets design, galvanising (or other treatment), set-out | | | | | | |
| 10.4 | Cement | Portland cement, packaging, age, condition, complying with AS3972 | | | | | | |
| 10.5 | Sand | Suitable for concreting, size, free from salts, clean | | | | | | |
| 10.6 | Aggregate | Suitable for concreting, size, grading, free from salts, clean | | | | | | |
| 10.7 | Concrete strength | Slump (180), strength (25MPa / 20MPa), mix design (1:2:4 / 1:2:6) | | | | | | |
| | | • Foundation inspection | | | | | | |
| | | • Columns | | | | | | |
| | | • Beams | | | | | | |
| | | • Slabs | | | | | | |
| | | • Septic tank | | | | | | |
| 10.8 | Concrete finish | Finish specification, A1, A2 finish, broom finish for concrete slabs, etc | | | | | | |
| 11 | Masonry walls | | | | | | | |
| 11.1 | Set-out | As per drawings, verticality control | | | | | | |
| 11.2 | Concrete blocks | Size (external walls - 150x150x400 / internal walls can be 100x1508400mm), strength (minimum 15MPa at 28 days), hollow core with rebates for reinforcement | | | | | | |
| 11.3 | Reinforcement | Correct size, spacing (should be 400mm c/c horizontally and vertically), setout, starter bars in concrete slab and adjacent walls at 400mm c/c | | | | | | |
| 11.4 | Mortar | Mix (1:6 – cement : sand), bedding thickness 10mm | | | | | | |
| 11.5 | Core filling | Correct mix 1:2:6 (concrete strength 20MPa minimum), fill no more than 400mm vertical at a time, | | | | | | |
| 12 | Timber frame (walls and roof) | | | | | | | |
| 12.1 | | Materials - correct timber sizes<br>Correct timber type | | | | | | |
| 12.2 | Connections | As per design (cyclone strapping, bolted connections, angle bracksts, etc).<br>Surface finish - galvanised | | | | | | |
| 13.1 | Wall cladding | As per design and specification<br>Materials<br>Surface finish as per design & specification | | | | | | |
| 13.2 | Fibre cement board | Thickness, meets specification | | | | | | |

| Ser | Item | Comments | Hold Point | Contractor | | Project Manager | | Comments |
|---|---|---|---|---|---|---|---|---|
| 13.3 | Hardboard (masonite) | Thickness, meets specification | | | | | | |
| 14.1 | Roof frame | Correct timber sizes<br>Correct timber type | | | | | | |
| 14.2 | Connections | As per design (cyclone strapping, bolted connections, angle bracksts, etc).<br>Surface finish - galvanised | | | | | | |
| 16 | Roof cladding | | | | | | | |
| 16.1 | Metal cladding | As per design and specification<br>• Colourbond 24G<br>• colour<br>o Sheet<br>o Flashing<br>o Ridge capping | | | | | | |
| 16.2 | Sarking | As per design and specification | | | | | | |
| 16.3 | Chicken wire | As per design and specification | | | | | | |
| 16.4 | Insulation | | | | | | | |
| 17 | Doors | | | | | | | |
| 17.1 | Materials | • Type – solid / hollow core<br>• Hinges<br>• Handle & locking device | | | | | | |
| 17.2 | Frames | Materials, finish | | | | | | |
| 17.3 | Installation | Paint finish, close without sticking, gaps acceptable | | | | | | |
| 18 | Windows | | | | | | | |
| 18.1 | Materials | • Type – louvres – glass<br>• Security mesh<br>• Insect screens<br>• Storm shutters | | | | | | |
| 18.2 | Frames | Materials, finish | | | | | | |
| 18.3 | Installation | Paint finish, close without sticking, gaps acceptable | | | | | | |
| 19 | Rendering | | | | | | | |
| 19.1 | Materials | Mortar mix 1:6 (cement:sand) | | | | | | |
| 19.2 | Application | Surface preparation<br>Thickness and finish | | | | | | |
| 20 | Tiling | | | | | | | |
| 20.1 | Materials | Tile type, thickness, colour, pattern | | | | | | |
| 20.2 | Installation | • Surface preparation and grouting<br>• Pattern and finish | | | | | | |

| Ser | Item | Comments | Hold Point | Contractor | | Project Manager | | Comments |
|---|---|---|---|---|---|---|---|---|
| 21 | Joinery - Cupboards, benches and vanities | | | | | | | |
| 21.1 | Materials | Timber frame, cladding – plywood, formica surface finish, hinges and door handles and locking mechanisms | | | | | | |
| 21.2 | Setout | As per drawings | | | | | | |
| 21.2 | Installation | Workmanship, finish | | | | | | |
| 22 | Fittings, fixtures and finishes – general | | | | | | | |
| | materials | As specified, quantity, quality, placement | | | | | | |
| 22.1 | Curtains | Setout, as per specified | | | | | | |
| 22.2 | Toilet roll holders | As specified, location | | | | | | |
| 22.3 | Item | | | | | | | |
| 22.4 | Item | | | | | | | |
| 22.5 | Item | | | | | | | |
| 23 | Plumbing / Hydraulics | | | | | | | |
| 23.1 | Qualified Plumber | Plumber has training and is qualified | | | | | | |
| 23.2 | Roof plumbing | Materials are as specified - guttering, downpipes (100mm uPVC), water tank size and as per specification (5000 litre) | | | | | | |
| 23.3 | Installation | Guttering has fall and setout of gutter brackets and downpipes is correct | | | | | | |
| 23.4 | Tank stand | Tank stand – at least 1m tall, block and RC concrete topping slab | | | | | | |
| 23.5 | Water supply system | Materials - piping as per specification, sizes, manufacturer | | | | | | |
| 23.6 | Installation | Layout, connections, check for leaks, commissioning | | | | | | |
| 23.7 | Sanitary system | Materials - piping as per specification, sizes, manufacturer | | | | | | |
| 23.8 | Installation | Layout, slopes, connections, check for leaks, commissioning | | | | | | |
| 23.9 | Fixtures and fittings | | | | | | | |
| 23.10 | Basins & sinks | As specified, good quality, installed as per manufacturer's specification | | | | | | |
| 23.11 | Toilets | As specified, good quality, installed as per manufacturer's specification | | | | | | |
| 23.12 | Taps | Fixtures & fittings as specified and installed as per manufacturers instructions | | | | | | |
| 23.13 | Shower rose and taps | Fixtures and fittings installed as per manufacturers instructions. | | | | | | |
| 24 | Gas System | | | | | | | |
| | Materials | Materials, pipe, connections, soldering as per specification | | | | | | |

| Ser | Item | Comments | Hold Point | Contractor | | Project Manager | | Comments |
|---|---|---|---|---|---|---|---|---|
| 24.1 | Setout | Pipe run is simple and direct, location of gas bottle in shaded area, external, secured and on a comcrete pad | | | | | | |
| 24.2 | Fixtures | Stove as per specification | | | | | | |
| 24.3 | Commissioning | No leaks, gas appliance works | | | | | | |
| 24.4 | Hot water heater | Installed as per manufacturer's specification | | | | | | |
| 25 | Electrical | | | | | | | |
| 25.1 | Qualifications | Qualified electrician | | | | | | |
| 25.2 | Materials | Materials - cable, conduit, GPOs, switches, switch boxes as specified | | | | | | |
| 25.3 | Installation | Setout & locations correct, cable either concealed or in surface conduit (as per design) | | | | | | |
| 25.4 | Light fittings | Light fittings – setout and as per specification / design | | | | | | |
| 26 | Air conditioning | | | | | | | |
| 26.1 | Qualification | Qualified air conditioning or refrigeration installer | | | | | | |
| 26.2 | Equipment | AC units as specified – manufacturer, type (inverter) and size (2.5kW, 7.5kW, etc) | | | | | | |
| 26.3 | Installation | Setout / location | | | | | | |
| 26.4 | Commisisoning | Commissioned and working properly | | | | | | |
| 26.5 | Product information | Manufactures information and waranty information | | | | | | |
| 27 | Painting | | | | | | | |
| 27.1 | Materials | Colour, manufacturer, type, finish (mat, semi-gloss, gloss, etc) | | | | | | |
| 27.2 | Execution | Surface preparation, application method, drying time, number of coats, finish | | | | | | |
| 28 | Equipment / furniture / appliance supply | As specified, manufacturer, waranty, install, quantity | | | | | | |
| 29 | Landscaping | As per design. No bare earth, mulching | | | | | | |
| 30 | Retaining walls | Retaining walls – built as per design | | | | | | |
| 31 | Other items as required | | | | | | | |
| 32 | Other items as required | | | | | | | |
| 33 | Site clean-up | The site is tidy and all waste has been removed to an approved area | | | | | | |
| 34 | Demobilisation | All works are complete and the contractor has completed all items of the Contract | | | | | | |

## SITE WORKS

### 1 CLEARANCE OF SITE

Remove from the site of the building up to 3 meters beyond external walls, or as otherwise specified, all trees, shrubs, bushes and other vegetation, together with their roots. All other trees, shrubs, etc. shall be protected as directed so that no avoidable damage shall occur during the period of the Contract. Similarly clear under roads and car parking.

The site shall be excavated to levels and lines indicated on drawings. Prior to excavation the Contractor shall determine exact site levels and relate them to the depth of excavations indicated. The Superintendent shall be advised and his approval obtained before commencement of excavation.

### 2 SITE FINISHING / LANDSCAPING

Finish the site to levels and falls as shown or directed. There is to be no bare earth remaining at the completion of the works. Bare areas are to have 100mm of topsoil spread over them and seeded with local grasses and plants as specified. All land surface areas are to have a smooth transition with existing surfaces except where retaining walls or other structures are specified. Water until cover is established or until four weeks after building is practically complete. Fill planters with a min of 300mm of approved vegetable soil.

### 3 ROADS

All materials and workmanship shall be to the P.W.D. standards for bitumen 7/14 two coat surfaced roads where specified in drawings or design documentation.

To road and car parking areas shown on the drawings excavate as set out in EARTHWORKS under excavate or fill to required grades and lay road-base of 200 mm minimum thick crushed limestone or equivalent compacted as described.

Form edges of road and car parking areas with precast concrete curb stones set in 15/20 concrete as detailed.

Form trafficable surface with 2 coats bitumen emulsion and gravel.

### 4 FOOTPATHS

Construct footpaths as detailed and shown on the drawings. Footpath to be 100mm thick, 25 MPa concrete with 663 mesh with brush finish.

# EARTHWORKS

## 1 EXTENT OF EXCAVATION

Before starting work on the site the Contractor must notify the Superintendent to confirm the boundaries of the site, and the extent to the site clearing required. Excavate to levels shown on drawings or as otherwise directed.

## 2 LIABILITY FOR EXCAVATIONS

Notwithstanding any approval or direction by the Superintendent with regard to excavations or any matter or thing connected therewith the Contractor shall be responsible for taking all necessary safety precautions and for any damage to persons or property arising from these operations.

## 3 EXCESS EXCAVATION

Should site excavations be taken below the shown levels or such altered levels as may be *directed the* Contractor shall make up to the required levels with approved compacted materials or weak concrete at his own expense. If trench excavation is taken out below the level shown or directed the Contractor shall make good to the correct levels, at his own cost, with a weak (1:4:8 mix) concrete or as specified.

## 4 SHORING AND SUPPORTS

The Contractor shall provide all necessary sheeting timbering, strutting, shoring etc. for the safety of the excavations, the workmen, the public and any adjacent work or structure.

## 5 GRUB UP ROOTS

Roots of trees and shrubs encountered in the foundation excavations shall be entirely grubbed up and removed and not merely cut off.

## 6 TREES AND SHRUBS

All trees and shrubs within 3m beyond the external walls shall be felled, unless otherwise specifically directed, the roots entirely grubbed up, and all debris either removed from the site or otherwise disposed of as directed. Holes or irregularities left after removal shall be filled in with approved consolidated materials or as directed.

## 7 VEGETABLE SOIL

Vegetable soil shall be removed from all areas to be leveled, or excavated, to a depth of 150 mm and carefully laid aside in soil heaps or otherwise disposed of as directed. This soil is to be retained for use in landscaping.

## 8 EXISTING DRAINS AND DITCHES:

The Contractor shall divert as required all ditches, field drains or other water ways on or around the site. Where such alterations or diversions are temporary they shall be reinstated on completion at the Contractor's expense.

## 9 SURFACE TRENCHES

Excavate in all materials found for surface trenches pier holes etc. all to the lengths, widths and depth shown on the drawings or to such lengths, widths and depths as may be directed. Level, well ram and consolidate trench bottoms and keep sides of excavations vertical unless otherwise directed.

## 10INSPECTION

The Contractor must notify the Superintendent when the excavations are ready for inspection, and no laying of reinforcement or concrete within the excavations shall be executed before such inspection has been made and approval has been received from the Superintendent.

## 11 DISPOSAL OF EXCAVATIONS MATERIALS AND DEBRIS

Selected materials from the excavations may, with approval be stockpiled on site for use as backfill, hard-core or top dressing. Surplus spoil and debris must be removed from site and disposed of as directed at the Contractor's expense.

## 12 EARTH FILL

After approval of concrete foundations and sub-structure walling, backfill with approved selected materials up to ground level or such other level as required or directed.

Backfill is to consist of soil without stones and rocks greater than 30mm diameter and of low clay content.

Backfill should be deposited in layer not exceeding 250 mm thick with each layer well rammed, watered and consolidated. Materials to be approved prior to placement.

## 13 HARD-CORE

HARD-CORE underground slabs shall be **approved** material laid in layers not exceeding 200 mm thick with each layer well rammed, watered and consolidated and finished to required levels. Top surfaces shall if directed be blinded with an approved sand.

## 14 DRAINAGE AND SERVICES:

Excavate as required and as shown on the drawings or as directed for all pipe cable-runs waste, soil and rainwater pipes, storm water channels and septic tanks and soak-away. Generally, all excavations for drains water or other services shall be in straight lines both in the horizontal and vertical planes and with vertical sides.

No pipe tube or cable shall be laid until the excavation has been approved by the Manager. The bottoms of all trenches shall be of such widths as to permit the proper jointing of the pipes, tubes or cables to be laid therein. No excavations may be backfilled until all pipes or services therein have been tested and approved by the Superintendent.

## 15 BACKFILL SERVICE TRENCHES

The filling around and over all pipes tubes or cables where not encased in concrete, shall for the first 300 mm over the top of the pipe, tube or cable be of fine approved materials (sand) free from stones or hard lumps and shall be carefully tamped to avoid damage. No mechanical rammer shall be used within 500 mm of the top of any pipe, tube or cable.

Backfilling of trenches shall be left not more than 25 mm proud of the adjoining surfaces and shall not be allowed to subside below the level of the adjoining surface.

The Contractor shall at his own expense and as and when required up to the end of the Defects Liability period, provide, place and consolidate additional approved materials to make good any settlement.

## 16 REINSTATEMENT

All paving, curbs, roads, paths crossings and the like shall be reinstated in their original position and if damaged replaced with new at the Contractor’s expense. Reinstatement of damage to surfaces of public roads shall be carried out to the entire satisfaction of the appropriate Public Authority.

## CONCRETOR

### 1 STANDARDS

Codes: Comply with the relevant standards including the following:

-

| | | |
|---|---|---|
| AS101 | - | Methods of testing concrete |
| AS1141 | - | Methods of sampling and testing aggregates |
| AS1302 | - | Steel reinforcing bows for concrete |
| AS1303 | - | Steel reinforcing wire for concrete |
| AS1304 | - | Welded wire reinforcing fabric for concrete |
| AS1379 | - | The specification and manufacture of concrete |
| AS1478 | - | Chemical and mixtures for use in concrete |
| AS1479 | - | Code of practice for use of chemicals used in concrete |
| AS2758 | - | Aggregates and rock for engineering purposes |
| AS3582 | - | Supplementary cementitious materials for use with Portland cement |
| AS3600 | - | Concrete structures |
| AS3610 | - | Formwork for concrete |
| AS3972 | - | Portland and blended cements |

### 2 MATERIALS

**General**

Unless otherwise stated all concrete shall be composed of Portland cement, fine aggregate, coarse aggregate, approved additives and water, proportioned and mixed as detailed in this Specification. All such materials shall conform with the requirements of this Specification.

**Portland cement**

All cement used shall be Portland cement type A and shall comply with AS3972.

**Water**

Water shall be free from matter injurious to concrete reinforcing bars, prestressing bars and strands and any other embedded items. Injurious materials include acids, alkalis, salts, sugars, organic materials and oils.

**Aggregate**

All aggregates shall comply with the requirements of AS27581.1. Limestone aggregates shall be washed with potable water to remove any salts. The maximum nominal size of aggregate shall be 20mm. Aggregate may be subjected to any or all of the tests detailed in AS1 141.

Fine aggregate can be coral sand or and from vicinity of beach, clean and free from detrimental matter. Coarse aggregate shall be basalt or limestone crushed, clean and free from dust. Individual pieces shall be roughly cubicle and aggregate containing an excess of flake shaped stones will not be approved.
Aggregates shall be stored so as to prevent the mixture of one size with another.
Aggregates shall not be stored in direct contact with the ground on or in such a manner that allows intrusion of foreign matter.

Aggregates and sands must be sourced from a licensed quarry or borrow area that has Department of Environment Protection and Conservation permits for extraction.

**Admixtures**

Chemical Admixtures to concrete shall only be used with the prior approval of the Superintendent after detailed submission and in accordance with AS1478 and AS1479.

## 3 PERFORMANCE REQUIREMENTS FOR CONCRETE

**General**

Unless shown otherwise on the structural drawings, all concrete shall have the following minimum 28 days compressive strength slump and cement content, irrespective of coarse aggregate used in the mix.

| | Strength | Slump (mm) | Min Cement Content (Kg/m3) |
|---|---|---|---|
| i) | Blinding or site screed 10MPa | 120 | n.a. |
| ii) | Backfill below footings 15MPa and beams | 120 | n.a. |
| iii) | Structural Concrete 25MPa (footings, beams & slabs) | 80 | 360 |
| iv) | External Paving 25MPa | 80 | 360 |
| v) | Grout to block-work 17.5MPa | 230# | 320 |

Note: (#) The 230 slump may be achieved by the addition of Super Plasticiser REHOBUILD716 used strictly in accordance with the manufacturer's recommendations.

**Mix Design**

The Contractor shall submit for approval by the Superintendent details of the proposed mix designs, at least two (2) weeks prior to any concrete being required for the works.

Notwithstanding any approval being given by the Superintendent the Contractor shall be solely responsible for the production of concrete having properties in accordance with Specification requirements. The following details for each mix design are required: Mix Designation Mark, class of concrete, proportion by weight of individual ingredients and total weight of batch, admixtures and quantity to be incorporated, slump, target strength, on-site quality control measures.

**Testing**

Slump Test: Perform one test per truck-load, or per cubic meter hand mixed, record the results and reject failures. Do not add water.

Sample Test: Arrange for one sample (3 cylinders) per 20 cubic meters poured, to be tested in compliance with AS3600 and AS1012.

**Acceptance**

The compressive strength of the concrete will be deemed to comply with the specified strength grade and hence be accepted if it complies with Clause 20.7 of AS3600 for Project assessment testing. Both plastic and hardened concrete shall be liable for rejection if any of the conditions described below are present:

Plastic concrete may be rejected if, after completion of mixing but prior to site handling:

a) The slump, determined in accordance with AS1012.3, differs from the specified slump by more than the tolerances permitted in AS133799 (for a target slump of 80mm or less, the

tolerance is ± 15mm, and for a target slump greater than 80mm, the tolerance is ± 30mm); or

b) The time since completion of mixing is greater than 1.5 hours; or
c) The appearance and cohesiveness of the particular quantity is significantly different from previously supplied quantities of the same specification.

Hardened concrete shall be liable to rejection if:

a) it does not satisfy the strength requirements of this specification,
b) it is porous, segregated, honey-combed, or contains surface defects; or
c) it fails to comply with other requirements of this specification.

Where hardened concrete is liable to rejection, the concrete may be acceptance if the conditions outlined in clause 19.1.10.3 of AS3600 are met. All remedial work to bring rejected concrete to an acceptable standard shall be to the Contractor's cost and to the approval of the Superintendent.

## 4 REINFORCEMENT

### Material

All reinforcing steel shall be as shown on the drawings and shall conform to AS1302 “Steel Reinforcing Bars for Concrete", AS3600 "Hard Drawn Steel Reinforcing Wire for Concrete", and AS1304 "Welded Wire Reinforcing Fabric for Concrete".

All reinforcing steel shall be free from loose scale, loose rust, grease, oil or other material deleterious to the adhesion of concrete to the steel. Steel shall be stored off the ground to the satisfaction of the Project Manager/Manager.

### Bending and Fabrication

Ending and fabrication of reinforcing steel shall be to the dimensions and requirements of Clause 19.2 of AS3600.

### Fixing

Reinforcing steel shall be placed as shown on the drawings and wired at all points where the bars cross so that there shall be no movement of the steel during placing of the concrete. Cover to steel shall be as specified + 6mm/-Omm. Steel shall otherwise be correct in position to the tolerances as set out in C19.5.3 of AS3600.

The wire shall be annealed iron wire not less than No. 16 gauge unless otherwise shown on the drawings. Welding of reinforcement steel shall only perform in locations approved by the Superintendent.

Laps to reinforcing bars shall be 40 diameters unless otherwise noted.

Mesh laps shall be as indicated in the following table:

| Standard | Fabric End Lap | Side | Lap |
|---|---|---|---|

| Numbers | Crosswire Spacing (mm) | Overlap on Site (mm) | Longitudinal Wire Spacing (mm) | Overlap on Site (mm) |
|---|---|---|---|---|
| F1218 to F718 | 200 | 425 | 100 | 125 |
| F81 to F41 | 100 | 225 | 100 | 125 |
| F102 to F42 | 200 | 425 | 200 | 225 |
| F11TM to F8TM | 300 | 500 | not required | not required |

Bottom reinforcing shall be supported on **heavy duty polyethylene chairs-** with integral base. Lumps of coral, broken concrete or block will not be accepted.

All reinforcement shall be adequately supported such that movement of the shell is limited to a minimum. Chairs shall be spaced at a maximum spacing of 1200mm both ways.

## 5 FORMWORK

### General

The material, design and construction of formwork shall comply with AS3610. Stripping of forms and removal of formwork supports from members cast in situ shall comply with the requirements of Clause 19.6 of AS3600.

Side forms may be striped 24 hours after the concrete has been poured, provided that the surfaces exposed are immediately sprayed with approved curing oil.

Bottom forms shall remain in place for 14 days after pouring or otherwise as directed by the Superintendent.

Specifically, forms for concrete work shall be constructed and erected so as to resist the force exerted on them with the deflection at any point no greater than three (3)mm.

Forms shall be sufficiently tight to prevent the leakage of mortar.

The responsibility for the sufficiently of the whole of the formwork shall rest entirely with the Contractor.

Forms for exposed surfaces shall be made of dressed timber or metal. Angle fillets shall be used in the angles of side forms.

The junction of soffit and side forms shall be square and the top edge of the slabs shall be edged with an approved edging tool.

All formed corners shall be chambered nominally 15mm x 15mm unless noted otherwise on the structural or Project Managerial drawings and 12mm deep drip groves shall be provided to the underside of all external concrete edges.

Forms shall be true and conform to the dimensions and levels shown on the drawings.

The interior surface of forms shall be oiled or greased with an approved non-staining mineral oil prior to the placing of reinforcement, and any surplus moisture shall be removed from the forms prior to concreting.

Should any formwork be displaced during concreting or within the periods specified for the retention of formwork, the concrete shall be removed between such limits as the

Superintendent may determine, construction joint shall be formed and the section of work shall be reconstruction after the formwork has been strengthened and adjusted.

**Surface Finish**

Formwork shall be constructed such that the following classes of surface finish are attained on the various concrete surfaces in the project: (These classes only apply to surfaces finished against formwork)

| Items | Class |
|---|---|
| All visible off form finishes | 2 |
| All other areas | 3 |

## 6 SUPPLY OF CONCRETE

**Ready Mix**
**Approval of Source**

All concrete supplied for any Contract shall preferably be ready mixed concrete. Ready mixed concrete is quite ideal for urban sites where transportation and access to a recommended supplier is readily available.

**Batching and Mixing**

Records of batching shall be kept at the mixing site showing weights of the various components of the mix, results of testing carried out to determine the in situ water content of the aggregate prior to mixing, and quantity of cement added.

**On Site Mix Concrete**

**Method: On Site Mix Concrete**

a) Ensure that the mix proportions are suitable for the specific job. See Table 1 below for a guide to the correct mix.

b) Use fresh cement, clean aggregate and water. Cement which has formed into hard lumps and aggregate which contains excessive dust and other foreign matter, or is soft or flaky shall not be used.

c) When calculating quantities of materials required add approximately 10 percent to each amount to allow for losses in storage and for irregularities in sub-foundations and floors on ground, etc.

d) The strength and durability of concrete depend largely on the amount of water used with a given amount of cement. Refer to Table 2 below for a guide to a suitable water content for each bag of cement and the expected compressive strength of concrete. The amount of water added to the concrete should be reduced if the aggregate contains moisture.

e) If the concrete consistency in the first batch is too dry, then reduce the amounts of aggregate in the subsequent batches. Do not add water in excess of the amount recommended. No sloppy batches to be poured.

f) When placing concrete, certain precautions have to be taken to ensure that:
   i) Form work and reinforcement are not damaged or dislodged.
   ii) The concrete does not segregate, i.e. the cement paste does not separate from the coarse aggregate.

iii) Placing of the concrete should start from the corners of the formwork and from the lowest level if the surface is sloping.

g) Thorough compaction of the concrete is essential to provide concrete which gives:
   i) Water tightness
   ii) Maximum strength
   iii) Maximum durability and Good appearance

h) Cure the concrete by keeping it damp for seven days. Lack of curing can result in unsightly surface cracking and weaker, less durable concrete.

**Method: Mixing Concrete by Hand (without a concrete mixer)**

**Safety issues**

- Avoid breathing in cement dust – cover your nose and mouth with clothing.
- We concrete releases an alkali which can damage the skin, if it comes into contact with the skin, immediately wash it off with plenty of water.
- If concrete splashes get into the eyes, flush out with water and seek medical attention immediately.

Equipment needed include: A bucket, shovel, wheelbarrow, a clean workable timber platform.

It would be best to actually use a bucket for measuring rather than measuring by 'shovel loads', you will get more gravel on a shovel than cement. It is far easier to mix two small piles than one large one.

For smaller jobs or when a concrete mixer is not available, mixing cement by hand would require the following the steps:

- Clean off the working surface, use a brush and hose it down.
- Carefully measure out onto the mixing surface about half the gravel needed into a rough cone shape.
- With a shovel, make a crater in the centre of the heap then measure and add all the cement required.
- Measure out the rest of the gravel and add to the heap forming a cone shape.
- Mix all the ingredients together using a shovel, work around the heap turning the mixture over three or four times to achieve an evenly coloured (grey) mixture.
- With a shovel, form another crater in the top of the heap and add some water.
- Shovel the gravel from the sides of the heap into the central crater and turn part of the heap to distribute the water throughout the mixture.
- Repeat forming the heap, making the crater, adding water, turning the heap until the whole mixture is wetted. As the dry material becomes absorbed with water, flatten out the heap and start 'chopping' across the top with the shovel, move around the heap to evenly mix in the water.
- A good mix should be smooth and plastic, not wet and runny or dry and crumbly. As a guide, keep an eye on the ridges as the top of the heap is ok; if they fill with a watery mix or the ridges disappear, the mix is too wet; if between the ridges stays dry, the mix is too dry.
- When finished wash and brush down surfaces and equipment to remove remains.

**Note:** One of the common mistakes made when mixing concrete by hand is adding too much water. Add it in small quantities and the heap will suddenly be the right consistence. If you keep part of the dry mix to one side, you could add this into the heap if it does become too runny.

**Concrete Mixtures**

**Note:** Site mixed concrete shall still meet the minimum cement contents given above. (The ratios shown below in Table 1 & 2 is Cement : Sand : Aggregate. For eg. 1:2:4 mix means the amount of cement is 100% of the volume, Sand is 50% and Aggregates is 25%).

| **TABLE 1 (Concrete Mix by Weight)** | | |
|---|---|---|
| A | 1:1½:3 - (32Mpa) | High structural strength concrete for thin reinforced walls, slender reinforced columns, fence posts, heavy-duty floors, driveways, paths and kerb and gutters in parking areas. |
| B | 1:2:4 - (25Mpa) | Commonly adopted mixture for footings, reinforced concrete footing, beams and internal floor slabs. |

| **TABLE 2 (Concrete Mix by Volume)** | | | | |
|---|---|---|---|---|
| Mixture Nominal Proportion | Cement (40 Kg bags) | Sand $m^3$ | Gravel $m^3$ | Water Litres per bag Cement |
| A 1:1½:3 | 8 | ½ | 1 | 20 |
| B 1:2:4 | 6 | ½ | 1 | 20 |

**Note:** If to keep costs down by using more sand, reinforced concrete should never contain less than 270kg of cement (about 0.19$m^3$) per 1$m^3$.

Batching by bucket

| All Purpose Cement | Coarse sand | Stone | Approximate yield |
|---|---|---|---|
|  |  |  |  |
| 1 Bucket | 3 Buckets | 3 Buckets | 4½ Buckets |

Batching by wheelbarrow

| All Purpose Cement | Coarse sand | Stone | Approximate yield |
|---|---|---|---|
|  |  |  |  |
| 2 Bags (1 = 50 kg) | 3 Wheelbarrows | 3 Wheelbarrows | 0,3 $m^3$ |

Quantities per $m^3$ of concrete

| All Purpose Cement | Coarse sand | Stone | Approximate yield |
|---|---|---|---|
|  |  |  |  |
| 6,59 Bags (1 = 50 kg) | 0,64 $m^3$ | 0,64 $m^3$ | 1 $m^3$ |

**Aggregate Size**
20mm maximum size aggregate is suitable for most jobs. A mix of 10 & 20mm size aggregate will be a perfect combination to achieve a denser mix.

**Batching and Mixing**

All mixing and batching operations shall be carried out in accordance with the requirements of AS1379. Records of batching shall be kept at the mixing site showing weights of the various components of the mix, results of testing carried out to determine the in situ water content of the aggregate prior to mixing, and quantity of cement added.

### Transport and Delivery

Transit trucks shall comply with AS1379, with an agitating speed between 2 and 3 RPM. The elapsed time between charging of the mixer and discharge at the site shall not exceed 45 minutes, and the concrete temperature at time of placement shall not exceed 32 degrees Celsius.

## 7 PLACING AND COMPACTION

### Approvals

No concrete shall be placed without the Superintendent's approval. The Contractor shall seek such approval at least 24 house prior to the formwork and reinforcement being ready for inspection and the intended time for the pour to commence. Contractor, but in any case not less than 2 hours, shall allow adequate time, for the Superintendent's inspection.
Concrete placement shall not commence until inspections have been carried out, outstanding work completed or corrected and approval to proceed given by the Superintendent.

All built-in pipes, fittings, guards, block-outs, bolts, reinforcement and other fittings shall be in position before placing is commenced.

### Methods of Placement

Concrete shall be transported from the place of mixing to its final location as quickly as practicable by means, which will prevent the aggregation or loss of component materials.

Concrete shall be deposited as nearly as practicable in its final position. Free dropping of concrete from a height greater than 0.5 meters on floor slabs or dumping a large quantity away from its final position and working it along the forms will not be permitted.

Concrete shall be placed in its final position before perceptible setting takes place.

Placing shall be carried out at such a rate and in such a manner that placed concrete that is partially set is not subsequently disturbed. Concrete that is partially set before placing in its final position, or concrete that is contaminated by foreign materials **shall not** be placed.

### Compaction

All concrete shall be compacted using suitably sized immersion vibrators. At least 2 vibrators shall be used, and an adequate number of stand-by vibrators shall be available on site in case of breakdowns.

Any concrete which is re-handled after initial vibration shall be re-vibrated immediately prior to final screeding, to ensure uniform, dense homogeneous concrete throughout its entire mass, including the surface layer.
Should the vibration of the concrete not be to the satisfaction of the Superintendent's request, the Contractor shall replace the person currently in control of the vibrator.

### Hot Weather Requirements

In hot weather, precautions shall be taken to avoid premature stiffening of fresh mix and to reduce water absorption and evaporation losses.

Where the temperature of the surrounding air is higher than 32 deg. Celsius, the following provisions shall apply:

a) The formwork shall be continuously sprayed with cold water in advance of the concreting. Excess water shall be removed from the inside of the forms immediately prior to the concrete placement. The reinforcement and the formwork, if metal forms are used, shall be protected from the effects of hot winds and direct sunlight.

b) The concrete shall have a temperature not higher than 32 deg. Celsius when placed, wither following the use of chilled mixing water, or by water spraying of the coarse aggregate of both, and if necessary by covering the container in which the concrete is transported to the forms.

c) When concrete is placed in dry windy conditions, or when the air temperature exceeds 30 deg. Celsius, or when the Superintendent deems that early and rapid loss of water from the mix may be detrimental to the concrete work, Master Contractors "Confilm" will be applied immediately after initial screeding.

d) The concrete shall be mixed, transported, placed and compacted as rapidly as possible.

## 8 FINISHING

### General

The surface of the placed concrete shall be screeded with a steel shod screed and brought to a smooth and level surface. After the concrete has hardened it shall be smoothed with a power troweling machine to remove all corrugations or irregularities.

Unless otherwise specified:

a) All slabs surfaces shall be steel float finished after laying.
b) All external concrete pavements shall be stiff broom finished after laying. Broom strokes shall be transverse to the direction of fall on the pavement.
c) Any concrete cast against forms shall have a class described in the formwork section of this specification.

If this result is not obtained, the Superintendent may accept the work as satisfactory provided that remedial works as directed are satisfactorily carried to by the Contractor at his own expense immediately upon removal of the forms. The Contractor concreting techniques must be adjusted to give the surface finish specified herein.

### Surface Tolerances

All concrete surfaces shall be finished to a tolerance of 3mm over any 3-meter length.

## 9 CURING

Once finishing is completed the exposed concrete surfaces shall be kept constantly in a damp or wet condition by an approved method such as being covered with a plastic membrane held in place by sand, or other satisfactory method. Joins should be adequately lapped to prevent escape of moisture.

The curing shall be maintained for seven (7) days after the pouring of the concrete. Alternatively, the Contractor may apply in writing to the Superintendent for the use of a curing

compound, indicating the type and brand to be used. Under no circumstances shall curing compound be applied on construction joints or surfaces that are to be topped or painted.

## 10 CONCRETE JOINTS

### General

All joints shall be in the locations shown on the drawings or where approved by the Superintendent. At all joints, before any new concrete is placed, the surfaces of the set concrete shall be scrabbled to remove any laitance, loose or porous material and have a clean, hard concrete surface which shall be dampened with a wet mortar at the time of placing new concrete.

No concrete shall be poured against hardened concrete which is less than four (4) days old.

a) Construction Joints

Construction joints shall, unless otherwise detailed or directed, be truly horizontal or vertical and made with a small formed rebate or other approved means of ensuring that a straight, clean line appears at the joint on completion.

b) Expansion/Contraction joints

The expansion/contraction joints shall be as detailed on the drawings. Dowel bars, if shown on the drawings, shall be to the sizes, length and spacing shown on the drawings. Dowels for expansion or contraction joints shall be smooth round bars. Each bar shall be straight and cut so as not to deform the cross section at the ends of the bars.

The bars shall be set in place prior to the placing of concrete in the first pour. The dowels shall be set such that the plane formed by the dowel bars is parallel to the plane of the underside of the slab. The direction of the dowels shall be parallel with the direction of movement of the slab or wall and not necessarily perpendicular to the joint. The Superintendent shall resolve any dispute as to the direction of the bars. After the stripping of the first pour formwork, during which the bars shall not be bent or displaced, the exposed section of the bar shall be coated with an approved bond breaker.

## 11 MISCELLANEOUS ITEMS

### Kerbs and Channel

Kerbs and channels shall be constructed to the profiles and levels and in the location shown on the drawings.

### Hold Down Bolts

Holding down bolts as shown on the drawings shall be provided by the Contractor complete with nuts and washers and set in position to the correct location and level.

Threads of holding down bolts shall be protected by greasing and wrapping of the threads with Denso 600 tape prior to concreting. The Contractor shall clean the bolts within 48 hours of pouring of concrete to ensure that the leveling nuts can travel the full length of the thread. The leveling nuts shall then be wound down to the base of the threads.

The Contractor shall provide 19mm plywood templates for each of the various groups of holding down bolts. Such templates shall be marked with the center lines of the bolt groups as defined by the drawings. The Superintendent shall be given access to same for checking.

**Bedding Sand**

Bedding sand shall be spread in the positions and thickness shown on the drawings or a minimum of 50mm. Bedding sand shall be well graded and passing a 4.75mm sieve. The sand shall be free of deleterious soluble salts or other contaminants.

**Moisture Barrier**

A moisture barrier shall be placed over the prepared sand bed prior to placement of concrete slabs and slab beams. It shall be high impact virgin grade polythene 0.2mm thick and shall be laid in minimum widths of 1800mm. Joints shall be lapped a minimum of 150mm and continuously taped in accordance with the manufacturer's recommendations. Seal around all penetrations with tape.

Cuts and tears to the moisture barrier shall be similar repaired and the number of penetrations minimized.

At slab steps a second layer of 0.2mm polythene shall be placed over the primary barrier.

This layer shall have no joints and shall be protected on its vertical face by a suitable barrier such as plastic coated cardboard or 4.5mm F.C. sheet. The layer shall be carried at minimum of 600mm horizontally past the top and bottom of the vertical face.

**Traffic**

Traffic or loads of any kind will not be allowed on any concrete for fourteen (14) days from the day of pouring except that concrete which is fully supported on compacted gravel may carry traffic approved by the Superintendent within seven (7) days of pouring.

**Exposed Steel Protection**

The ends of reinforcing bars that are left projecting from poured concrete shall have an approved plastic protection affixed to each end. It shall be the Contractor's responsibility to supply, affix, maintain and remove the protectors.

## CONCRETE BLOCK LAYER

### 1 General

Materials and workmanship shall comply with the requirements of AS3700 (the SAA Masonry Code) and AS2733.

Blocks shall have a minimum compressive strength of 15 MPa at 28 days and shall be sound with sharp unbroken arises free from cracks, stains and other defects and dimensionally correct.

Use good quality blockwork. Damaged blocks and poor quality blockwork will not be allowed. Neatly butt all blockwork to adjoining walls.

Read this trade in conjunction with the Concrete Section.

No blocks shall be laid unless at least fourteen (14) days have elapsed after block have been moulded.

Blockwork shall be plastered, except for retaining walls, which shall be face blockwork.

### 2 Masonry Mortar

Mortar will consist of Portland cement, sand mixed in the proportions of 1:3. No hand mixing will be allowed. Re-tempering of mortar will not be permitted.

### 3 Grout Filling

Fill cores with 17.5MPa concrete, using 6mm coarse aggregate. Filling of cores to take place after the laying of all block courses. All cores to be filled leaving a minimum of 1 hour and a maximum of 3 hours between pours.

Locate horizontal and vertical reinforcement as shown on drawings including all starter bars.

### 4 Masonry Walls

Qualified block layers shall be employed.

Carry up concrete masonry walls shown on drawings. Poor block laying will be unacceptable. Blocks to be laid stretcher bond, to accurate storey heights.

Iron all bed joints and perpends to all areas of face blockwork. Provide non hardening joint compound at junction of internal and external walls.

Remove dirt and mortar stains from walls with stiff rushes and water and where necessary a carborundum stone. Hydrochloric acid must not be used. Make good damage by other trades. use paint scraper to remove mortar droppings. Rub down uneven patches.

Protect all facing blocks from damage and staining. Blocks shall not be saturated before being used nor shall they be laid in wet weather. All joints to be 1Omm, slightly rounded.

## 5 Mortar Plasticiser Agent

The Contractor may provide and use an approved type of mortar Plasticiser as and where directed by Superintendent to improve the workability of the mortar.

## 6 Rejection

The Superintendent reserves the right to have all substandard masonry units removed from the site.

## 7 Bracing

Temporary bracing shall be used after blockwork is structurally complete, to ensure stability during consolidation of under floor fill.

## 8 Items to be Cast In

All anchors, bolts, conduits and the like shall be secured before grouting commences.

Neatly cut holes for all electrical light switches and power outlets, where shown.

Note: Refer to Electrical for the height locations.

## 9 Timber Door and Window Frames

Fix sides of frames to blockwork with approved 150mm x 1.60mm slotted, corrugated, galvanised steel straps at top and bottom of frames and at no greater than 600mm intervals. Turn up 50mm and secure each strap to back of jambs with two galvanised flat head 25mm nails and build straps into mortar joints.

Well paint prime all frames and sills before building in.

## 10 Sills

Neatly top all blockwork where exposed beyond rear of timber sills to block walls.

Similarly top of exposed blockwork walling as directed neatly aligned to straight line by grinding.

## 11 Flashing

To underside of all lower sills to building(s), build in 'Alcore' flashing turned up and down into sill rebate and over slab respectively.

## PLASTERER / RENDERING

### 1 SCOPE
Where specified for cement render to all exposed blockwork and concrete beams columns and foundations and floor screws to all concrete floors. (Refer also to Schedule of Finishes).

### 2 MATERIAL
Refer to CONCRETOR.

### 3 GRADES OF PLASTER
There shall be two grades of plaster for general use Grade 1 - Building Interior, Grade 2 - Building Exterior Rendering.

### 4 INTERIOR PLASTER
The Grade 1 plaster for interior work shall be composed or 1 part cement; 1 part Hydrated Lime; 6 parts sand measured by volume.

### 5 EXTERIOR RENDER
Grade 2 External Rendering shall be composed of 1 part cement; 4 parts sand, measured by volume.

### 6 APPLICATION
The whole of the plasterwork shall be executed in a workmanlike manner, to the satisfaction of the Superintendent. The plasterwork is to the basis of a good decorative finish and great care should be taken to achieve the finest finish obtainable. Any rejected through non-compliance with the specification or careless workmanship shall be removed and removed and replaced at the expense of the Contractor. The plastering Contractor shall be responsible for ensuring that freshly completed work can neither "dryout" not "sweat-out" to the detriment of the surface and unless special instructions are **given for** finishes all surfaces shall be troweled to a smooth even true finish and shall be kept free from blemish. The plasterer should "follow the sun" i.e. work on the shaded side of the building and provide sun screens to prevent the work drying out too quickly.

### 7 WORKING TIME
Plaster mixes containing self-setting materials e.g. cement shall be used up within 2 hours of first contact with water. All materials remaining after this time shall be discarded. Materials which have started to set should in general not be re tempered.

### 8 PREPARATIQN
Before plaster is applied the joints in the walling shall be raked out and the surface of the, blocks shall be thoroughly wetted with clean water. When re-plastering old work the surface must be free from all decoration finishes and roughened by means of a hammer and chisel.

### 9 NUMBER OF COATS
The plastering shall be carried out:

- skimming - 3mm thick
- one-coat work (12mm thick)
- two-coat work (each coat 10mm thick)

Whichever is required by the project, specification or ordered by the Superintendent. In two-coat work first shall be scratched over before it has set to provide a key for the second coat, which shall be applied until the former has properly set and dried out.

## 10 CONCRETE SOFFITS

Plastering of in-site concrete must be carried out in the thinnest possible coat sufficient to give even smooth surface. The maximum thickness of plaster shall be 10 mm. The concrete surface shall be wetted with clean water but the plaster shall not be applied until the water has soaked into the surface of the concrete. Spatter dash may be applied with an approved machine to improve the Ky.

## 11 FIXING SCREEDS

Gauges, consisting of patches of mortar 150 mm square shall be fixed to the surface about 2 m apart and to the required thickness of the plaster coat. Where the wall is a large, vertical wooden screed shall be fixed 2 m apart.

The thickness of the screed shall be the thickness of the required coat. The plaster shall be laid in alternate panels, and when these have thoroughly set and not less than 3 days after they-have been laid, the forms shall be removed and the intermediate panels completed.

## 12 FINISH TO SURFACE

The final surface shall be finished off before the plaster has set. Provide an even textured finish with a wood float and sponge

## 13 VEE JOINTS

Where shown on the drawings and where plaster covers different background materials provide neat Vee joints in the plaster.

Rule the Vee joints straight and true and cut it through to the background.

## 13 COMPLETION

Plastering materials must not be mixed on the floors inside the buildings unless these are to be screeded later. On completion of each section of the work all excess plaster must be cleaned off before setting and the surfaces washed down with clean water. All damage to finished surfaces and other materials or fitments due to the setting excess plaster shall be made good to the satisfaction of the Manager.

## 14 TRIAL AREAS

Whenever a special finish or color mix is required the Contractor shall carry out sample trial areas for the Superintendent’s approval to serve as specimen to which the Contractor should work.

## CARPENTER AND JOINER

### 1 GENERAL

All workmanship shall be of the highest standard and all workmen employed on the works shall be competent in their respective occupations. The Contractor shall supply all loose planks, battens, trestles and ladders and construct all scaffolding necessary and remove same on completion. The Contractor shall perform all cutting away and making good in attendance on other trades, and shall provide and fix all grounds, pellets and slips necessary for the fixing of joinery and all fixing, easing and striking etc. required for concrete work and shall clean up all rubbish as it occurs and as directed.

### 2 TIMBER

The timber shall be of the best quality available with due regard to the particular purpose for which it is to be used and to the approval of the Manager. Timber for finishing not specified by name shall be of approved species and the Contractor shall submit for approval the names of the timber he proposes to use before the work is commenced. The whole of the timber shall be well seasoned free from sap, shakes, large loose or dead knots, wavy edges or other defects. Any timber, which develops defects, wraps, twists after fixing shall be removed and made good at the Contractor's expense.

| | |
|---|---|
| Treated Pine, framing | Framing grade no 1, treated pine - H2 or H3 class |
| Plywood, Interior | Thickness to be nominated - 2400mmx1200mm, Internal Plywood, Pacific Ply or Aus/NZ manufactured |
| Plywood, External | Thickness to be nominated 2400mmx1200mm, External Plywood, Pacific Ply or Aus/NZ manufactured |
| Treated Structural Pine | Structural grade F8 Treated H3.2 Pine, |

### 3 PRESERVATIVE

All structural timber and timber in contact with the ground or exposed to the weather shall, unless otherwise specified, be treated with an approved timber preservative by an approved diffusion process.

Where work on the timber expose surfaces below the area penetrated by the preservative; then such raw surfaces shall be treated with preservative applied by brush or other approved method to the satisfaction of the Manager.

### 4 STORING

Timber delivered to site for use in the work shall be stacked to approval and protected from the weather and termites.

### 5 DIMENSIONS

Unwrought timber shall be left clean from the saw and shall not be less than the dimensions stated or shown. Timber specified as dressed, clean, or finished shall stand full where so stated otherwise a 3 mm allowance shall be allowed for each dressed face.

*["Dressed" timber is timber that has been planed or machined in some way. (abbreviation of "wrought") "Undressed" timber has only been sawn to size (abbreviation of "unwrought")]*

### 6 FASTENINGS

Nails generally shall be of an approved type and finish. Screws generally shall be of non ferrous material and of approved gauge and size. Bolts and nails shall be of the materials, strength, diameter and lengths as specified and shall be galvanized.

Timber connectors shall be of the type and pattern specified or instructed and fixed as stated in the manufacturers instructions and conforming to the relevant Australian Standards. All

fastenings shall be sized to suit wind and earthquake loading as set out in the Vanuatu Building Code and AS 1170.2 and AS 1170.4.

All framing connections including bottom plate to studs

## 7 SKIRTING

Timber skirting where specified in the Schedule of Finishes shall be in approved dressed timber to the required profile, in long lengths scribed to floor and walls and security fixed to the walls. All internal and external mitres, stop and return ends shall be neatly executed to approval. Fix and finish as described for "Architraves".

## 8 JOINERY

Timber, building boards, fastenings etc., shall be as previously specified and all exposed timbers shall be selected so that only matching timbers shall be used in any one item.

Plywood unless otherwise specified shall be deemed to be external quality moisture resistant and sheets shall be selected if so directed and shall comply with AS2269. Where "marine" plywood is specified it shall be in conformity with AS 087 and AS 088.

Hard laminated plastic sheeting shall be similar and equal to "Formica" and shall be standard grade, of selected color and pattern and shall be fixed with an approved adhesive to the manufacturer's instructions. All glue shall be of approved manufacture, used in accordance with the manufacturer's instructions and shall be suitable in all respects for its intended purpose.

## 9 PRIMING

Before fixing prime with one full coat of an approved primer on all surfaces except such exposed parts of such frames as are specified for a clear finish. Similarly prime the surfaces of all architraves, skirting, mouldings, stops and the like, built-in fittings etc. which will be in contact with floors, walls ceilings etc., unless otherwise specified.

Prime before erection the mating surfaces of all joints in addition to priming all round such finishing as are specified for a paint finish.

## 10SETTING OUT AND FABRICATION

All joinery work shall be accurately set out in accordance with the specification and drawings and finished in a proper workmanlike manner.

All joinery work items shall be commenced as soon as practical after signing the contract but shall not be wedged and glued or finished until the building is ready to receive them. All joinery items shall be carefully stored and any part of the work with warps shakes or other defects shall be replaced before final assembly. The finished articles shall be sand-papered to a smooth even face and finished as specified. All surfaces must be protected and any damage sustained on transporting or installing must be made good or the damaged item replaced as directed.

## 11TIMBER FRAMES

All door and window frames shall be of approved dressed hardwood of the dimensions stated or shown and shall unless otherwise specified be mortise and tenon jointed and shall be finished with pencil rounded exposed arises.

Frames generally shall be of not less than 100 mm x 50 mm section and where 38 mm or less in thickness shall stand full size. Frames in blockwork or concrete walls shall be fixed in place with approved split and fanged galvanized straps 38 mm wide by not less than 16 gauge built into walls at approximately 600 mm centers and no frame shall have less than two such straps on each side where against such walls.

Door frames unless otherwise specified shall be rebated.

## 12FLUSH DOORS

HOLLOW CORE DOORS are to be constructed in accordance with AS2688 and are to be 35mm finished thickness with minimum 65mm wide stiles, top, mid and bottom rails and 610 x 90mm lock blocks each side. The core is to be a honeycomb of approved material, the doors are to be faced each side with a first grade exterior quality resin bonded 4mm thick three ply and the doors are to be edge-stripped all round with a nominal 13mm thick strip finishing a minimum 10mm thick, full height at stiles and glued and pinned to the frame. The doors are to be true and square and supplied fine sanded ready for painting.

SOLID CORE DOORS are to be constructed in accordance with AS2688 having blockboard core, painting quality veneer faces and bonded with waterproof glues to give a waterproof exterior quality. They are to be 40mm finished thickness and edge stripped as for hollow core doors. The doors are to be true and square and supplied fine sanded ready for painting.

Fit each door to its frame with a finished 1.5mm clearance all round hang it on the hinges and fix all of the door hardware specified elsewhere and nominated on the door Schedule.

## 13ARCHITRAVES

To all timber door frames and where specified provide and fix dressed timber architraves of the section and profile required including neatly forming all mitres, stopped and returned ends etc. All fixings shall be punched or countersunk and puttied and any stopping used shall match the architrave and to be approved. Care must be exercised to avoid all hammer and other tool marks on the finished surfaces.

## 14FIXTURES AND FITTINGS GENERALLY

Fixtures and furniture shall be provided as shown on the drawings. They shall generally be made up from components specified in the following clauses.

Unless otherwise specified, finishes shall be applied only to exposed surfaces, which for the purposes of this clause shall mean those surfaces visible from the outside of the fixture in its built-in position with all doors and drawers closed.

Sealing coats shall be applied to internal surfaces of all fixtures and fittings equal to one coat of semi-gloss clear enamel. Catches, handles, hardware, etc., shall be the types specified.

- Door and drawer handles shall be 100mm "D" handles, aluminum matt finish - Hinges shall be concealed self closing

- Drawers shall slide on approved proprietary ball bearing sliders.

Where solid timber is required in exposed position it shall be of type and grade to match the face veneers.

Trim to fixtures: where fixtures are to fit into recesses or where they abut finished surfaces they shall be scribed to fit wherever possible.

Exposed bench tops shall be solid timber where shown. Non-exposed tops (e.g. if covered with laminated plastic) shall be 19 mm marine grade plywood. Laminated plastic surfaces shall be returned on to nosing.

## 15 DOOR HARDWARE

Provide and fix all of the following hardware in complete accordance with the hardware manufacturer's recommendations and to the particular doors and gates nominated on the drawings or in the schedules.

Unless otherwise specified, the following hardware (or approved equivalent) are to be installed.

**Hinges**

Light narrow stainless steel loose pin butt hinges 100 x 75mm generally.

Light narrow stainless steel fixed pin butt hinges 100 x 75mm to all outward openings external doors.

Fit two hinges to all hollow core doors and three hinges to all double doors and solid core doors.

Fix all hinges with stainless steel screws.

**Locksets and Latch Sets**

Locksets and Latch sets are to be equal in quality to Lockwood 500 Series Key-in-knob and are to be satin chrome plated brass.

**Door Closers**

Door closers (except floor recessed) shall be equivalent to LANE (CORBIN) 500 CH fully concealed closer and arm bracket with regular rigid arm-jamb hold-open with satin stainless steel cover plates.

**Keying:**

All locks are to be keyed as nominated on the Door Schedule and are to come under a Master key.

Each separate key or group of identical keys is to be stamped, and supplied with a split-ring attached brass tag stamped, with the MARK nominated on the Door Schedule.

**Barrel Bolts (Flush Bolts)**

EFCO chrome plated brass nominal 150 mm high body with matching ferrules for fixing at floor level and matching shoes for fixing at the head of the door. Fit bolts top and bottom of the first closing leaf of each pair of doors.

## 16 MISCELLANEOUS HARDWARE

Provide and install all of the miscellaneous hardware specified hereunder, where shown on the drawings or nominated in the Schedules.

## 17CYCLONE SHUTTERS

Supply removable timber cyclone shutters and fixing brackets as detailed to all windows.

## 18CEILINGS & SOFFITS

Clad ceilings and soffits where shown on the drawings with 6mm Hardies VILLABOARD fixed in accordance with the manufacturer’s instructions. Edges of the sheets shall be joined with proprietary plastic "H" sections.

# PLUMBING

## 1 GENERALLY

The whole of the plumbing shall be executed strictly in accordance with rules, regulations and requirements of the statutory, sanitary, water or other authority having jurisdiction in the area concerned.

The Contractor shall give all notices and pay all fees required in connection with the plumbing installation, and mains water supply.

The Contractor shall not assign nor sub-let any part of the plumbing work included in the contract without the prior approval, in writing, of the supervising officer.

## 2 PIPES AND FITTINGS:

All pipes and fittings shall be to sizes as specified or shown on the drawings and as follows:

Wrought iron and mild steel pipes and fittings shall be galvanized and shall be of an approved quality and dimensions to AS 1074.

Copper pipes shall be half-hard or solid drawn of approved quality and to gauges and sizes specified, all to AS 1432. Copper tubing fittings shall be cast brass or wrought copper of approved manufacture and complying with the requirements of AS 1585, 1589 and 1645.

UPVC pipes and fittings where specified shall be to AS 1477 fixed in accordance with manufacturer's instructions with suitable PVC fittings.

Polyethylene (Polythene, Polybutenol) pipes and fittings shall be to AS 1159.

Cross-linked polyethylene (PE-X) pipes are to comply with AS2492.

## 3 JOINTS IN PIPES

Wrought-iron pipes and steel pipes. Wrought-iron and mild-steel pipes shall be screwed together firmly to a butt joint, and the joints shall be made watertight with paint graphite, or other approved compound.

Copper pipes. Joints between copper pipes shall be made by means of an approved method of brazing or welding or with purpose made connections of approved manufacture.

UPVC and Polythene Pipes. As manufacturer's instructions and to AS 2032 and 2033:2008.

Cross-linked polyethylene (PE-X) pipe fittings are to comply with AS2537.

## 4 PROTECTION OF PIPES

All metal pipes where buried in the ground or concealed in concrete or blockwork shall be, unless otherwise specified, wrapped with DENZO tape or other approved equal in accordance with the manufacturer’s instructions.

## 5 TRAPS

Every trap shall have a water seal not less than 38 mm deep if the diameter of the trap does not exceed 50 mm and not less than 50 mm deep if the diameter is over 50 mm, and shall have the same diameter as the waste pipe to which it is connected. Traps in the "one pipe system" shall all have a 75 mm seal. Traps shall be screwed on "bottle" type, chrome plated.

## 6 JUNCTION FITTINGS

All junction fittings in soil and waste pipes shall be curved or oblique angled junctions provided with approved inspection or cleaning eyes at all points of change of direction, in such positions as to be easy access for the proper cleaning of such pipes.

## 7 SANITARY FITTINGS

If included in the project documentation and otherwise specified, the following specifications (or approved equivalent) are to be followed.

### W.C. Suites

W.C. suites shall be vitreous china with concealed outlet and close coupled vitreous cistern with dual flush and plastic seat (type to be approved by Project Manager).

### Wash-Hand Basins

To be vitreous china of an approved pattern and size as Fowlerware "REEF 550". Basins to be provided with 50 mm waste fittings plug and chain.

### Kitchen Sinks

Sinks shall be stainless steel, double bowl, self-rimming, min inside dimensions 560 x 460 x 260 deep.

### Laundry Sinks

Sinks shall be stainless steel, single bowl, self-rimming, min inside dimensions 400 x 500 x 260 deep.

### Wash Trough

Plate washing trough shall be stainless steel including splash back 4000 long 335 wide and 125 deep with 3 No 50mm outlets with strainers complete water seal trap.

### Cleaner's Suites

Shall be vitreous china 525 x 400 mm with chrome plated grate and shall be fitted with 50 mm waste fittings, plug and chain.

### Accessories

**Domestic**
Supply and fix 1 No toilet roll holder to each W.C. cubicle. Supply and fix 1 No towel rack to each bathroom wall.
**Commercial**
Supply and fix 1 No toilet roll holder to each W.C. cubicle. Supply and fix 1 No liquid soap dispenser to each wash basin. Supply and fix 1 No paper towel dispenser to each wash basin.

### Taps

Wash basin, and sink taps shall be color coated brass with ceramic disc of an approved manufacture and of the type to suit the application. Garden taps shall be 18 mm brass hose cock with hose union.

**Valves**

Valves shall be brass gate valve type with a wheel head of approved manufacture and of the same size as the pipe to which they are fitted.

**Isolation of fittings**

Every WC cistern shall be isolated by means of an angle stop cock. Other fittings may be specified to be isolated in the particular specification for the contract.

## 8 COLD WATER SUPPLY

The Proprietor will arrange for a water connection to the size specified and to terminate with a gate valve. Contractor to extend the supply in galvanised iron pipe to size specified to the building at a point where shown on the particular drawings for the Contract. Extend the Supply in half-hard solid drawn copper pipe or cross-linked polyethylene (PE-X) pipe to sizes specified to all sanitary and other fittings.

## 9 HOT WATER SUPPLY

All hot water reticulation shall be run in half-hard solid drawn copper pipe or cross-linked polyethylene (PE-X) pipe to the gauges and sizes shown on the particular drawings. Prior to installation the contractor is to provide the Project Manager with the product specification for approval. All hot water services throughout the building including exhaust pipe if any shall be completely covered by spiral winding with "plumber's felt" or other approved lagging tightly wrapped and taped.

## 10WATER HEATER

Where directed in the drawings allow for taking delivery of the water heater, installing in place, connecting to gas and cold water supplies, installation of flue and connection to hot water supply lines. The type, manufacturer and location of the water heater are all to be approved by the Project Manager prior to installation.

## 11TESTING

TESTS: All hydraulic systems (pipes, fittings and fixtures) are to be tested as part of the contract works. The contractor is to supply apparatus and materials necessary for, and carry out the tests required by the Specification or regulatory authorities, in the presence of the Project Manager/Project Manager and the authorised representative of the relevant authority for the service under test.

CONCEALED WORK: Do not cover or conceal underground or enclosed work until it has been inspected and tested, in sections where necessary, to the approval of the Project Manager and the relevant authority. Leave pipe joints exposed to enable observation during the tests.

HYDROSTATIC TESTS: Test pipe work at the pressure of 2 Mpa or 3 times working pressure for 2 hours unless overridden by regulatory authority requirements. A test shall be deemed successful if no loss of pressure occurs.

REJECTIONS: Pipe works which fails a required test, or which vibrates or is noisy because of insufficient support or loose fixings, is liable to rejection.

## 12INSTALLATION

GENERALLY: Install pipe work in straight lines and uniform grades without sags. Provide bends and sets as required and sufficient unions, flanges and isolating valves for satisfactory removal of piping and fittings for maintenance. Arrange and support pipe work as necessary so that it remains free from vibration whilst permitting necessary movements such as thermal

expansion and contraction. Provide the fittings and components connected up and ready for testing the service. Keep the number of joints to a minimum.

DISSIMILAR METALS: Do not install copper in contact with steel, zinc, or other materials likely to generate electrolytic, galvanic or corrosive action. Make junctions between dissimilar metals with special fittings manufactured in suitable compatible material.

CHANGES IN DIRECTION: Use bends where practicable in preference to elbows. Use elbows where pipes are led up or along walls and then through to fixtures.

Do not exceed manufacturer's specified radii for change of direction in 'plastic' [HDPE, UPVC, PE-X] pipes.

JOINTS: Fit joints tightly, seal and make leak-proof with no internal projections, burrs or obstructions.

VALVES: Arrange together where practicable in-operational grouping, inconvenient and readily accessible positions. Fix engraved aluminum or brass plate near valves specifying the purpose of the valve eg: 'showers', 'toilets'.

CONCEALED PIPEWORK: Pipe work runs in false ceilings, roof spaces, under suspended ground floors, plant rooms, and the like: Arrange adjacent to, and horizontally parallel with each other and with walls, beams, and the like. Keep at least 150 mm above ground surface under suspended ground floors. Provide adequate spacing of at least 25 mm between pipes, 50 mm between pipes and electrical cables. Take off branches at right angles unless otherwise shown on the drawings.

## 13ACCESSIBILITY

FITTING: Locate in accessible positions, with adequate clearance, pipe fittings requiring maintenance or servicing, including control valves, joints designed to enable removal of pipes, and the like.

REMOVABILITY: As far as practicable, install plumbing work inside buildings so that it is removable without damage to the building structure or finishes.

# DRAINAGE

## 1 EXCAVATION: See Excavator

## 2 CONCRETE: See Concreter

## 3 DRAIN PIPES

Unless otherwise specified drainpipes shall be UPVC pipes and fittings to AS1254,1260 and 1415 and installation shall conform to AS 2032.

## 4 TRENCH BOTTOM

Trench bottoms generally shall be clean earth without loose stone or projecting rock. Hand holes shall be made under pipe spigots to allow for jointing and pipe barrels shall be on solid earth along their whole length. Where directed pipes shall be laid on a sand bed not less than 75 mm thick.

## 5 CONCRETE BEDS

Where shown, required or directed drain-pipes shall be laid on a full width 100 mm thick bed of concrete class 7/40. Where pipes are to be bedded and haunched the concrete shall be carried up the full width of the bed to the level of the horizontal diameter of the pipe and then splayed off to the level of the top of the barrel.

## 6 PIPES UNDER BUILDINGS

Pipes laid under a building or a road shall, unless otherwise: specified, be fully encased in concrete class 7/40 to a minimum 100 mm thickness or as directed.

## 7 DRAIN LAYING

All pipes shall be carefully examined before being laid and no damaged or flawed pipes may be used in the works. Drains shall be laid in straight lines and to even gradient following the runs shown on plan or as directed. Generally, the gradients used shall be 1 in 40 for 100-mm diameter pipes and 1 in 60 for 150 mm (maximum).

Care must be exercised in setting out and determining the levels of the pipes and the Contractor shall provide suitable instruments and set up and maintain all sight rails, boning rods, bench marks etc. necessary for the purpose.

All drains shall be laid with the sockets, leading up hill and shall be kept free from dirt, stones, debris and superfluous cement and shall be handed over on completion in a clean condition. All fittings, bends, junctions etc. shall be in the appropriate material and to approval.

## 8 P.V.C. PIPES

Shall be joined by solvent cement, welding or other means as approved and as recommended by the pipe manufacturer.

## 9 DRAINAGE DISPOSAL

Generally, all foul drainage shall be run to a septic tank and/or soak pit.

## 10 RODDING EYES

Where shown on plan or where directed provide easily accessible rodding or cleaning eyes.

## 11 MANHOLES

Manholes shall be provided by the Contractor in the positions shown on the plans or where directed.

Manholes shall be constructed to the sizes and depths shown or required. Bed half round section PVC main channels in the bottom of manholes 1:3 cement mortar. Branch channels shall be three quarter section. Diameter of the channels shall be the same as the drains they serve unless otherwise specified. Bench up the bottom of the manhole from the top of the channels in concrete class 7/20 with 19 mm stone at an angle of not less than 30 and finish polished from a steel trowel to give smooth self - cleansing surfaces. Render above the benching in 1:3 cement mortar finished with a steel trowel. Manholes exceeding 900 mm deep shall have approved galvanized step irons set, or cast in, to the walls at 300 mm vertical centers.

Manholes generally shall have minimum internal dimension of 457 mm x 457 mm and unless otherwise specified be covered with cast iron covers or sump gratings and frames and of weights as specified or shown on the drawings and sealed to approval.

Gully traps shall be provided in the positions shown in the drawings either proprietary made or from concrete with a fitting cover and 1 00mm water seal.

**12SEPTIC TANK**

Excavate for and provide septic tank generally of reinforced blockwork to the dimensions specified or shown on the project drawings.

**13SOAKAWAY PITS**

Where shown excavate waste water and storm water soak pits of capacity shown on the drawings. After inspection and approval by the supervising officer backfill round the soakaway with 200 mm min limestone rock to 300 mm from finished ground level. Finish to finished ground level with limestone and 150 min topsoil.

**14TESTING**

Each run of pipe shall be tested after laying but before being back filled. On completion the entire drainage system shall again be tested and any faults therein rectified to approval before the works are handed over. Testing generally shall be by means of the appropriate water test or as directed.

**15STORMWATER DRAINAGE**

Where shown provide stormwater drainage formed as shown or specified and lead to discharge point. Drains to be formed to even falls generally not less than 1:200.

**16FLOOR WASTES**

Provide and fit approved trapped floor wastes of size and in positions shown on the drawings or specified. Wastes shall be supplied with chromium plated brass screw in grate assembly.

## METAL WORKER

### 1 SCOPE

The scope of work is the fabrication, supply installation and fixing of all the metalwork and roofing required in the Works and in addition to the particular items specified hereunder includes all of the incidental and ancillary metalwork required for items specified in other sections even though not specifically nominated.

### 2 SAMPLES

Submit samples of the following:

-Butt joints and mitre joints, made by the proposed techniques in fiats, tubes and sections;

-Protective coating finishes such as chrome plating, galvanizing, anodizing, powder coating, baked finishes;

-Mechanical finishes including polishing, sand blasting, and the like;

-Sections for use in fabricated work.

### 3 MATERIALS

Use metals suited to their function, finish and method of fabrication, in sections of adequate strength and stiffness for their purpose.

### 4 WORKMANSHIP

PREFABRICATION: Fabricate and pre-assemble items in the workshop wherever practicable.

EDGES AND SURFACES: Keep clean, neat and free from burrs and indentations. Remove sharp edges without excessive radiusing.

JOINTS: Fit accurately to a fine hairline.

TUBE BENDS: Form bends in tube without unduly deforming the true cross section.

COLOURS: Match colors of sheets, extrusions and heads of fastenings in color finished work.

### 5 WELDING, BRAZING, SOLDERING

Finish visible joints made by welding, brazing or soldering by grinding, buffing or the like methods appropriate to the class of work before painting, galvanizing, or the like further treatment. Aluminum after jointing shall be without visible surface color variations.

### 6 FASTENINGS

GENERALLY: Fastenings, including anchors, lugs, screws, rivets and the like, shall be of approved type, appropriate to the work, capable of transmitting the loads and stresses imposed, and sufficient to ensure the rigidity of the assembly. All fastenings shall be heavily galvanized to approval after fabrication and before fixing.

### 7 ALUMINIUM WINDOWS AND DOORS

Supply and fix powder coated aluminum GLAZING windows and doors as shown on the door and window schedule and key plan to the colour as specified in the drawings or finishes schedule.

All doors and windows shall be fitted with matching aluminum head and sill and weather seals with neoprene gasket.

All windows shall be fitted with aluminum fly screening.

Aluminum swinging doors shall be constructed from powder coated aluminum, side hinged and fitted with rebated floor bolts to both leaves.

Aluminum sliding doors are to be constructed from powder coated aluminum, a handle and locking mechanism and robust roller system (to be approved by the Project Manager prior to installation).

## 8 MANHOLE & SUMP COVERS

Manhole and Sump covers shall be of the light duty type as NONROC by GATIC Australian Ltd or other approved equal.

## ROOFING

### 1 General

Roof the buildings with a watertight system as shown and specified, including all necessary accessories, roof plumbing, flashing, roof drainage, and the like. Ensure installation is in accordance with cyclone conditions as per the Vanuatu Building Code, Vanuatu Home Building Manual and relevant Australian and/or New Zealand Standards.

The system shall include adequate means of dealing with vapour pressure, condensation, and corrosion.

### 2 Inspection

Give notice that the following are ready for inspection, prior to complete installation:
a) Substructure
b) Sarking
c) Guttering when required
d) Accessories

### 3 Materials and Workmanship Generally

Carry out all necessary operations for the satisfactory performances of the roof, including cutting at junctions, trimming around penetrations and flashing.

Protect the roofing system from damage throughout the works. Avoid construction leads on the roof. Clean off debris and loose material from completed sections at the end of each day's work and on completion of roof. Keep the rainwater systems when required free of foreign matter and leave them unobstructed on completion.

Roofing sheets shall be provided in one continuous length from ridge to eave.

The installation shall be in strict accordance with the manufacturer's instructions.

### 4 Roof Sheet Protection

During the handling, transporting and storing of roof sheet, protect the corners, edges and ribs from damage. Store sheets under cover clear of the ground and away from risk of damage by building operations. Avoid contact with cement, lime and abrasive dust. Prevent water from being drawn between stacked sheets by capillary action. Surface discolouration or other damage resulting from neglect of protective measures shall be cause for rejection.

### 5 Expansion and Contraction

Provide for thermal movement in the roof installation, including movement in joints and fastenings, particularly in sheet metals and thin sections.

### 6 Sarking

Sarking membrane to the buildings shall be reflective foil laminate, double-sided, low flammability, of weight not less than 35g/sq. m.

Sarking shall be provided to all roof area.

Lay the sarking membrane over the battens and overlap successive layers over the section next below by not less than 100/150mm. Pressure-sensitive adhesive tape to sarking joints to be used.

Sarking is to be laid over galvanised chicken wire to provide strength.

## 7 Roof SHEETING

Roof Sheeting: Roofing shall be 'Colorbond' steel sheet, 0.55 mm BMT (base metal thickness) to approved color complying with AS2728:2013 with a metallic-coated steel substrate conforming to AS1397:2011-G550.

Installation of the Colourbond shall be in compliance with AS1562.1:1992 and HB-39:2015, National Construction Code (NCC) [Australia] and relevant manufacturer Technical Bulletins.

Sheeting to be lapped 1&½ ribs, generally away from prevailing weather.

Flashing and Capping shall conform to building standards and be made from steel sheet of minimum base thickness 0.55mm and have a Colorbond finish. Turn up tray position under ridging. Neatly join flashings at junctions and ensure that all are watertight. Colour to match roof cladding

Roofing and Ridge Capping and Fasteners to be adequate for maximum roof cover. Fasteners shall be fixed through the sheeting crest over each purlin support. Fasteners to be adequate for the maximum roof cover. Colour to match roof cladding.

**Fastening Schedule.** All roof sheeting to be fixed to purlins with 75 mm approved galvanized/Colorbond twisted shank drive screws with neoprene and galvanized washers and galvanized/Colorbond cyclone cap to each fixing. Sheets shall be fixed in accordance with the manufacturer's instructions for cyclonic conditions and or Vanuatu 'Home Building Manual' page E-6.

**Flashing Fasteners.** Generally, fasten through the roof sheeting to the supports using the same fastens and spacing as the roofing. Where spaces exceed 600mm fix to roof sheeting with No. 10-12 x 16mm long needle point self-drill screws with hexagonal head and neoprene sealing washer. Space maximum 600mm centres.

**Barge Moulds.** Fix to timber barge boards with No. 10 x 16mm long hex head self-drilling screws with neoprene sealing washers. Space maximum 600mm centres.
Moulds to be same as roof colour.

**Metal Separation.** Prevent direct contact between incompatible metals, and between green hardwood or chemically treated timber and aluminium or coated steel, by either:

a)Applying a suitable anti-corrosion low moisture transmission coating to contact surfaces.
b)Separating contact surfaces with a suitable plastic/bituminous felt separation layer.
c)Do not use lead in direct contact with roofing

## 8 GUTTERING AND DOWNPIPES

Supply and fix all gutters and downpipes to the sizes and in the positions as shown on the drawings.

Unless otherwise specified gutters to be fabricated from either:

- Colorbond® steel to match the roof sheeting (0.55 BMT, conforming to AS1397-G550-AM100) eaves gutter will be quad type, size 175mm wide x 100mm deep, or
- uPVC, Marley 'Magnum' or AE. 150mm dia PVC 1/2 round (AS/NZS4176.2)

Sizes to be as per the drawing. In all cases the exterior lip of eaves gutters shall be lower than the interior lip against the building,

Support eaves gutter on Colorbond steel brackets or uPVC brackets, spaced at maximum 800mm.

Suitably rivet and silicone seal all joints, and provide as directed non-ferrous restraining screws at bracket locations.

Fall all gutter at a minimum of 1: 200 to the downpipes. Ponding in the gutter shall not be accepted. The maximum spacing of expansion joints in the gutter shall be 12 metres.

Downpipes shall be 100mm UPVC Pressure Pipe Class B conforming to Australian or NZ Standards. Supply downpipes complete with all fittings. Screw fix pipes with PVC or galvanized steel brackets into wall.

Rainwater tanks to be manufactured from polyethylene, of robust design and track record (such as Rotomould tanks). Tanks are to be supplied with a brass tap and locking mechanism, insect screen at the top opening and overflow pipe.

Rainwater tanks are to be positioned on a tank stand 0.5m high. The stand is to be constructed from blocks (150mm x 200mm x 400mm) reinforced with 10mm reinforcement (400mm c/c vertical and horizontal), foundation concrete with 3 x Y12mm bars 400mm x 300mm) and topping concrete slab 100mm thick with 662 mesh placed centrally.

## TILES & PAVER

### 1 QUARRY TILE FLOORING

The tiles shall be of an approved brand to the colours and sizes as specified and named on drawings. If not specified all tiles are to be approved by the Project Manager prior to purchase. Unless otherwise specified tiles are to adhere to the following:

- Floor tiles used in wet areas such as bathrooms and toilets will be non-slip tiles – rated R10 or 11 as per AS 4586.
- Size 300mm x 300mm x 5mm.

The concrete sub-floor shall be given a screed of cement/sand 1:3 minimum 20mm thickness. This screed shall be laid level and true or to fall as shown on the drawings. Whilst the screed is still green the quarries (tiles / pavers), which must be thoroughly soaked in water, shall be laid in a 6mm bed of 1:3 cement/sand leveled off with 1:1 cement grout and the floor cleaned immediately with sand or sawdust. After laying, the tiles shall be protected and not walked on for four (4) days. When the tiles have set and the surface thorough cleaned and application of linseed oil shall be made just prior to handing over the building.

### 2 GLAZED WALL TILES

The walls shall be rendered 1:3 cement/sand to a flat plumb and true surface. The tiles first well soaked in water, shall be bedded in cement mortar 2½:1 (sand:cement) the mortar being "buttered" on the back of the tile to give a bed of 20mm after which the tiles shall be pressed into position and tapped home. All joints are to be kept truly horizontal and vertical and must not exceed 2mm in width. After setting the joints shall be grouted in keene's cement or similar.

Alternatively, a proprietary brand of mastic cement adhesive may be used in accordance with the maker's instructions in which case the rendering must be finished as flat as possible since the mastic bedding is too thin to allow any adjustment to be made when placing the tiles.

### 3 TILE THICKNESS

Where tiles of different thickness butt together, example at skirting, the contractor shall allow for the varying thickness in the wall rendering.

### 4 THERMOPLASTIC (VINYL) TILES

Thermoplastic tiles shall be 300x300mm x 2.5mm of approved brand laid on appropriate adhesive on the screed that is even, level and clean. Where patterns on the floor are required, they should be laid out cold so that the overall layout may be measured and equal borders adjusted to each side of the room. Edges of tiles must not be left exposed to traffic and an appropriate edge strip must be installed along tile exposed edges. All tiles will be laid warm on the adhesive and great care must be taken to ensure that they are laid at the right time in the correct manner.

# GLAZIER

## 1 FRAMES

The frames for mounting glazing shall be specified in the drawings and/or scope of work. The material specifications and details are as included either under ‘Carpentry’ or ‘Metal Worker’ sections of this specification.

Louvre frames – all louvre frames to be ‘Palmair’ by Breezeway (or approved equivalent).

## 2 GLASS

The glass used shall be BS 952 or equivalent and of approved manufacture, free from all defects. All glass to be delivered in proper containers with marker’s name, type of glass, thickness, weight of glass attached to the outside of containers.

## 3 CLEAR PLATE GLASS

The clear plate glass to be a minimum thickness of 6mm or to the thickness specified for the opening, and to be polished. The glass is to be safety glass wherever located in thoroughfare or where people walk complying to AS 2208.

## 4 PUTTY

The putty for glazing to be steel frames and approved by manufacturer.

## 5 BEDS & WASH LEATHER

The glass to doors and screens and other places where vibrations may occur or where detailed, shall be bedded in wash leather with beds, and fixed with brass cups and screws. Allowances for expansion of the glass.

## 6 CLEANING DOWN

On completion of all glazing works, clean all glasses inside & outside.

## PAINTIER:

### 1 GENERAL

The work required under this section consists of all labour, material and equipment necessary to furnish and apply paint and other coverage to all surfaces (unless otherwise noted) in accordance with the drawings, specification and schedule herein (including scaffolding and other access equipment required to implement the works.

### 2 General Requirements

Combinations: Do not combine paints from different manufacturers in a paint system. For clear timber finish systems, use only the combinations of putty, stain and sealer recommended by the manufacturer of the top coats.

Delivery: Deliver paints to the site in the manufacturer's labelled containers

Tinting: Use only products which are colour tinted by the manufacturer or supplier.

Putty: Oil-based or polymeric based. Putty for timber finishes: Lacquer or water based, or 2K inert putty. Do not use oil based or glazing putty.

Spraying: All paint shall be applied by brush or roller. The use of spray equipment is not permitted without prior written approval from the site supervisor.

Adulteration of Paint: Where paint supplied by the manufacturers is found to be adulterated in any way whatsoever, the Contractor/local Contractor must replace such defective paint with a new batch whether such defective paint is the subject of a warranty claim against the manufacturers or not.

Drying Times: The contractor shall allow the following minimum drying times for paints:

Undercoats: 24 hours prior to enameled finishing coat being applied.
Enamel: 24 hours prior to the application of the second coat.

Number of Coats: Unless specified as one coat or two coat systems, each paint system consists of not less than three coats. Provide additional coats if necessary to:

- prepare porous or reactive substrates with prime or seal coats consistent with the manufacturer's recommendations;
- achieve the total film thickness or texture; or
- achieve a satisfactory non-transparency.

Anti-Fungal: NOTE: All acrylic paints to have anti-fungal compound included.

Inspections: Give two (2) working day's notice so that inspection of work may be made at the following stages:

(a) completion of preparation of surfaces
(b) after application of sealer coat
(c) after application of undercoat
(d) after application of each subsequent coat

### 3 MATERIALS

All paint products shall be Taubmans, Dulux or an equivalent quality product approved by the Project Manager.

Storage & Care (On-site):

- Before storing paint mark each paint container with a permanent marker stating – name of paint, code, colour and which room/surface it was used for. This is for easy referencing when you want to use the paints again at a later date.
- Store the cans on a dry surface, off the ground, or on concrete floors – to keep the cans from rusting.
- It is ideal to keep the cans in a cool area but don't allow it to freeze otherwise it will separate and become unusable.
- Keep the cans stored away from direct sunlight, or other heat sources that will speed up the paint's deterioration. Sheds or garages should be avoided in storing paint cans. Recommended ideal places include a utility closet or a laundry room.
- Keep paint left overs in smaller jars/containers as paint stores better and longer in full containers where there is less contact with air.
- To create a even tighter air seal and prevent metal-to-metal corrosion, use a plastic bag and cut out a circle larger than the opening of the tin can, and use it as a gasket under the lid.
- When opening paint cans for reusing, check that the paint "skin" that forms at the top of the can opening is removed with other debris before the paint is mixed thoroughly. Mix paint with a clean piece of off-cut timber and ensure each paint uses a separate timber piece for mixing the paint.
- When closing the lid of the paint use a rubber mullet to properly seal the lid tight not a hammer as it may distort the lid and disrupt the air seal. Another alternative would be to place a block of timber on top of the lid and hammer the block to set the lid firmly.
- Also wipe clean all paint residues from the groove/rim before closing the lid, so to make the lid easier to open when in next use and also allow air in by making the lid fit tighter.

## 4 PROTECTION

Remove door furniture, switch plates, light fittings and other fixtures before starting to paint, and refit in position undamaged on completion of the installation.

## 5 SUBSTRATE PREPARATION

All finishes shall be sanded using appropriate grade sandpaper's ensuring that all raised imperfections are removed. Sanding of all surfaces shall also occur during subsequent coats. Each coat is to be allowed to dry and be rubbed down with glass or garnet paper of suitable grit before the next coat is applied. Use filler tinted to match the substrate if the finish is transparent.

## 6 PRIMING BEFORE FIXING

Apply one coat of wood primer (including end grain) to the back of external fascia boards, timber door and window frames, bottoms of external doors, associated trims and glazing beads before fixing in position.

## 7 PAINT APPLICATION

Apply the first coat immediately after substrate preparation and before contamination of the substrate can occur. Ensure each coat of paint or clear finish is uniform in colour, gloss, thickness and texture, and free of runs, sags, blisters, or other discontinuity.

All paint is to be applied by brush or roller. Where paint is applied by brush it is to be laid off so that no brush marks show.

## 8 Repair of Galvanising

Where galvanised surfaces have been subsequently welded, prime the affected area with zinc rich organic binder.

**9 Previously Painted Wall and Ceiling Surfaces**
Previously painted surfaces will be prepared by washing down using a detergent solution such as Sugar Soap or "tricleanium" to remove all dirt and grease prior to minor stripping, stopping and repainting.

**10 Woodwork**
Previously painted and/or stained woodwork is to be thoroughly cleaned down with lime water or a detergent solution prior to stopping, re-staining and varnishing and/or repainting. Re-staining and varnishing is to be done as separate operations.

**11 Dry Stripping**
Any loose or flaking material that cannot be removed by washing off, must be dry stripped.

**12 Painted Steel Frames and Cabinets**
All rust scale is to be removed by cleaning down thoroughly with a wire brush and coarse / medium grade emery cloth/paper.

**13 Stopping**
Wall and ceiling cracks are to be properly cut out and stopped up with neat gypsum plaster, or an appropriate cellulose filler. Loose stopping over nails to plaster sheets is to be removed and the nail punched before re-stopping. All loose plaster sheets are to be re-nailed with galvanised clouts, punched and stopped.

All nail holes and cracks in painted woodwork are to be stopped with wood putty or ready mixed wood fillers. All nail holes and cracks in stained woodwork are to be stopped with wood putty stained to match the existing colour of the woodwork or ready mixed coloured wood fillers. Wood putty or fillers used are to be of a quality proprietary brand.

All surfaces must be rubbed down between coats. Any surfaces that have a high gloss paint retention must be rubbed down with wet and dry carborundum paper before the application of any paint.

**14 Painted Woodwork**
Apply one coat of undercoat paint and one coat of gloss finishing paint to all previously painted surfaces. Where the scope of works calls for repainting or re-staining of window frames this means the complete frame and sashes, irrespective of the size configuration or the number of sashes.

**15 Unpainted Woodwork**
Unpainted woodwork or woodwork previously sanded back to bare wood, shall be primed or spot primed as required.

**16 Water Stains**
Water stains on ceilings and wall surfaces must be sealed with one coat of stain sealer before the application of matt or low sheen acrylic paint, or flat enamel.

**17 Hard Board Surfaces.**
Hard Board surfaces shall be sealed with one coat of an approved acrylic or solvent borne sealer as directed by the site supervisor.

**18 Concrete Surfaces**
Concrete surfaces shall be sealed with two coat of an approved acrylic (water based) sealer as directed then 2 coats of finishing coat.

Where required, concrete slabs shall be finished with two coats of an approved concrete sealer.

**19 Previously Painted Surfaces**
Where previously painted surfaces require sealing, the surface shall be thoroughly cleaned and then sealed with two coats of an approved acrylic (water based) sealer as directed.

**20 Treatment of Mould**
The method of treatment and subsequent repainting will be as follows:

i) Wash down mould with clean water containing detergent (half a cup of detergent mixed with 8 litres of water), changing the water frequently. Wash out the cleaning rag frequently.
ii) Apply bleach solution (one part Hypocholride bleach to three parts of clean water) to be left on the surface for thirty minutes.
iii) Wash off with clean water.

In heavily affected cases treat mould with an approved anti-mould solution and allow to dry for 24 hours (minimum).

Washing down rags must be regularly washed out to prevent contamination and spread of spores.

The washing and bleach treatment will in no way dispense with the necessity to wash walls and ceilings that is regarded as normal preparation.

**21 PAINTING SCHEMES**

| i)Externally | | |
|---|---|---|
| Element | Paint System | Colour |
| Timber doors, including lower and top edges, sills, spandrels mullions, door frames, timber doors etc, exposed, structural elements, barge boards, lattice, free standing posts, fascia expose roof overhang framing and supports members, gable linings, gable vents, finial and support, metal roof brackets where exposed | Apply 1 coat pink primer, 1 coat undercoat and two coats exterior gloss enamel. Prime concealed laps as stated in Section CARPENTER<br><br>Dulux or approved equivalent | (as specified in drawings) |
| Timber walls | External acrylic semi-gloss paint 'Weathershield' or approved equivalent | |
| Ceilings | 1 Coat Anti-Fungus Plywood overall sealer, 2 coats Anti-fungus satin acrylic | (as specified in drawings) |
| Blockwork, concrete | 3 coats acrylic semi-gloss | (as specified in drawings) |
| Steelwork | 2 coats of metal gloss enamel over the primer | (as specified in drawings) |
| | | |
| ii)Internally | | |
| Rear of sills, mullions, frames, external doors, internal doors, including top and bottom edges, skirtings | 1 coats acrylic primer and 2 coats interior acrylic full gloss | (as specified in drawings) |

| | | |
|---|---|---|
| Timber walls | Undercoat and two coats of interior acrylic semi-gloss | |
| Blockwork and concrete walls | 3 coats acrylic satin | (as specified in drawings) |
| Plywood Joinery | 3 coats Polyurethane semi-gloss | (as specified in drawings) |
| Repaired Concrete Floors | 2 coats 2 pack epoxy | (as specified in drawings) |
| Steelwork | Primer + 2 coats of metal gloss enamel | (as specified in drawings) |

NOTE: The discharge of toxic fluids and other wastes, etc, into the sewerage or drainage system, is strictly prohibited.

**22WORKMANSHIP**

All works shall of the highest standard, performed by skilled tradesmen in accordance with sound trade practice, using tools and equipment suitable for ensuring a first class job. No external works shall be done during inclement weather. Any works damaged by dust, rain or by any other cause shall be rubbed down and recoated. The top and bottom edges of all doors, sashes, facings, etc…, shall be painted the same number of coats as the exposes surfaces.

No coats of paint, varnish or polish shall be applied until the undercoat is perfectly dry and hard. All finished surfaces shall be left smooth even and free from brush marks, lap marks or other defects.

The contractor shall adequately protect all finished works, including glass from paint splashes.

The contractor shall take adequate precautions to prevent all works from dust, dirt disfigurement or other disfigurement. No paint or other materials shall be stored in direct contact with the finished surfaces areas.

The contractor shall provide all necessary pans, trays, etc…, on which to store and prepare materials and provide all dust sheets to protect any completed works including floors.

**23CLEANING UP**

The contractor shall on completion leave the job free from paint splashes and clean and tidy.

# ELECTRICAL AND AIR CONDITIONING SERVICES

## 1 EXTENT OF WORK

The extent of the electrical services included in the contract is defined in the drawings, tender and scope of work documentation. Where electrical services are included the contractor is to allow for coordination with UNELCO (where relevant), fabrication, installation, connection, commissioning, testing and maintenance during the Defects Liability Period.

## 2 APPROVED CONTRACTORS

The electrical services work covered by this contract shall be carried out by a qualified and approved Electrical Contractor. The Contractor shall have a competent licensed foreman employed on site for the duration of the project.

All air conditioning services are to be installed by qualified and approved air conditioning / refrigeration / mechanical services contractor. The Contractor shall have a competent licensed foreman employed on site for the duration of the installation.

## 3 STANDARDS AND CODES

All equipment installed and work carried out shall be to the latest requirements of the local Statutory Authorities.

## 4 SUPPLY OF MATERIALS

The Contractor shall supply all items necessary, other than those noted in the project specification as being supplied by the Client and whether or not detailed in the specification and drawings to complete the installation to the satisfaction of the Project Manager.

All materials supplied by the Contractor shall be new, in first class condition and of the type specified herein unless a suitable substitute is available, whereupon approval in writing must be sought from the Project Manager prior to installation of the alternative.

## 5 SAMPLES

REQUIREMENTS: Submit samples of the following to be held by the Contractor:

- All types of light fittings
- All types of lamps
- Socket outlets and switches
- Fans
- Air conditioners
- Accessories as may be requested by the Project Manager

## 6 TESTING

The contractor is responsible for the initial startup and operation of both the complete system and of each item of equipment until the time that the whole installation is operating under full commercial load. Make all adjustments and alterations during the commissioning period. Particularly adjust and balance the loadings of all sections of the system, calibrate and adjust all instrument, verify correct operation of all safety and protective elements and select and fit fuse links and devices for accurate protection and discrimination.

Carry out a full trial of the installed equipment in conjunction with and coordinated with other trades. These full load trials shall be carried out independently of each other and on separate days. The full load trial will be required to demonstrate stable, safe, reliable operation of the installed equipment through the whole range of plant operation. Supply all labour and test equipment required for the trial and if necessary coordinate with other trades to attend after normal working hours to carry out the trial. If the trial proves unsatisfactory, rectify all faulty work and repeat the trial without variation to the Contract Sum.

Practical completion will not be given until the system is satisfactorily commissioned and fully operational.

## 7 ELECTRICITY SUPPLY

Provide conduits for main incoming cables from UNELCO meter as shown on the drawings.

Carry out all trenching, backfilling and compacting for all buried conduits.

The Client's mains cable to be as detailed on the drawings.

The Contractor to be responsible for all co-ordination with UNELCO.

## 8 EARTHING

The earthing system shall be MEN. Install proprietary 2.5m long 15mm diameter, copper or stainless steel clad solid earth rods in proprietary pits at final locations to be determined on site.

Connect the main earthing conductor and interconnecting bonding use clamps to AS 1882.

Install location and warning labels.

Connect switchboard earth to earth bonding facility.

Connect metallic piping of any water supply system, any portion of which is underground, to earth, and connect to earthing plate attached to building reinforcing in the main switchroom.

Label the main earth connection at both ends with a metal tag "Main Earth Do Not Disconnect".

## 9 MAIN SWITCH BOARD (MSB)

### 9.1 GENERAL

The main switchboard shall be rated 415/480 V, 400 A, 10 kA for one second as shown and scheduled, metal clad, air insulated, front connected, constructed in accordance with AS 1136.1 and any other relevant Australian Standards.

### 9.2 SUPPLY CIRCUIT

Supply voltage three phase, four wire, 50 Hz.

- -Rated operational voltage (Ue) 415 V.
- - Rated insulation voltage (Ui) 480 V.

Fault level 10 kA for one second, standard peak/rms ratio.

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### 9.3 CIRCUIT BREAKERS

Circuit breakers to comply with AS, 2184, AS 3858 and IEC 157 as relevant.

### 9.4 IDENTIFICATION

Switchgear and fittings neatly, functionally and symmetrically arranged and grouped so that main switches, other switches, fuse boards and control devices are separate and distinct. Main switches grouped and clearly identified from other sections of the board for each floor level.

Each group of distribution equipment and each device, appropriately labeled with readily visible engraved laminated labels mechanically fixed unless otherwise agreed.

## 10 SUBMAIN CABLES AND CABLE FACILITY

### 10.1 GENERAL

Supply and install submain cables as shown on the drawings.

Fit proprietary sleeves or glands to all submain cable ends. Connect all submains at the respective switchboards and distribution boards.

Install submains cables with a minimum of 50mm clearance between different submains.

Single core cables installed in pairs touching for single phase circuits or touching trefoil groups plus neutral for 3- or 4- wire three phase circuits. Statutory spacing between pairs or trefoil groups of conductors. Secure submain cables with stainless cable ties of approved brand.

The whole installation arrange for neatness, reliability and easy access together with sufficient loop for the use of a "hook on" ammeter.

Cables colour coded red, white, blue for phases, black for neutral and green/yellow for earth at all terminal connections by PVC sleeve or other approved method and labeled with their circuit number at entry into the switchboard cubicle or enclosure and at the junctions of cable ducts or conducts with those of other cables where the cable is not obvious.

### 10.2 UNDERGROUND INSTALLATION

Underground cabling shall be installed in accordance with AS 3000 "Category 'A' System" and that markers shall be installed to indicate change of direction or 50m apart for straight runs.

### 10.3 CONDUITS

Heavy duty PVC cast into concrete unless otherwise specified. Co-ordinate conduit sizes and groupings for efficient use of space. Conduits shall comply with AS 2052, AS 2053 and AS 1345.

Conduits securely installed square, level, parallel and aligned with adjacent building structures and neatly placed for minimum obstruction. Conduit firmly supported at intervals not more than 1200mm using galvanized steel saddles and masonry bolts or other approved fixing matched to the supporting structure. Wooden plugs and soft thermos-plastic plugs in masonry not accepted. Plastic plugs only where specifically approved.

Wiring to all services in areas without suspended ceilings run in suitably sized conduits concealed within the respective concrete slabs and into columns and walls whether precast or otherwise. Conduit boxes of sufficient depth to allow conduits to run straight without bends or sets direct into junction box spigot. Conduits generally run in the middle of the slab.

Conduits to external fittings wherever practicable concealed from normal view both internally and externally. Conduits for machine and fixed equipment circuits terminated within 600m of the terminal box on the machine and the final connection in flexible PVC conduit secured with proprietary rigid PVC fittings, or brass fittings where exposed to weather.

## 11 DISTRIBUTION BOARDS

Supply and install sub-distribution boards as shown on the drawings.

Fully enclosed, complete with door. Available for recess mounting on wall as shown on the drawings with front access to all equipment and wiring terminations.

## 12FINAL SUBCIRCUITS
### 12.1 GENERAL

All power, lighting and all other final sub-circuits, conduits and ducts for all services throughout the whole of the building where shown on the drawings.

Generally in areas where no ceilings exist, all final sub-circuit wiring to lighting and power, or miscellaneous equipment such as telephone, etc shall be enclosed in PVC conduits laid within floor slabs and down walls and columns whether precast or not.

Clearly and permanently label each connected emergency fitting internally with the origin switchboard designation and circuit identification.

All light fittings shall be connected to the sub-circuits by three pin plug and socket. Round earth pins shall be used for connecting high intensity discharge fittings to remote ballast units.

Sub-circuits shall be fully rated to the setting of the protective device, and all cables in a group shall be assessed as carrying full rated current.

### 12.2 INSTALLATION

Wiring concealed from normal view in all areas unless otherwise specified.

Methods of installation within buildings:

- Sheathed cables without conduits above suspended ceilings or within wall or partition cavities.

- Enclosed in galvanized Class B screwed conduit or heavy duty PVC conduit up to 50mm, where exposed to view or cast in concrete. Prior approval of positions case in concrete required prior to pouring concrete.

- Sheathed cables enclosed in conduit in mortar joints between brick courses or within wall chases, with outlet fittings or switches flush mounted in proprietary conduit wall boxes.

Even if generally concealed from normal view, wiring neatly and tidily installed. Supported clear of ceiling tiles above suspended grid ceilings.

### 12.3 VOLTAGE DROP

Size all light and power final sub-circuits in accordance with the required derating factors applicable for grouping of cables as required by AS 3008.

## 13.0 OUTLETS AND ACCESSORIES
Provide all GPOs and other terminal fittings where shown on the drawings, but confirm all locations on site in advance. All fittings and accessories are to be ‘HPM’ or ‘Clipsal’ or approved equivalent.

Plug sockets in recessed wall boxes except where specified otherwise. Mounting height nominally 300mm above floor level except where the building structure, fixtures or statutory regulation may dictate otherwise or as shown on the drawings.

Plug sockets in toilets and laundry areas nominally 1200mm above floor.

## 14.0 MACHINES AND APPLIANCES

Supply, install and connect final sub-circuits to electrical equipment as shown on the drawings. Connect all fixed equipment by means of permanent wiring.

Install wall mounted isolating switches for items of plant and extend wiring in conduits in the floor slabs and connect circuits to appliance and input terminals where shown and as shown on the drawings.

The location, power input terminals and rated power requirement of each type of equipment confirmed before installation.

Co-ordinate the locations of outlets for appliances with the locations of the cable entry points of the appliances so that cables are concealed as much as practicable or as short as practicable.

## 15.0 LIGHTING

### 15.1 GENERAL

Luminaries shall conform in type, number, size, location and switching with details shown in both specification and associated drawings. Confirm in advance of manufacture that physical mounting details conform to actual building and ceiling details.

Install all fittings in the positions shown on the drawings for the initial installation but confirm all locations on site in advance. Allow at no extra cost to relocate fittings 3m in any direction prior to installation.

Install lamps in all fittings.

### 15.2 FLUORESCENT AND DISCHARGE LUMINARIES

Metal work painted gloss white unless otherwise specified.

### 15.3 EXTERNAL LUMINARIES

IP56 enclosure, dust and insect proof, having non-ferrous, galvanized or stainless steel housings and fixings, soft rubber or PVC gaskets on all joints and screwed conduit entries. Vented to allow escape of condensation.

Work exposed to the weather installed to withstand heavy rain and wind velocities of up to 200 km/h without leakage, deformation or damage.

### 15.4 LIGHTING SWITCHES

Light switches installed nominally 1350mm above floor unless otherwise specified.

Positions of switches shown on the drawings confirmed in advance of installation or revised if necessary where they may be obscured or inconvenient in the completed installation.

Where surface mounting is necessary light switches shall be mounted on blocks and wired in painted surface conduit.

Ganged switchplates used where practicable for the control of similar, adjacent circuits.

Layout of switches on ganged plates similar to layout of lights. Switches marked with supply phase and circuit number using approved proprietary markers.

All light switch mechanisms shall be 10A. Select escutcheon arrangement in each case for optimum co-ordination with Project Architectural detail.

Ganged switchplates with more than four switches shall incorporate identification labels for all switches. Provide multi-gang switchplates where two or more switches are installed adjacent.

## 16 EMERGENCY AND EXIT LIGHTING SYSTEM

Supply and install an emergency lighting system with the emergency and exit luminaries in the positions if shown on the drawings.

The emergency and exit luminaries complete with self-contained nickel cadmium batteries and dual rate charge.

Emergency lights generally to connect direct to normal lighting un-switched active in the immediate area.

- Equipped with power supply indicator and local test switch.
- Battery case temperature limited to battery manufacturer is recommendations.
- Emergency lamp operated within lamp manufacturer's recommendations for optimum performance and starting.