SUNWAY CITY

STANDARD BIDDING DOCUMENT

for the

Procurement of Non-Complex Works

February 2022

Standard Bidding Document for the Procurement of:	Roads, Sewer and Water Reticulation in Ventersburg Industrial Area
Procurement Reference No:	SC/05/22
Procuring Entity:	SUNWAY CITY
Date of Issue:	04/02/2022

Table of Contents

PART 1: BIDDING PROCEDURES

References:

References to the Act are to the Public Procurement and Disposal of Public Assets Act [*Chapter22:23*] and references to the Regulations are to the Public Procurement and Disposal of Public Assets (General) Regulations (Statutory Instrument No. 5 of 2018). The terms and requirements in the Act and Regulations govern the submission of Bids and should be read by all Bidders.

Procurement Reference Number:

Preparation of Bids

You are requested to bid for the items specified in the Statement of Requirements below, by completing and returning the following documentation:

1. the Bid Submission Sheet in this Part 1;
2. the Priced Bill of Quantities or Schedule of Activities (in Part 2) – Ensure all pages are attached.
3. a copy of documentation necessary to demonstrate eligibility in terms of section 28 (1) of the Regulations;
4. Certificate showing that you are currently registered with the Procurement Regulatory Authority of Zimbabwe
5. A bid security or bid securing declaration in the format specified in this Part;
6. the completed qualification forms provided in this Part 1;
7. A copy of Valid Tax Clearance Certificate.
8. A copy of Confirmation of current registration in Category A of CIFOZ or ZBCA (Only a certificate or letter from CIFOZ or ZBCA) and a comprehensive Basic Price List of all equipment, materials & labour to be used on the project.

You are also required to pay the administration fee of two hundred United States Dollars payable by bidders for bids subject to prior review by the Special Procurement Oversight Committee in terms of section 54 of the Act and as set out in Part IV of the Fifth Schedule to the Regulations. The fees must be paid to PRAZ and the receipt must be submitted together with the bid as proof of payment.

You are advised to carefully read the complete Bidding Document, as well as the Special Conditions of Contract in Part 3: Contract, before preparing your Bid. The standard forms in this document may be retyped for completion but the Bidder is responsible for their accurate reproduction. All pages of the Bid must be clearly marked with the Procurement Reference Number above and the Bidder's name and any reference number.

Lots and Packages

The requirement is not divided into lots and packages, as indicated in Part 2, Statement of Requirements.

Number of bids allowed

No Bidder may submit more than one bid, either individually or as a joint venture partner in another Bid, except as a subcontractor. Where the works are divided into lots and packages, only one Bid can be submitted. A conflict of interest will be deemed to arise if Bids are received from more than one Bidder owned, directly or indirectly, by the same person.

Clarification

Clarification of the bidding document may be requested in writing by any Bidder up to 21/02/2022 and should be sent to Mr Mapurisa, 2098 Cedar close, Sunway City, Harare contactable on 0772916554 or mapurisam@sunwaycity.co.zw .

Pre-bid meeting and Site Visit

A Site visit will be held at Sunway City, Ventersburg Industrial area on 15/02/2022 at 1100 hours [CAT]

Validity of Bids

The minimum period that the Bidder's bid must remain valid is ninety days from the deadline for the submission of bids.

Submission of Bids

Bids must be submitted in writing in a sealed envelope to the address below, no later than the date and time of the deadline below. It is the Bidder's responsibility to ensure that they receive a receipt confirming submission of their Bid with correct details of the Bidder and the number of the Bid.

The Bidder must mark the envelope with the Bidder's name and address and the Procurement Reference Number.

Three copies of the Bid should be provided, i.e. one original clearly marked "ORIGINAL." And 2 copies. In addition, the Bidder must state the number of copies of the Bid and must mark each of them clearly "COPY." In the event of any discrepancy between the original and the copies, the original will prevail.

Late bids will be rejected. The Procuring Entity reserves the right to extend the bid submission deadline but will notify all potential bidders who have collected the bidding documents of the amended bid submission deadline.

Date of deadline:	08/03/2022	Deadline Time: 1000	hours

[CAT]

Submission address: Sunway City, 2098 Cedar Close, Ventersburg, Harare

Means of acceptance: Sealed bids are to be placed in a marked bid box at Sunway City, 2098 Cedar Close, Ventersburg, Harare between 0800hrs and 1600hrs [CAT].

Bid opening

Bidders and their representatives may witness the opening of bids, which will take place at the submission address immediately following the deadline.

Withdrawal, amendment or modification of Bids

A Bidder may withdraw, substitute, or modify its Bid after it has been submitted by sending a written notice, duly signed by an authorized representative. However, no Bid may be withdrawn, substituted, or modified in the interval between the deadline for submission of Bids and the expiration of the period of Bid validity specified by the Bidder or any extension of that period.

Time for Completion

The time for completion of the Works is twenty weeks which is the Intended Time for Completion in GCC 1.1(q) of the Special Conditions of Contract (SCC) in Part 3.

Bid Prices and Discounts

The bid rates and prices must cover all costs of labour, materials, equipment, overheads, profits and all associated costs for performing the Works and must include all taxes and duties. The whole cost of performing the Works must be included in the items stated, and the cost of any incidental works will be deemed to be included in the prices quoted.

The Bidder must fill in rates and prices for all items of the Works described in the Bill of Quantities or Schedule of Activities. Items against which no rate or price is entered by the Bidder will be deemed to be covered by the rates or prices for other items in the Bill of Quantities or Schedule of Activities.

The price quoted in the Bid Submission Sheet must be the total price of the Bid, excluding discount. The Bidder must quote any discounts and the methodology of its application in the Bid Submission Sheet.

Currency

Tenders should be priced in *United States/ZW$.*

Bid Security

The Bidder must include a Bid-Securing Declaration using the form included in Part 2.

Any bid not accompanied by a Bid Securing Declaration in accordance with section 26 (4) of the Regulations, as this is a requirement of bidding, will be rejected by the Procuring Entity as non-responsive.

Bid-Securing Declaration of a Joint Venture (JV) must be in the name of the JV that submits the Bid. If the JV has not been legally constituted at the time of bidding, Bid-Securing Declaration must be in the names of all intended partners.

Origin of Materials, Equipment and Services:

All materials, equipment and services to be used in the performance of the contract shall have as their country of origin an eligible country, as defined in the Special Conditions of Contract.

Evaluation of Bids

Bids will be evaluated using the methodology set out in Part V of the Regulations.

Review by the Special Procurement Oversight Committee

Section 54 of the Act provides for review by the Special Procurement Oversight Committee for certain especially sensitive or especially valuable contracts. This requirement will be subject to this review, referring to the thresholds contained in section 10(5) of and the Second Schedule to the Regulations. Because of this at least two identical copies of the Bid Documents are required and that, where the copies are not identical, the contents of the bid marked original will alone be considered.

Eligibility and Qualification Criteria

Bidders are required to meet the criteria in section 28 of the Act and section 28(1) of the Regulations to be eligible to participate in public procurement and to be qualified for the proposed contract. They must therefore:

1. have the legal capacity to enter into a contract (Letter from lawyer registered with Law Society of Zimbabwe – attach proof of registration)
2. not be insolvent, in receivership, bankrupt or being wound up, not have had business activities suspended and not be the subject of legal proceedings for any of these circumstances; (Attach letter from bank showing good standing).
3. have fulfilled their obligations to pay taxes (attach current tax clearance certificate) and social security contributions (attach NSSA certificate) in Zimbabwe;
4. not have a conflict of interest in relation to this procurement requirement;

5. not be debarred from participation in public procurement under section 72 (6) of the Act and section 74(1) (c), (d) or (e) of the Regulations or declared ineligible under section 99 of the Act;
6. have the nationality of an eligible country as specified in the Special Conditions of Contract;
7. passed the minimum qualification criteria indicated in this Part 1; and
8. have been registered with the Authority as a Supplier and have paid the applicable Supplier Registration Fee set out in Part III of the Fifth Schedule to the Regulations.

Participation in this bidding procedure is restricted to Zimbabwean bidders registered in Category "A" of CIFOZ or ZBCA.

Detailed Evaluation

The Bids will be examined to confirm that all terms, conditions and requirements of the bidding document have been complied with by the Bidder. The assessment of responsiveness shall be determined in accordance with the criteria in section 28 of the Regulations.

Evaluation of Technical Bids will include an assessment of the Bidder's technical capacity to mobilize key equipment and manpower which is substantially responsive to the Procuring Entity's Requirements.

The detailed evaluation shall include the following stages:

a) **Stage 1** – Qualification criteria compliance check

At this stage the bids will be evaluated for compliance with all the requirements set out in the said ACT, the REGULATIONS and any requirements set herein. Bidders are required to ensure that they have submitted all the requested information, in the format requested. Bids with inadequate information or missing pages will be rejected.

b) **Stage 2** – Technical & Financial evaluation

Only bids that are deemed compliant in stage 1 will be evaluated in stage 2. Bids deemed not compliant in stage 1 will be rejected and thus receive no further consideration.

The technical and financial evaluation will be points based, with the most attractive bids securing the highest number of points per criteria, with the minimum overall pass threshold of 80 points. The following will be considered:

	EVALUATION CRITERIA	POINTS	REMARK
1	Bidder's Experience on similar projects	29	See detailed requirements within this document
2	Bidder's Plant Proposal & Declaration	20	See detailed requirements within this document
3	Bidder's Human Resource Proposal & Declaration	10	See detailed requirements within this document
4	Bidder's Capacity to Cashflow Project	15	See detailed requirements within this document
5	Rates Analysis	26	See detailed requirements within this document
	TOTAL	100	Minimum qualifying Score = 80

Stage 2 – Scoring Table (Technical & Financial evaluation)

Notes under Stage 2

This following will be considered during evaluation, in addition to other requirements stated in this document:

- Tender Rates – the rates should not be sub-economic (this invariably results in poor workmanship & high maintenance costs), hence not advantageous.
    - the rates should not be deemed expensive but should be comparable to market prices & reasonably linked to input costs.
- Experience – The recent (3-5years relevant experience) will give indication of current operating environment awareness that will benefit the project.
- Plant and Equipment – Commitment to providing a complete bid with fixed rates will be deemed advantageous to the project as this will help avoid escalations & the costly due diligence processes which invariably delay projects.
- Human Resources - Commitment to present a complete bid with the stated minimum personnel is deemed advantageous as it facilitates project efficiency hence optimising costs.
- Financial Capacity – Ability to resource the project is deemed advantageous to the project.

c) **Stage 3** – Final

Only bids scoring a minimum of 80 points and above will be deemed compliant and hence be considered for stage 3. Bids scoring below 80 points will not be considered in stage 3.

The bids scoring 80 points and above will be deemed suitable, with the overall price determining the bid to be recommended for award.

Award of Contract

Of the bids that qualify for **stage 3** **the lowest-priced bid** will be recommended for award of this tender (See below).

The proposed award of contract will be by issue of a Notification of Contract Award in terms of section 55 of the Act which will be effective on receipt of a Letter of Acceptance in accordance with Part 3: Contract. Unsuccessful Bidders will receive the Notification of Contract Award and if they consider they have suffered prejudice from the process, they may, within 14 days of receiving this Notification, submit to the Procuring Entity a Challenge in terms of section 73 of the Act, subject to payment of the applicable fee set out in section 44 of and the Third Schedule to the Regulations.

Right to Reject

The Procuring Entity reserves the right to accept or reject any Bids or to cancel the procurement process and reject all Bids at any time prior to contract award.

Corrupt Practices

The Government of Zimbabwe requires that Procuring Entities, as well as Bidders and Contractors, observe the highest standard of ethics during the procurement and execution of contracts. In pursuit of this policy:

1. the Procuring Entity will reject a recommendation for award if it determines that the Bidder recommended for award has, directly or through an agent, engaged in corrupt, fraudulent, collusive or coercive practices in competing for the Contract or has been declared ineligible to be awarded a procurement contract under section 99 of the Act;
2. the Authority may under section 72 (6) of the Act impose the debarment sanctions under section 74(1) of the Regulations; and
3. any conflict of interest on the part of the Bidder must be declared.

Bid Submission Sheet

{Note to Bidders: Complete this form with all the requested details and submit it as the first page of your Bid. Attach the completed Statement of Requirements and any other documents requested in Part 1. Ensure that your Bid is authorised in the signature block below. A signature and authorisation on this form will confirm that the terms and conditions of this Bid prevail over any attachments. If your Bid is not authorised, it will be rejected. If the Bidder is a Joint Venture (JV), the Bid must be signed by an authorized representative of the JV on behalf of the JV, and so as to be legally binding on all the members as evidenced by a power of attorney signed by their legally authorized representatives.

Bidders should mark as "CONFIDENTIAL" information in their Bids which is confidential to their business. This may include proprietary information, trade secrets, or commercial or financially sensitive information.}

Procurement Reference Number:

Subject of Procurement:

Name of Bidder

Bidder's Reference Number:

Date of Bid:

We offer to supply the items listed in the attached Statement of Requirements, at the prices indicated on the attached Price Schedule and in accordance with the terms and conditions stated in your Bidding Document referenced above.

We confirm that we meet the eligibility criteria specified in Part 1: Procedures of Bidding.

We declare that we are not debarred from bidding and that the documents we submit are true and correct.

The validity period of our bid is: ……*{days}* from the date of submission.

We confirm that the prices quoted in the attached Price Schedule are fixed and firm for the duration of the validity period and will not be subject to revision, variation or adjustment.

Bid Authorised By:

Signature …….. **Name:** ……

Position: …….. **Date:** ……*(DD/MM/YY)*

Authorised for and on behalf of:

Company ……

Address: ……

……

Qualification Criteria

Factor	**Financial Situation**					
Sub-Factor	**Criteria**					**Documentation Required**
	Requirement	**Bidder**				
		Single Entity	**Joint Venture, Consortium or Association**			
			All partners combined	**Each partner**	**At least one partner**	

Factor	**Financial Situation**					
Sub-Factor	**Criteria**					**Documentation Required**
	Requirement	**Bidder**				
		Single Entity	**Joint Venture, Consortium or Association**			
			All partners combined	**Each partner**	**At least one partner**	
1. Financial Resources	The Bidder must demonstrate access to, or availability of, financial resources such as liquid assets, unencumbered real assets, lines of credit, and other financial means, other than any contractual advance payments to meet the cash-flow requirement for the contract. For determination of cash flows required, use the formula: **t/4ct x bv** where: **t** = time taken to clear and pay a certificate, **ct** = project duration, **bv** = bid value. For determination of turnover, either the average annual turnover for a period of the past two years must least be twice the value of the bid or a letter of commitment from a financial institution should be submitted. Letter of comfort from the financial institution will not be accepted.	Must meet requirement	Must meet requirement	Must meet _____ percent 60% of the requirement	Must meet _____ percent 75% of the requirement	Form 3

Factor	**Experience**					
Sub-Factor	***Criteria***					***Documentation Required***
	Requirement	***Bidder***				
		Single Entity	***Joint Venture, Consortium or Association***			
			All partners combined	***Each partner***	***At least one partner***	
1. General Experience	Experience under contracts in the role of contractor, subcontractor, or management contractor for at least the last 3-5 years prior to the bid submission deadline.	Must meet requirement	N / A	Must meet requirement	N / A	Form 4
2. Specific Experience	Participation as contractor in a civil engineering project of similar nature in the last 3-5years	Must meet requirement	Must meet requirements for all characteristics	N / A	Must meet requirement for one characteristic	Form 5

PQ FORM 1 – Financial Situation

Historical Financial Performance

Bidder's Legal Name: _____ Date: _____
JV Partner Legal Name: _____ Bidding No.: _____
Page _____ of _____ pages

To be completed by the Bidder and, if Joint Venture (JV), by each partner

Financial information in USD equivalent	Information for previous year (USD equivalent)
Information from Balance Sheet	
Total Assets (TA)	
Total Liabilities (TL)	
Net Worth (NW)	
Current Assets (CA)	
Current Liabilities (CL)	
Information from Income Statement	
Total Revenue (TR)	
Profits Before Taxes (PBT)	

☐ Attached are copies of financial statements (balance sheets, including all related notes, and income statements) for the previous year as required above complying with the following conditions:

- Must reflect the financial situation of the Bidder or partner to a JV, and not sister or parent companies
- Must be audited by a certified accountant
- Must be complete, including all notes to the financial statements
- Must correspond to accounting periods already completed and audited (no statements for partial periods shall be requested or accepted)

PQ Form 2. Annual Turnover (Previous year)

Bidder's Legal Name: _____ Date: _____
JV Partner Legal Name: _____ Bidding No.: _____
Page _____ of _____ pages

Year	USD
	_____

PQ Form 3. Financial Resources

Specify proposed sources of financing, such as liquid assets, unencumbered real assets, lines of credit, and other financial means, net of current commitments, available to meet the total construction cash flow demands of the subject contract.

Source of financing	Amount (USD)
1.	
2.	
3.	
4.	

PQ FORM 4. Experience

General Experience

Bidder's Legal Name: ____________________________ Date: _____________________
JV Partner Legal Name: ____________________________ Bidding No.: ________________
Page _______ of _______ pages

Starting Month / Year	Ending Month / Year	Years*	Contract Identification	Role of Bidder
______	______		Contract name: Brief Description of the Works performed by the Bidder: Name of Purchaser: Address:	_________
______	______		Contract name: Brief Description of the Works performed by the Bidder: Name of Purchaser: Address:	_________
______	______		Contract name: Brief Description of the Works performed by the Bidder: Name of Purchaser: Address:	_________
______	______		Contract name: Brief Description of the Works performed by the Bidder: Name of Purchaser: Address:	_________
______	______		Contract name: Brief Description of the Works performed by the Bidder: Name of Purchaser: Address:	_________
______	______		Contract name: Brief Description of the Works performed by the Bidder: Name of Purchaser: Address:	_________

*List calendar year for years with contracts with at least nine (9) months' activity per year starting with the earliest year

PQ Form 5. Specific Experience

Bidder's Legal Name: _____ Date: _____
JV Partner Legal Name: _____ Bidding No.: _____

Page _____ of _____ pages

Similar Contract Number: ___ *[insert specific number]* of ___*[insert total number of contracts* required.	**Information**		
Contract Identification	_____		
Award date Completion date	_____ _____		
Role in Contract	☐ Contractor	☐ Management Contractor	☐ Subcontractor
Total contract amount	_____		UGX_____
If partner in a JV or subcontractor, specify participation of total contract amount	_____%	_____	UGX_____
Procuring Entity's Name:	_____		
Address: Telephone/fax number: E-mail:	_____ _____ _____ _____		

PQ Form 5a. Specific Experience (cont.)

Bidder's Legal Name: _____ Page _____ of _____ pages
JV Partner Legal Name: _____

Similar Contract No. __*[insert specific number]* of ___*[insert total number of contracts]* required	**Information**
Description of the similarity in accordance with Sub-Factor 2.4.2a) of Section III (Evaluation and Qualification Criteria):	
Amount	_____
Physical size	_____
Complexity	_____
Methods/Technology	_____
Physical Production Rate	_____

Detailed Basis of Technical & Financial evaluation - Points breakdown & requirements

The following criteria will be used:

ITEM	DESCRIPTION	KEY SUBMISSIONS FROM TENDERER	POINTS	Remarks
1	Tenderer's Experience	At least 3 (three) similar civil works completed in last 5years - Attach reference letters - Checks to be made	24 points	a) 4 points for each of 3 similar projects. Zero points for dissimilar works or project less than **half size** of this project (USD values to be attached or calculated). b) 4 points each for client reference letter confirming successful & satisfactory completion of each similar project Zero points for dissimilar works or no letter or unsatisfactory/unsuccessful completion.
2	Tenderer's Experience	At least 1 (one) similar project successfully completed in last 3years - Attach reference letters - Checks to be made	5 points	a) 5 points only where there is client reference letter confirming successful & satisfactory completion of similar project b) Zero points for dissimilar works or no letter or unsatisfactory/unsuccessful completion.

3	Plant and Equipment	Plant and Equipment: - Dozer - Grader - Bowser - Roller - Excavator	20 points	a) 20 points for letter undertaking to use own equipment & fix equipment rates in USD for 2022 (subject ONLY to **statutory** USD payment changes) b) 5 points for hire and subject to USD escalations in plant dry rates
4	Human Resources	Experience Human Resources: - Site Engineer/Technician – +5years in Civils (minimum 5years on similar projects) - Roads Foreman – Artisan/Technician-+5years (minimum 5years on similar projects) - Plumber – Artisan/Technician+5yrs (minimum 5years on similar projects) - Experienced grader operators - +5years (minimum 5years on similar projects) - SHEQ Officer - +5years (minimum 5years on similar projects)	10 points	a) 10 points for letter undertaking to, if successful & appointed contractor, ensuring the personnel noted here will be on site (failure of which will constitute a contractual breach at/during the contract stage). NB: 2 points per resource b) Zero points for failure/refusal to undertake/commit so have minimum stated personnel.
5	Financial Capacity	Financial Capacity: A) - Cashflow in Bank (To meet stated requirement) - Letter of undertaking from	15 points	

		bank - Other Liquid assets AND - Turnover (as stated in document)| - B) Other Sources		a) 15 marks for A b) 5 marks for B
6	Tender rates	Tender rates	26 points	a) Loss of two points (to max 26) for every rate that is below cost of materials/inputs without letter of discount from supplier or confirmation that material is in stock (sub-economic.)

PART 2: PROCURING ENTITY'S REQUIREMENTS

Scope of Works

Procurement Reference Number: SC/04/21

[See the full tender document for works].

Brief Description of Works

Construction of Roads & Storm water Drainage, Sewer Reticulation and Water Reticulation

Location of Works

EPZ Area .Ventersburg, Township, Harare

Commencement and Completion Periods Required

COMMENCEMENT IN 2021/ CONSTRUCTION PERIOD IS 20 WEEKS

Specifications

The Works are to be performed in accordance with the following attached specifications:

As contained in this document

Drawings

DWRG No	DESCRIPTION
277/SR/01	SEWER RETICULATION LAYOUT
277/SR/02	SEWER LONGTUDINAL SECTIONS
277/SR/03	SEWER LONGTUDINAL SECTIONS
277/WR/01	WATER RETICULATION LAYOUT PLAN
277/W-01b	WATER RETICULATION DETAILS SHEET 1
277/W-01c	WATER RETICULATION DETAILS SHEET 1
	GENERAL PLAN FOR STANDS 1-14 AND 47-66 VENTERBURG
	GENERAL PLAN FOR STANDS 15-46 AND 67-108 VENTERBURG
277/R/01	ROADS AND STORMWATER DRAINAGE LAYOUT
277/R-01	ROADS AND STORMWATER DRAINAGE LAYOUT
277/R-02	ROADS AND STORMWATER DRAINAGE LAYOUT
277/R/02	ROAD LONGTUDINAL SECTIONS
277/R/03	STORMWATER DRAINS LONGTUDINAL SECTIONS
277/R-03	STORMWATER DRAINS LONGTUDINAL SECTIONS
277/R/04	STORMWATER DRAINS LONGTUDINAL SECTIONS
277/R-04a	ROADS AND STORMWATER DETAILS
277/R-04b	ROADS AND STORMWATER DETAILS
277/R/05	STORMWATER DRAINS LONGTUDINAL SECTIONS
277/R/06	STORMWATER DRAINAGE CONSTRUCTION DETAILS AND ROAD INTERSECTIONS

Bill of Quantities

Should be used for admeasurement contracts where payments are based on completed units of items of works

Name of Bidder:

Bidder's Reference Number:

Currency of Bid: _____

Item No	Description of Works	Quantity	Unit of Measure	Unit Price	Total Price
	Preliminary & General Items			SUM	
	Total For Road 1			SUM	
	Total For Road 2			SUM	
	Total For Road 3			SUM	
	Total For Sewer Reticulation			SUM	
	Total For Water Reticulation			SUM	
	Specialist Services			SUM	
Sub-total					

Add VAT	
Contingency *	
Grand Total	

Bill No. 1

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
1	**Preliminary and General**				
1.1	Allow for surety bonds; full insurances in accordance with the contract that include the following: -Third party insurance -Workmen insurance -Works insurance -Surety bond.	SUM			
1.2.1	Allow for establishment on site	SUM			
1.2.2	Allow for clearing away on completion of the works	SUM			
1.3	Establish temporary facilities on site for:				
	(i)Site offices (use by contractor), and Site meetings and furniture (Room for Site Meetings =30m^2),	SUM			
	(ii)Consulting Engineer's office =20m^2, plus desk & chair)	SUM			
	(iii) Site storage facilities	SUM			
	(iv)Water and power (for site offices) (generator if needed) for construction.	SUM			
	(v) Site telephone/cell phone line and full rental/bill charges	SUM			
	(vi) Establish flush-system ablution facilities for: (a) workmen (b) visitors (c) Female personnel	SUM			
1.4	Allow for transport of plant to site and final removal, use of plant (full expenses) including scaffolding.	SUM			
1.5	Allow for costs related in complying in full to the General Conditions of Contract.	SUM			

1.6	Allow for compliance with Safety, Health & Environment issues as directed by National Standards thus include the following: - Safety clothing - Helmets - Safety chains - Safety shoes - Gloves - Safety Signage - Dust control etc. - Covid protocols	SUM			
1.7	Allow for barricading all working areas & ensuring protection/prohibition of access by third parties and animals (include indemnifying Sunway City against all claims related to injury to self & third parties).	SUM			
1.8	Provide everything necessary to supervise and executed the works as specified herein and on drawings.	SUM			
	TOTAL CARRIED TO SUMMARY				

Bill No. 2

ITEM	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
2	**CITY ROAD 1- CH2540-3385** **ROADS AND STORMWATER**				
2,1	**SUBGRADE**				
2.1.1	Allow for clearing of road reserve including vegetative matter, bushes, trees and stumps up to 1m girth and cart off site to municipal and engineer approved dump site within 20km radius.	m^2	21138		
2.1.2	Remove trees and stumps of girth more than 1m, including stacking and grubbing roots.	No	17		
2,2	**EARTHWORKS**				
2.2.1	Remove topsoil to a depth of 150mm to roadbed width, and cart off site to municipal and engineer approved dump site within 20km radius.	m^3	1650		
2.2.2	Excavate unsuitable subgrade material to roadbed (average depth of 600mm) and stockpile on site for re-use and carting away.	m^3	6595		
2.2.3	Load excess excavated material from spoil heaps and cart off site to municipal and engineer approved dump site within 20km radius. *(Bulked volume – factor = 1.33 or as measured on site by engineer)*	m^3	8772		
2.2.4	Excavate for removal of anthills and cart off site to municipal approved dump site within 20km radius	m^3	110		
2.2.5	Allow for termite-treatment of anthills using an approved ant-killer at the specialist's approved rate.	m^2	183		
2.2.6	Excavation in rock material and stockpile on site	m^3	1755		
	SUBTOTAL CARRIED FORWARD				

ITEM	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
	SUBTOTAL BROUGHT FORWARD				-
2.2.7	Allow for loading and hauling of excavated rock material to a municipal approved dump site within a radius of 20km from site.	m^3	1755		
2,3	**SUBGRADE PREPARATION**				
2.3.1	Shape road formation; scarify 150mm deep, water & compact subgrade to 93% LCE	m^2	10992		
2,4	**BORROW MATERIAL FOR PAVEMENT**				
2.4.1	Identify borrow pit for base material and prepare same including payments for the gravel to authorities **(For the purpose of this tender Warren Park gravel pits are to be used).**	Sum	1		
2.4.2	Excavate, sort, stockpile and safe- keep gravel at approved borrow pit (compacted volume).	m^3	3300		
2.4.3	Load, haul approved gravel material from borrow pit to site (compacted volume).	m^3	3300		
2.4.4	Import crusher-run for sub-base (compacted volume).	m^3	3300		
2.4.5	Fill in layers of 150 mm thick (compacted volume) to form sub-base with allowance for vee –drains and water and compact the following				
2.4.5.1	i) gravel to 98% HCE (compacted volume)	m^3	3300		
2.4.5.2	ii) crusher-run to 100% HCE (compacted volume)	m^3	3300		
2,5	**BITUMINOUS SURFACING**				
2.5.1	PRIME				
	SUBTOTAL CARRIED FORWARD				

ITEM	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
	SUBTOTAL BROUGHT FORWARD				
2.5.1.1	a) Supply all materials and apply single seal bituminous surfacing as specified (6.7 stone size)	m^2	RO		
2.5.1.2	b) Supply all materials and apply double seal bituminous surfacing as specified (13.2/6.7 stone size)	m^2	9300		
2,6	**CULVERTS AND STORMWATER DRAINS**				
2.6.1	Clear and set out along routes of mitre and stormwater water drains an average width of 2m.	m	1690		
2.6.2	Excavate in pickable material, (depth n.e 1.0m) for V-drains as per drawing.	m^3	2028		
2.6.3	Allow for loading and hauling of excavated pickable material to a municipal approved dump site within a radius of 20km from site.	m^3	2028		
2.6.4	Excavation in hard material and stockpile on site.	m^3	1014		
2.6.5	Allow for loading and hauling of excavated hard pickable material to a municipal approved dump site within a radius of 20km from site.	m^3	1014		
2.6.6	Excavation in rock material and stockpile on site.	m^3	406		
2.6.7	Allow for loading and hauling of excavated rock material to a municipal approved dump site within a radius of 20km from site.	m^3	406		
2,7	**DRAIN LINING**				
2.7.1	Compact bottom of excavation and prepare to receive concrete lining	m^2	1014		
	SUBTOTAL CARRIED FORWARD				

ITEM	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
	SUBTOTAL BROUGHT FORWARD				
2.7.2	Compact side disturbed material to 93% HCE and prepare to receive concrete lining.	m^2	3549		
2.7.3	Supply and cast Grade 10 concrete for 75mm thick lining to trapezoidal drains with S193 mesh reinforcement (Rate to include formwork)	m^3	343		
2.7.4	Import gravel, backfill and compact to specification on sections with culverts.	m^3	264		
2.7.5	Compact bottom of culverts to specification and prepare to receive mass concrete	m^2	264		
2.7.6	Supply and cast Grade 20 concrete base for culvert (Rate to include formwork)	m^3	80		
2,8	**CULVERT PIPES**				
2.8.1	Supply and install Class S standard reinforced stormwater pipes with interlocking Ogee joints for underground drainage pipes 600mm in diameter	m	220		
2.8.2	Supply and cast concrete to haunches and surrounds Grade 20 (Rate to include formwork)	m^3	176		
2.8.3	**Backfilling**				
	Backfilling with selected excavated material to sections with culvert pipes	m^3	80		
2,9	**CULVERT END TREATMENT**				
2.9.1	a) Stone pitching to end of pipes	m^2	51		
2.9.2	b) Excavate for, supply all materials including cover grating and construct catchpits up to a depth of 1m as detailed	No	5		
2.9.3	Construct culvert headwalls with industrial bricks complete with concrete bases as shown on the drawings	No	38		
2,1	**KERBING**				
	Supply, deliver, lay and bed precast concrete kerbing as detailed for the following:				
	SUBTOTAL CARRIED FORWARD				

ITEM	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
	SUBTOTAL BROUGHT FORWARD				
2.10.1	900 x 300 kerbs	m	200		
2.10.2	300 x 150 half kerbs	m	46		
2.10.3	Grade 10 haunching to mountable kerbs	m^3	30		
2,11	**TRAFFIC SIGNS**				
2.11.1	Supply and erect road signs to Ministry of Transport specifications	No	3		
2,12	**CARRIAGEWAY MARKINGS**				
2.12.1	Supply all materials and apply carriageway markings as directed on site	m^2	127		
2,13	Allow for carrying-out of own quality control tests including density tests & material grading test to confirm compliance before advising Engineer who might order independent tests.	Sum	1		
	TOTAL CARRIED TO SUMMARY				

Bill No. 3

ITEM	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
3	**CITY ROAD 2 (CH 0-340) ROADS AND STORMWATER**				
3,1	**SUBGRADE**				
3.1.1	Allow for clearing of road reserve including vegetative matter, bushes, trees and stumps up to 1m girth and cart off site to municipal and engineer approved dump site within 20km radius.	m^2	8500		
3.1.2	Remove trees and stumps of girth more than 1m, including stacking and grubbing roots.	No	7		
3,2	**EARTHWORKS**				
3.2.1	Remove topsoil to a depth of 150mm to roadbed width, and cart off site to municipal and engineer approved dump site within 20km radius.	m^3	670		
3.2.2	Excavate unsuitable subgrade material to roadbed (average depth of 600mm) and cart off site to municipal and engineer approved dump site within 20km radius.	m^3	3528		
3.2.3	Excavate for removal of anthills and cart off site to municipal approved dump site	m^3	45		
3.2.4	Allow for termite-treatment of anthills using an approved ant-killer at the specialist's approved rate.	m^2	74		
3.2.5	Excavation in rock material and stockpile on site	m^3	706		
	SUBTOTAL CARRIED FORWARD				

ITEM	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
	SUBTOTAL BROUGHT FORWARD				
3.2.6	Allow for loading and hauling of excavated rock material to a municipal approved dump site within a radius of 20km from site.	m^3	706		
3,3	**SUBGRADE PREPARATION**				
3.3.1	Shape road formation; scarify 150mm deep, water & compact subgrade to 93% LCE	m^2	4420		
3,4	**BORROW MATERIAL FOR PAVEMENT**				
3.4.1	Identify borrow pit for base material and prepare same including payments for the gravel to authorities. **(For the purpose of this tender Warren Park gravel pits are to be used).**	Sum	1		
3.4.2	Excavate, sort, stockpile and safe- keep gravel at approved borrow pit (compacted volume).	m^3	1330		
3.4.3	Load, haul approved gravel material from borrow pit to site (compacted volume).	m^2	1330		
3.4.4	Import crusher-run for sub-base (compacted volume).	m^3	1330		
3.4.5	Fill in layers of 150 mm thick (compacted volume) to form sub-base with allowance for vee –drains and water and compact the following				
3.4.5.1	i) gravel to 98% HCE (compacted volume)	m^3	1330		
3.4.5.2	ii) crusher-run to 100% HCE (compacted volume)	m^3	1330		
3,5	**BITUMINOUS SURFACING**				
3.5.1	PRIME				
3.5.1.1	a) Supply all materials and apply single seal bituminous surfacing as specified (6.7 stone size)	m^2	RO		
	SUBTOTAL CARRIED FORWARD				

ITEM	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
	SUBTOTAL BROUGHT FORWARD				
3.5.1.2	b) Supply all materials and apply double seal bituminous surfacing as specified (13.2/6.7 stone size)	m^2	3740		
3,6	**CULVERTS AND STORMWATER DRAINS**				
3.6.1	Clear and setout along routes of mitre and stormwater water drains an average width of 2m.	m	690		
3.6.2	Excavate in pickable material, (depth n.e 1.0m) for V-drains as per drawing.	m^3	830		
3.6.3	Allow for loading and hauling of excavated pickable material to a municipal approved dump site within a radius of 20km from site.	m^3	830		
3.6.4	Excavation in hard pickable material and stockpile on site.	m^3	415		
3.6.5	Allow for loading and hauling of excavated hard pickable material to a municipal approved dump site within a radius of 20km from site.	m^3	415		
3.6.6	Excavation in rock material and stockpile on site.	m^3	166		
3.6.7	Allow for loading and hauling of excavated rock material to a municipal approved dump site within a radius of 20km from site.	m^3	166		
3,7	**DRAIN LINING**				
3.7.1	Compact bottom of excavation and prepare to receive concrete lining	m^2	414		
3.7.2	Compact side disturbed material to 93% HCE and prepare to receive concrete lining.	m^2	1449		
3.7.3	Supply and cast Grade 10 concrete for 75mm thick lining to trapezoidal drains with S193 mesh reinforcement (Rate to include formwork)	m^3	140		
	SUBTOTAL CARRIED FORWARD				

ITEM	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
	SUBTOTAL BROUGHT FORWARD				
3.7.4	Import gravel, backfill and compact to specification on sections with culverts.	m^3	179		
3.7.5	Compact bottom of culverts to specification and prepare to receive mass concrete	m^2	179		
3.7.6	Supply and cast Grade 20 concrete base for culvert (Rate to include formwork)	m^3	54		
3,8	**CULVERT PIPES**				
3.8.1	Supply and install Class S standard reinforced stormwater pipes with interlocking Ogee joints for underground drainage pipes 600mm in diameter	m	149		
3.8.2	Supply and cast concrete to haunches and surround Grade 20 (Rate to include formwork)	m^3	120		
3.8.3	**Backfilling**				
	Backfilling with selected excavated material to sections with culvert pipes	m^3	54		
3,9	**CULVERT END TREATMENT**				
3.9.1	a) Stone pitching to end of pipes	m^2	35		
3.9.2	b) Excavate for, supply all materials including cover grating and construct catchpits up to a depth of 1m as detailed	No	5		
3.9.3	Construct culvert headwalls with industrial bricks complete with concrete bases as shown on the drawings	No	26		
3,10	**TRAFFIC SIGNS**				
3.10.1	Supply and erect road signs to Ministry of Transport specifications	No	4		
3,11	**CARRIAGEWAY MARKINGS**				
3.11.1	Supply all materials and apply carriageway markings as directed on site	m^2	51		
3,12	Allow for carrying-out of own quality control tests including density tests & material grading test to confirm compliance before advising Engineer	Sum	1		2,13

	who might order independent tests.				
	TOTAL CARRIED TO SUMMARY				

Bill No. 4

CITY ROAD 3					
ITEM	**DESCRIPTION**	**UNIT**	**QUANTITY**	**RATE**	**AMOUNT**
4	**CITY ROAD 3-CH0-440**				
	ROADS AND STORMWATER	-			
4,1	**SUBGRADE**				
4.1.1	Allow for clearing of road reserve including vegetative matter, bushes, trees and stumps up to 1m girth and cart off site to municipal and engineer approved dump site within 20km radius.	m^2	10900		
4.1.2	Remove trees and stumps of girth more than 1m, including stacking and grubbing roots.	No	9		
4,2	**EARTHWORKS**				
4.2.1	Remove topsoil to a depth of 150mm to roadbed width, and cart off site to municipal and engineer approved dump site within 20km radius.	m^3	860		
4.2.2	Excavate unsuitable subgrade material to roadbed (average depth of 600mm) and cart off site to municipal and engineer approved dump site within 20km radius.	m^3	4522		
4.2.4	Excavate for removal of anthills and cart off site to municipal approved dump site within 20km	m^3	57		
4.2.5	Allow for termite-treatment of anthills using an approved ant-killer at the specialist's approved rate.	m^2	95		
4.2.6	Excavation in rock material and stockpile on site	m^3	905		
	SUBTOTAL CARRIED FORWARD				

ITEM	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
	SUBTOTAL BROUGHT FORWARD				
4.2.7	Allow for loading and hauling of excavated rock material to a municipal approved dump site within a radius of 20km from site.	m^3	905		
4,3	**SUBGRADE PREPARATION**				
4.3.1	Shape road formation; scarify 150mm deep, water & compact subgrade to 93% LCE	m^2	5668		
4,4	**BORROW MATERIAL FOR PAVEMENT**				
4.4.1	Identify borrow pit for base material and prepare same including payments for the gravel to authorities. **(For the purpose of this tender Warren Park gravel pits are to be used).**	Sum	1		
4.4.2	Excavate, sort, stockpile and safe-keep gravel at approved borrow pit (compacted volume).	m^3	1700		
4.4.3	Load, haul approved gravel material from borrow pit to site (compacted volume).	m^2	1700		
4.4.4	Import crusher-run for sub-base (compacted volume).	m^3	1700		
4.4.5	Fill in layers of 150 mm thick (compacted volume) to form sub-base with allowance for vee –drains and water and compact the following				
4.4.5.1	i) gravel to 98% HCE (compacted volume)	m^3	1700		
4.4.5.2	ii) crusher-run to 100% HCE	m^3	1700		
4,5	**BITUMINOUS SURFACING**	-			
4.5.1	PRIME				
4.5.1.1	a) Supply all materials and apply single seal bituminous surfacing as specified (6.7 stone size)	m2	RO		
	SUBTOTAL CARRIED FORWARD				

ITEM	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
	SUBTOTAL BROUGHT FORWARD				
4.5.1.2	b) Supply all materials and apply double seal bituminous surfacing as specified (13.2/6.7 stone size)	m^2	4796		
4,6	**CULVERTS AND STORMWATER DRAINS**				
4.6.1	Clear and set out along routes of mitre and stormwater water drains an average width of 2m.	m	880		
4.6.2	Excavate in pickable material, (depth n.e 1.0m) for V-drains as per drawing.	m^3	1056		
4.6.3	Allow for loading and hauling of excavated pickable material to a municipal approved dump site within a radius of 20km from site.	m^3	1056		
4.6.4	Excavation in hard material and stockpile on site.	m^3	528		
4.6.5	Allow for loading and hauling of excavated hard pickable material to a municipal approved dump site within a radius of 20km from site.	m^3	528		
4.6.6	Excavation in rock material and stockpile on site.	m^3	215		
4.6.7	Allow for loading and hauling of excavated rock material to a municipal approved dump site within a radius of 20km from site.	m^3	215		
4,7	**DRAIN LINING**				
4.7.1	Compact bottom of excavation and prepare to receive concrete lining	m^2	528		
4.7.2	Compact side disturbed material to 93% HCE and prepare to receive concrete lining.	m^2	1848		
	SUBTOTAL CARRIED FORWARD				

ITEM	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
	SUBTOTAL BROUGHT FORWARD				
4.7.3	Supply and cast Grade 10 concrete for 75mm thick lining to trapezoidal drains with S193 mesh reinforcement (Rate to include formwork)	m^3	180		
4.7.4	Import gravel, backfill and compact to specification on sections with culverts.	m^3	67		
4.7.5	Compact bottom of culverts to specification and prepare to receive mass concrete	m^2	222		
4.7.6	Supply and cast Grade 20 concrete base for culvert (Rate to include formwork)	m^3	67		
4,8	**CULVERT PIPES**				
4.8.1	Supply and install Class S standard reinforced stormwater pipes with interlocking Ogee joints for underground drainage pipes 600mm in diameter	m	185		
4.8.2	Supply and cast concrete to haunches and surrounds Grade 20 (Rate to include formwork)	m^3	148		
4.8.3	**Backfilling**				
	Backfilling with selected excavated material to sections with culvert pipes	m^3	67		
4,9	**CULVERT END TREATMENT**				
4.9.1	a) Stone pitching to end of pipes	m^2	46		
4.9.2	b) Excavate for, supply all materials including cover grating and construct catchpits up to a depth of 1m as detailed	No	5		
4.9.3	Construct culvert headwalls with industrial bricks complete with concrete bases as shown on the drawings	No	34		
4,1	**TRAFFIC SIGNS**				
4.10.1	Supply and erect road signs to Ministry of Transport specifications	No	4		
4,11	**CARRIAGEWAY MARKINGS**				
4.11.1	Supply all materials and apply carriageway markings as directed on site	m^2	66		
4,12	Allow for carrying-out of own quality control tests including density tests & material grading test to confirm compliance before advising Engineer	Sum	1		2,13

	who might order independent tests.				
	SUBTOTAL CARRIED TO SUMMARY				

Notes to Gravel & Crusher Run measurement

(a) **Excavated materials** to be cart-off site will be measured after bulking is considered, i.e. the actual volume cart-off site or use of a bulking factor of 1.33 in the absence of measurement.

(b) **Compacted material** will be measured net after compaction, i.e. only the measured COMPACTED volume will be certified. Bidder is to allow for this is pricing.

Bill No. 5

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
5.0	**SEWER RETICULATION**				
5.1	**EARTHWORKS**				
5.1.1.	Allow for setting out of pipeline routes	sum	1		
5.1.1.	Clear and setout suitable width for pipeline route of all grass and bushes (minimum 2m). Include trees n.e. 1.0m girth	m	1908		
5.1.1.	Remove all trees or stumps of girth measured 1.0m above ground level or at highest point of stump				
5.1.1.	Exceeding 1.0m n.e. 2,0m girth	No	4		
5.1.1.	Exceeding 2.0m girth	No	4		
5.2	Excavate trenches in suitable width **minimum** 700mm wide in all materials, return fill and ram as specified (tenderer to price for suitable/practical width of excavation). Rate to include shoring.				
5.2.1	For 160mm dia. sewer pipe and below				
5.2.1.1	depth n.e. 1m	m	10		
5.2.1.2	depth between 1m - 1.5m	m	295		
5.2.1.3	depth between 1.5m - 2.0m	m	423		
5.2.1.4	depth between 2.0m - 2.5m	m	295		
5.2.1.5	depth between 2,5m - 3.0m	m	295		
5.2.1.6	depth between 3m - 3,5m	m	295		
5.2.1.7	depth exceeding 3.5m	m	295		
5.2.2	For 200mm dia sewer pipe				
5.2.2.1	depth n.e. 1m	m	RO		
5.2.2.2	depth between 1m - 1.5m	m	RO		
5.2.2.3	depth between 1.5m - 2.0m	m	RO		
5.2.2.4	depth between 2.0m - 2.5m	m	RO		
5.2.2.5	depth between 2,5m - 3.0m	m	RO		
	SUBTOTAL CARRIED FORWARD				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	SUBTOTAL BROUGHT FORWARD				
5.3.1	Extra over for excavation and backfilling across roadways. Rate to include reinstatement of roadways	m	89		
5.3.2	Allow for disposal of excess excavated material to municipal approved dumpsite.	m^3	1002		
5.3.3	Extra over all excavation rates for excavation in rock material	m^3	1002		
5.4	Backfill from selected excavated material stockpiled onsite and compact.	m^3	3411		
5.5	Supply, lay, 50mm river sand bedding for all PIPES, Backfill with 50 mm river sand to 50mm above pipe crown	m3	596		
5.6	**SEWER PIPELAYING**				
5.6.1	Supply, lay, bed, joint and test the following class 16 sewer pipes including all joints and accessories.				
5.6.1.1	(i) 200 ϕ AC pipes	m	RO		
5.6.1.2	(ii) 150 ϕ AC pipes	m	RO		
5.6.1.3	(iii) 200 ϕ PVC pipes	m	RO		
5.6.1.4	(iv) 160 ϕ PVC pipes	m	1908		
5.6.1.5	(v) 110 ϕ PVC pipes	m	RO		
5.7	**MANHOLE**				
	Miscellaneous				
5.7.1	Supply, lay, joint and test Y-junctions. Install in blanked off pipes for house connections as directed				
5.7.1.1	a) 200 x 110	Nos	RO		
5.7.1.2	a) 160 x 110	Nos	33		
5.7.2	Construct 915mm nominal diameter manholes as detailed with precast concrete covers and frames and complete with step irons.				
5.7.2.1	depth between 1m - 1.5m	Nos	5		
5.7.2.2	depth between 1.5m - 2.0m	Nos	5		
	SUBTOTAL CARRIED FORWARD				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	SUBTOTAL BROUGHT FORWARD				
5.7.3	Construct 1 050mm nominal diameter manholes as detailed with precast concrete covers and frames and complete with step irons.				
5.7.3.1	depth between 2.0m - 2.5m	Nos	10		
5.7.3.2	depth between 2.5m - 3.0m	Nos	10		
5.7.3.3	depth between 3.0m - 3.5m	Nos	3		
5.7.3.4	depth exceeding - 3.5m	Nos	RO		
5.7.4	Construct 1 200mm nominal diameter manholes as detailed with precast concrete covers and frames and complete with step irons.				
5.7.4.1	For 315mm ϕ pipes	Nos	RO		
5.8	Extra over for drop maholes	Nos	3		
5.9	Supply grade 10 concrete for manhole bases	m^3	10		
5.10	Test manholes as specified.	Nos	RO		
5.11	Stopper plugs and markers as detailed.	Nos	RO		
	TOTAL CARRIED TO SUMMARY				

Bill No. 6

ITEM	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
6.0	**WATER RETICULATION**				
6.1	**SITE CLEARANCE**				
6.1.1	Allow for setting out of pipeline routes	sum	1		
6.1.2	Setout clear and grub along water line route to a minimum width of 2m including removal of trees with girth n.e. 0,5m	m	2545		
6.1.3	Remove and grub trees with girth exceeding 0,5m	No	4		
6.1.4	Remove topsoil to a nominal depth of 100mm from trench width, stockpile and conserve.	m^3	406		
6.2	**EXCAVATION AND BACKFILLING**				
	Excavate 700mm wide trenches for 160mm diameter pipes and allow for refilling and compaction after pipe installation (rate to allow for shoring).				
6.2.1	i) Depths up to 1,0m.	m	RO		
6.2.2	ii) Depths over 1,0 deep up to 1,5m.	m	2545		
6.3	Trim bottom of trenches excavated in hard material and rock 75mm below barrow of pipe and refill with selected material compacted to 95% L.C.E. to form the pipe bedding.	m^2	2545		
6.4	E/O item for excavation in rock material irrespective of depth as specified	m^3	611		
6.5	Allow for disposal of excess excavated material to municipal approved dumpsite.	m^3	611		
	SUBTOTAL CARRIED FORWARD				

ITEM	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
	SUBTOTAL BROUGHT FORWARD				
6.6	Extra over item 3.7 for additional compaction up to 95% H.C.E when refilling trenches at road crossings.	m	250		
6.7	Backfill from selected excavated material stockpiled onsite and compact.	m^3	3040		
6.8	Supply, lay, 50mm river sand bedding for all PIPES, Backfill with 50 mm river sand to 50mm above pipe crown	m^3	535		
6.9	**PIPELAYING**				
6.9.1	Supply, inspect, deliver to site, unload, handle, lay, joint and test PVC pipes as specified, including all collars and other special fittings, including for cutting and wasting of pipes the following.				
6.9.1.1	PVC pipes in 4m lengths				
6.9.1.2	i) 200mm dia - Class 16	m	RO		
6.9.1.3	ii) 160mm dia - Class 16	m	RO		
6.9.1.4	iii) 110mm dia - Class 16	m	2030		
6.9.1.5	vi) 75mm dia - Class 16	m	RO		
6.9.1.6	v) 63mm dia-Class 16	m	500		
6.10	Galvanised Pipes for Stand Connections including fittings	No	31		
6.11	Supply lay 50mm PVC pipes across roadways	m	RO		
6.12	Plan ended sluice gate valves as specified with 2 CISC joints 160mm	No	8		
6.13	Supply and lay cast iron hydrant tees with 75mm flanged branch drilled 160mm.	No	20		
	SUBTOTAL CARRIED FORWARD				
ITEM	**DESCRIPTION**	**UNIT**	**QUANTITY**	**RATE**	**AMOUNT**

	SUBTOTAL BROUGHT FORWARD				
6.14	Supply, install and test fire hydrants complete with 75mm double flanged gate valve class 16, duck foot bend and adapters piece with cap including all bolts, nuts and gaskets.	No	20		
6.15	Supply and install marker plates with supporting posts. Contractor to drill posts as required and supply bolts rivets, bolts ends to be hammered over. Allow for supply and welding on 200mm x 200mm x 3mm Ms base plate to be painted after installation.	No	28		
6.16	a) Supply materials for and construct concrete thrust blocks including all necessary rough shuttering.	No	16		
6.17	b) Construct valve chambers as specified	No	28		
6.18	Allow for concrete surround where directed.	m^3	10		
	TOTAL CARRIED TO SUMMARY				

Bill No. 7

PROVISIONAL SUMS

ITEM	DESCRIPTION OF WORK	QTY	UNIT	RATE	AMOUNT
7.0	**PUMP STATION**				
7.1	Allow a provisional sum of five hundred thousand dollars only for the provision of a pump station.	1	Sum	500 000	500 000
7.1.1	Allow for attendance	1	___%		
7.1.2	Allow for profit	1	___%		
7.2	Allow a provisional sum of thirty thousand dollars only for quality control tests (NB: not to be confused with contractor's own tests).	1	Sum	30 000	30 000
7.2.1	Allow for attendance	1	___%		
7.2.2	Allow for profit	1	___%		
7.3	Allow a provisional sum of ten thousand dollars only for client's covid 19 protocols (NB: not to be confused with contractor's own protocols).	1	Sum	10 000	10 000
7.3.1	Allow for attendance	1	___%		
7.3.1	Allow for profit	1	___%		
7.4	Allow a provisional sum of ten thousand dollars only for client's use in pegs re-establishment (this amount may be omitted in full or in part)	1	Sum	10 000	10 000
	Allow for attendance	1	___%		
	Allow for profit	1	___%		
	TOTAL CARRIED TO SUMMARY				

(NB: These amounts may be omitted in full or in part. If omitted in full then no allowance for profit or attendance shall accrue to the contractor.)

FINAL SUMMARY

BILL No	DESCRIPTION	AMOUNT ($)
Bill No 1	PRELIMINARIES & GENERAL	
Bill No 2	CITY ROAD 1	
Bill No 3	CITY ROAD 2	
Bill No 4	CITY ROAD 3	
Bill No 5	SEWER	
Bill No 6	WATER	
Bill No 7	PROVISIONAL SUMS	
	SUB TOTAL 1	
	ADD 15% CONTINGENCIES	
	SUB TOTAL 2	
	ADD 14.5% VAT	
	GRAND TOTAL	

Schedule of Activities

N/A

Name of Bidder:

Bidder's Reference Number:

Currency of Bid: _____

Item No	Activities of Works	Unit	Total Price
		Lump-sum	
		Lump-sum	
		Lump-sum	
		Lump-sum	
		Lump-sum	
		Lump-sum	
		Lump-sum	
		Lump-sum	
		Lump-sum	
		Grand Total	

Form of Bid Security
Bid-Securing Declaration

{The Bidder must fill in this Form in accordance with the instructions indicated, where it has been stated in the Bidding Procedures that a Bid-Securing Declaration is a requirement of bidding}.

Procurement Reference number:

Date: ……*[date (in day, month and year format)]*

Bidder's Reference Number:

To: *{full name of Procuring Entity}*

We, the undersigned, declare that:

We understand that, according to the terms and conditions of your bidding documents, bids must be supported by a Bid-Securing Declaration.

We accept that we may be debarred from being eligible for bidding for any contract with a Procuring Entity in Zimbabwe for a period of time to be determined by the Authority, if we are in breach of our obligation(s) under the bidding conditions, because:

(a) we have withdrawn our Bid during the period of Bid validity; or

(b) having been notified of the acceptance of our Bid by the Procuring Entity during the period of bid validity, we fail or refuse to execute the Contract.

We understand this Bid Securing Declaration will expire if we are not the successful Bidder, either when we receive your notification to us of the name of the successful Bidder; or twenty-eight days after the expiration of our Bid, whichever is the earlier.

Signed …….. **Name:** ……

In capacity of: …….. **Date:** ……*(DD/MM/YY)*

Duly authorised for and on behalf of:

Company ……

Address: ……

……

Corporate Seal (where appropriate)

{Note: In case of a Joint Venture, the Bid Securing Declaration must be in the name of all the partners to the Joint Venture that submits the Bid.}

Declaration by the Accounting Officer

I declare that the procurement is based on neutral and fair technical requirements and bidder qualifications.

Signed	……..	**Name:**	……
In capacity of:	……..	**Date:**	……*(DD/MM/YY)*

Duly authorised for and on behalf of:

Company ……

Address: ……

……

Corporate Seal (where appropriate)

PART 3 CONTRACT

General Conditions of Contract

Any resulting contract is subject to the Zimbabwe General Conditions of Contract (GCC) for the Procurement of Non-Complex Works (copy available on request) except where modified by the Special Conditions below.

Special Conditions of Contract

Procurement Reference Number: ……

The clause numbers given in the first column correspond with the relevant clause number of the General Conditions of Contract.

GCC reference	Special Conditions
1.1(g)	**The Contractor is: _____**
1.1(q)	**The Intended Completion Date for the Whole Works is: _____**
1.1(t)	**The Procuring Entity is: _____**
1.1(v)	**The Project Manager is: _____**
1.1(w)	**The Site is located at: _____**
1.1(z)	**The Start Date shall be: _____**
1.1(cc)	**The Works consist of:** _____ _____
2.2	**The documents that form part of the Contract shall be following:** a. the Contract Agreement, b. the Letter of Acceptance, c. the Contractor's Bid Submission Sheet, d. the Special Conditions of Contract, e. the General Conditions of Contract, f. the Procuring Entity's Requirements, g. the Contractor's Bill of Quantities or Schedule of Activities (as applicable), and h. any other documents submitted by the Contractor forming part of the

GCC reference	Special Conditions
	Contract. The priority of the documents shall be in the aforementioned order. If there is any discrepancy or inconsistency, the Project Manager shall issue any necessary clarification.
2.3	**The Contract is a:** *[an admeasurement contract]*
3.1	**The Language of the Contract is English.** The Law governing the Contract is that of the Republic of Zimbabwe.
4.1	The Project Manager's decision shall be limited to the following: (a) issuing a variation order equal to 15% of the Initial Contract Amount in accordance with GCC Sub-clause 29.1(b); (b) adjusting the Contract Price by up to 10% of the Contract Amount when a Compensation Event causes additional cost in accordance with GCC Sub-clause 33; and (c) any consequent extension of time that should be issued under (a) and (b). On circumstances that exceeded the aforementioned limits, prior approval of the Procuring Entity is required.
7	**7.1 The limit of subcontract is: No limit_____** If subcontracting is allowed, this shall not diminish or affect the contractor's responsibility for fulfilling its obligations under a Contract **7.2 The Schedule of Other Contractors is:**
10.1	**The minimum insurance amounts and deductibles shall be**: (a) for loss or damage to the Works, Plant and Materials: *[Full Contract Sum]*. (b) For loss or damage to Equipment: *[Full Value of Equipment]*. (c) for loss or damage to property (except the Works, Plant, Materials, and Equipment) in connection with Contract *[USD 20 000 - 00]*. (d) for personal injury or death: (i) of the Contractor's employees: *[USD 15 000 - 00]*. (ii) of other people: *[USD 10 000 - 00]*.
16.1	**The Site Possession Date shall be**:
19.1	The Contractor shall submit a Program for the Works within 14 days after the date of the Letter of Acceptance.

GCC reference	Special Conditions
19.3	Program updates shall be as required specifically by the Project Manager of the Procuring Entity. The Contractor shall submit for approval an updated Program for the Works within 7 days from the date of any change made to the Contract.
26.1	**The Defects Liability Period is**: *[12]* months.
34.2	**Adjustment of the Contract Price**: The Project Manager shall not adjust the Contract Price if taxes, duties, and other levies are changed during the period from Start date to the date of the Completion certificate.
35.1	The retention shall be *[10 % with half of it being released at Issuance of Certificate of Practical Completion but after receipt of As-built drawings & manuals]*.
36.1	The Liquidated Damages shall be _USD 2000 - 00 per day of delay. The total liquidated damages (LD) shall not exceed (*10% of the Contract SUM)*
38.1	No advance payment shall be made. OR The advance payment shall not exceed 15% of the Contract Price for domestic contractors and 10% for foreign contractors, and shall be paid to the Contractor no later than *[insert date]* from receipt of an acceptable Bank Guarantee.
39.1	The Performance Security shall be in the form of a Bank Guarantee and in the amount of _10% of the Contract Amount. *[A **Bank Guarantee** shall be unconditional (on demand) (see Part 3. Contract Forms).]*
42.1	The Contract Administration Fee set out in Part V of the Fifth Schedule of the Regulations is due upon the signing of the Contract and the applicable Fee is $ *[State applicable Fee or delete]*.
46	**46.1** The date to supply "as-built drawings and/or operating manuals shall be within 14 days following issue of Completion Certificate. **46.2** The amount to be withheld shall be _5% of the Contract Sum
49.1	The percentage to apply to the value of the work not completed, representing the Procuring Entity's additional cost for completing the Works, is *[insert percentage]*.

Contract Forms

This Section contains forms which, once completed, will form part of the Contract. The forms for Performance Security and Advance Payment Security, when required, should only be completed by the successful Bidder after contract award.

Table of Forms

LETTER OF ACCEPTANCE

[To be produced on letterhead paper of the Procuring Entity]

To:

[name and address of the successful Tenderer]

Subject: Letter of Acceptance

This is to notify you that your Bid dated……. *[insert date]* for the execution of the . . . . . *[insert name of the contract and procurement reference number,]* for the Accepted Contract Amount of the equivalent of . . . . . *[insert amount in numbers and words and name of currency]*, as corrected and modified in accordance with the Instructions to Bidders is hereby accepted by the Procuring Entity.

You are requested to furnish the Performance Security within 28 days in accordance with the Conditions of Contract, using for that purpose the Performance Security Form included in Section 3 (Contract Forms) of the Bidding Document. *[Delete page if no Performance Security is required in the SCC]*

Signed:	……..…*[insert signature of authorised person]*
Name:	……..……[*insert complete name of person signing]*
In the capacity of:	……..……...[*insert legal capacity of person signing]*
Duly authorized to sign the letter of acceptance for and on behalf of	……..……...[*insert complete name of Procuring Entity]*
Date:	…….. day of ……..…….. ……*{DD/MM/YY}*

Attachment: Contract Agreement

CONTRACT AGREEMENT

Procurement Reference:…….

THIS CONTRACT AGREEMENT is made the *[insert: **date**]* day of *[insert: **month**]*, *[insert: **year**]*.

BETWEEN

(1) *[insert complete name of Procuring Entity]*, a *[insert description of type of legal entity, for example, an agency of the Ministry of .... of the Government of Zimbabwe, or corporation incorporated under the laws of Zimbabwe]* and having its principal place of business at *[insert full postal address of Procuring Entity]* (hereinafter called "the Procuring Entity"), and

(2) *[insert name of Contractor]*, a corporation incorporated under the laws of *[insert: country of Contractor]* and having its principal place of business at *[insert full postal address of Contractor]* (hereinafter called "the Contractor").

WHEREAS the Procuring Entity desires that the Works known as *[name of the Contract]* should be executed by the Contractor, and has accepted a Bid by the Contractor for the execution and completion of these Works and for the remedying of any defects in them,

THE PROCURING ENTITY AND THE CONTRACTOR AGREE AS FOLLOWS:

1. In this Agreement words and expressions shall have the same meanings as are assigned to them in the General and Special Conditions of Contract referred to below.

2. The following documents shall constitute the Contract between the Procuring Entity and the Contractor, and each shall be read and construed as an integral part of the Contract:

   (a) This Contract Agreement;

   (b) The Letter of Acceptance;

   (c) The Contractor's Bid;

   (d) The Special Conditions of Contract;

   (e) The General Conditions of Contract;

   (f) The Procuring Entity's requirements (Specifications and Drawings);

   (g) The completed Bill of Quantities or Schedule of Activities; and

   (h) *[Add here any other document(s)]*.

3. This Contract Agreement shall prevail over all other Contract Documents. In the event of any discrepancy or inconsistency within the Contract Documents, then the documents shall prevail in the order listed above.

4. In consideration for the payments to be made by the Procuring Entity to the Contractor as mentioned below, the Contractor hereby agrees with the Procuring Entity to execute the Works and to remedy any defects in them in conformity with the Contract.

5. The Procuring Entity hereby agrees to pay the Contractor, in consideration for the execution and completion of the Works and the remedying of any defects in them, the Contract Price or such other sum as may become payable under the Contract at the times and in the manner prescribed by the Contract.

IN WITNESS WHEREOF the parties hereto have caused this Agreement to be executed in accordance with the laws of Zimbabwe on the day, month and year indicated above.

For and on behalf of the Procuring Entity

Signed:	……..
Name:	
In the capacity of:	*[Title or other appropriate designation]*

For and on behalf of the Contractor

Signed:	……..
Name:	……..
In the capacity of:	……*[Title or other appropriate designation]*

*[**Note**: If the Contractor consists of more than one entity, all these entities should appear as signatories, e.g., in the following manner:]*

For and on behalf of each member of the Joint Venture

Signed:	……..
Name of member:	……
In the capacity of:	*[Title or other appropriate designation]*

Signed:	……..……..
Name of member:	……
In the capacity of:	*[Title or other appropriate designation]*

BANK GUARANTEE FOR PERFORMANCE SECURITY

[Delete page if no Performance Security is required in the SCC]
[The issuing bank, as requested by the successful Bidder, must fill in this form in accordance with the instructions indicated]

Date: *[insert date (as day, month, and year)]*

Title of the procurement: *[Insert general title of the procurement]*

Procurement Reference No: *[insert reference]*

Bank's Branch or Office: *[insert complete name of Guarantor]*

Beneficiary: *[insert complete name of Procuring Entity]*

Performance Guarantee No:

We have been informed that …….. *[name of the Contractor]*, (hereinafter called "the Contractor") has entered into Contract No. . . . . *[procurement reference number of the Contract]*. dated *[insert day and month]*, *[insert year]*, with you, for the execution of …….. *[name of contract and brief description of Works]* (hereinafter called "the Contract").

Furthermore, we understand that, according to the conditions of the Contract, a performance guarantee is required.

At the request of the Contractor, we ……. *[name of the Bank]* hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of …… *[name of the currency and amount in figures]* [1]…. (. . . . . *[amount in words]*) such sum being payable in the types and proportions of currencies in which the Contract Price is payable, 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 the . . . . . day of . . . . . , ... [2], and any demand for payment under it must be received by us at this office on or before that date. The Guarantor agrees to a one-time extension of this guarantee for a period not to exceed ….*[six months][one year]*, in response to the Procuring Entity's written request for such extension, such request to be presented to the Guarantor before the expiry of the guarantee.

This guarantee is subject to the Uniform Rules for Demand Guarantees, ICC Publication No. 758, except that subparagraph (ii) of Sub-article 20(a) is hereby excluded.

. . . . . .

[Seal of Bank and Signature(s)]

Note –

All italicized text is for guidance on how to prepare this demand guarantee and shall be deleted from the final document.

[1] *The Guarantor shall insert an amount representing the percentage of the Contract Price specified in the Contract and denominated either in the currency(ies) of the Contract or a freely convertible currency acceptable to the Procuring Entity.*

[2] *Insert the date twenty-eight days after the expected completion date. The Procuring Entity should note that in the event of an extension of the time for completion of the Contract, the Procuring Entity would need to request an extension of this*

guarantee from the Guarantor. Such request must be in writing and must be made prior to the expiration date established in the guarantee.

ADVANCE PAYMENT SECURITY

[Delete page if no Advance Payment is required in the SCC]
[The bank, as requested by the successful Tenderer, shall fill in this form in accordance with the instructions indicated.]

Date: *[insert date (as day, month, and year)]*
Procurement Reference No: *[insert reference]*

[Issuing bank's letterhead]

Beneficiary: *[insert legal name and address of Procuring Entity]*

ADVANCE PAYMENT GUARANTEE No.: *[insert Advance Payment Guarantee no.]*

We have been informed that ……. *[name of the Contractor]* (hereinafter called "the Contractor") has entered into Contract No……. *[procurement reference number of the Contract]*, dated *[insert day and month]*, *[insert year]* with you, for the execution of …….. *[name of contract and brief description of Works]* (hereinafter called "the Contract").

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

At the request of the Contractor, we …….. *[name of the Bank]*. hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of …….. *[name of the currency and amount in figures]****** (……. *[amount in words]*) 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 under the Contract because the Contractor used the advance payment for purposes other than the costs of mobilization in respect of the Works.

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 on its account number …….*[Contractor's account number].* at …….. *[name and address of the Contractor's Bank]*.

The maximum amount of this guarantee shall be progressively reduced by the amount of the advance payment repaid by the Contractor as indicated in copies of interim statements or payment certificates which shall be presented to us. This guarantee shall expire, at the latest, upon our receipt of a copy of the interim payment certificate indicating that eighty (80) percent of the Contract Price has been certified for payment, or on the ….. day of …….. [2], whichever is earlier. Consequently, any demand for payment under this guarantee must be received by us at this office on or before that date. The Guarantor agrees to a one-time extension of this guarantee for a period not to exceed *[six months][one year]*, in response to the Procuring Entity's written request for such extension, such request to be presented to the Guarantor before the expiry of the guarantee.

This guarantee is subject to the Uniform Rules for Demand Guarantees, ICC Publication No. 758.
……

[Seal of Bank and Signature(s)]……

Note –

All italicized text is for guidance in preparing this demand guarantee and shall be deleted from the final document.

1 The Guarantor shall insert an amount representing the amount of the advance payment denominated either in the currency(ies) of the advance payment as specified in the Contract, or in a freely convertible currency acceptable to the Procuring Entity.

2 Insert the expected expiration date of the Time for Completion. The Procuring Entity should note that in the event of an extension of the time for completion of the Contract, the Procuring Entity would need to request an extension of this guarantee from the Guarantor. Such request must be in writing and must be made prior to the expiration date established in the guarantee.

PREAMBLES TO TRADE

HARDSTAND SPECIFICATIONS

EARTHWORKS

Preambles

The Standard Specification for earthworks shall be the South African Bureau of Standards Standardized Specification for Civil Engineering Construction SABS 1200 D - 1988 (Amended 1990) Earthworks and the Equivalent Standards Association of Zimbabwe Standards (SAZS). Where there is a conflict between the standards SABS shall be adopted.

The said Specification shall be amended and or amplified as set out below.

CLASSIFICATION OF MATERIALS FOR EXCAVATION PURPOSES

The Contractor shall immediately notify the Engineer in writing if during excavation he encounters any material which in his opinion should be classified as excavation other than soft excavation. Immediately on receipt of the Contractor's notification, the Engineer shall inspect the material and order the Contractor to carry out trial excavations using equipment and methods described in Clause 3.1 of SABS 1200-D. The opinion of the Engineer after the trial excavations are completed as to the class of excavation shall be final. Should the Contractor fail to notify the Engineer before proceeding further with excavations considered to be other than soft excavations, the excavation shall be deemed to be soft excavation.

In the case of excavation by hand, the classification of materials shall be as follows:

Soft Excavation:	shall mean excavation which can be carried out efficiently by the use of hand tools.
Intermediate Excavation:	shall mean excavation which cannot be carried out efficiently and economically by the use of hand tools and which require the use of pneumatic tools or mechanical breakers.
Hard or Rock Excavation:	shall mean excavation in rock which can only be removed by blasting.

Use of Explosives

Should blasting be necessary, the Contractor shall take every precaution to protect the Works and persons, animals, and property in the vicinity of the Site. The Contractor will be held responsible for any injury or damage caused by any blasting operations and shall make good such damage at his own expense.

The transport, storage, and use of explosives shall comply with the provisions of the relevant National Statutes.

Standing orders for the use and handling of explosives shall be as per those produced by the Chief Government Mining Engineer.

When blasting to specified profiles, the Contractor shall so arrange the holes and charges that the resulting exposed surfaces are as sound as the nature of the material permits. The Contractor shall make good at his own expense any additional excavation necessitated by the shattering of rock in excess of any overbreak allowance specified in the project specification or in any other earthworks specification or given on a drawing.

Traffic Control

Where the work affects the operation or safety of public road traffic, in addition to complying with the requirements herein the Contractor shall provide, erect, and maintain traffic signs that conform to the requirements of the Roads and Road Traffic (Traffic Signs and Signals) Regulations, as shown on the drawings or stated elsewhere in the specifications.

Where and as ordered or scheduled, or both, warning lights, an adequate number of flagmen, and appropriate barricades clearly visible to oncoming traffic at all times of day and night shall also be provided. If steel drums are used for this purpose they shall be ballasted with soil or sand or stones and the outside white-washed facing oncoming traffic. The drums shall be maintained in a clean and effective condition and no stones shall be placed on them.

Transport for Earthworks

The Free haul distance for disposal of excess excavated material to an approved spoil tip shall be 10km.

EARTHWORKS (PIPE TRENCHES)

Preambles

The Standard Specification for excavating pipe trenches shall be the South African Bureau of Standards Standardized Specification for Civil Engineering Construction SABS 1200 DB-1989 (Amended 1990): Earthworks (Pipe Trenches) and the Equivalent Standards Association of Zimbabwe Standards (SAZS). Where there is a conflict between the standards SABS shall be adopted. The said Specification shall be amended and/or amplified as set out below.

Materials for Reinstatement of Roads and Paved

The Contractor shall reinstate and maintain the surfaces of all roadways through which trenches or other excavations have been made. Should any subsidence occur at the site of such trench or other excavation, the Contractor shall without undue delay restore the road surface to its correct level.

Areas paved with precast slabs, in situ concrete or paving bricks shall be reinstated to their original condition.

Excavations

For payment of intermediate and hard rock, the width of excavation of trenches shall be D + 600. The volume shall be calculated assuming vertical sides. The rate shall be deemed to be inclusive of any widening barters, etc required by the Contractor to suit his chosen method of excavation.

Overhaul of Excess Excavated Material

Free haul distance for disposal of excess excavated material shall be unlimited in the case of disposal along the trench servitude and 10km in the case of disposal to an approved spoil tip.

Shoring and Control of Water Inflow.
The cost of these two items of work shall be deemed to have been included in the rates for excavation.

Water Supply
The Contractor shall provide a proper supply of clean water for use on the works and he will not be allowed to:

a) Use any water taken from any sewers, drains or culverts for any purpose in connection with the works.
b) Use water taken from any river or stream, ditches or pond, except those for which he obtains written permission from the Engineer.

Should piped water from the Municipality supply be available on or near the site the Contractor, if he so desires, may make arrangements with the Harare City Council to have a metered supply of water made available at the nearest practical point to the works.

Under this arrangement the Harare City Council provide (to the contractor's account), at the standard rates, connections and meters and the Contractor must ensure that the standpipes (which he shall provide) shall be securely braced and stayed and that the type of stop-cocks, which he shall also provide shall be of the screw-down type. The Contractor will also ensure that the stopcocks are kept securely locked at all times that they are not in use.

The amount of water that the Contractor uses, as indicated by the meter, will be charged at the current commercial rates. The charges incurred in the use of Municipality water shall be settled by the Contractor as they become due.

At all times the Contractor must be aware of the current restrictions regarding the use of water in Victoria Falls and he must ensure that no wastage of water takes place.

Existing Services

The Contractor must make himself acquainted with the position of all existing services such as storm water drains, water mains, sewers, electric cables, telephone cables, lighting poles, etc., before any excavation is started. Any damages to these services due to his operations will be the responsibility of the Contractor, such damage to be made good at the Contractor's expense.

It will be the Contractor's responsibility to liaise with the Harare City Council or the organisation concerned, to obtain any further information required and to arrange for any particular pipe, cable, etc., to be exposed to judge whether any alterations are required. Such work will usually be done by the organisation concerned, but they may request the Contractor to do so.
In this event the work will be paid for at a separately negotiated rate.

Protection of Fences, Trees, etc.

All fences, walls, trees, shrubs, hedges, etc., required to be maintained shall be protected and kept free from damage due to the operations under the Contract and upon completion of the works shall be handed over in sound condition to Council.

Replacement of Land Survey and Stand Pegs

The Contractor shall be responsible for the preservation of all land survey, stand pegs, boundary pegs, other pegs and beacons. If during the progress of the works any such pegs or beacons are disturbed or removed from any cause whatsoever the Contractor, at his own expense, shall ensure speedy replacement by a Chartered Land Surveyor.

Fires

The Contractor shall take the outmost care to prevent the starting of veld or bush fires by himself, or his employees, and shall indemnify and hold Council in no way liable for any claims that may arise by reason or damage done by veld fires or otherwise that may have been caused in any way by himself or his employees or by reason of his works.
Further he shall be held responsible for any unlawful cutting or removal of trees other than those required to carry out the works, all such timber to remain the property of the Council.

Security and Safety

The Contractor shall, at his own expense, undertake all necessary precautions to prevent loss or damage to his plant and equipment, or his work force, on site.

The Contractor shall not sell, nor allow to be bought, sold nor consumed, any alcohol within the confines of the works.

The Contractor shall erect all fencing barriers, warning signs, flags, lights, etc., necessary to protect the public and the works from danger or damage, at all times and the attention of the Contractor is drawn to the need for insurances in this regard.

Explosives

The Contractor shall conform to all Government, Council and/or other regulations in respect of the storage handling or firing of explosives and he will be held responsible for any neglect of these provisions.

Traffic

The safety of the public and the convenience of traffic shall be the responsibility of the Contractor, at all times, for the duration of the project.

The Contractor shall provide and install adequate barriers, direction and warning signs for the proper control and routing of traffic over deviations and/or past the works. Signs should be simple, clear and easy to read. They must be erected at points such that the motorist has ample time to read and obey the instructions thereon.

All traffic control arrangements must be approved by the Engineer and by the Zimbabwe Republic Police.

In the event the Contractor, sub contracting any section of the works, the Engineer is to be advised of the limits of respective responsibility.

The Contractor shall be responsible for the true and proper setting out of the works. No work shall commence upon any portion of the Contract until such time as ground levels have been taken by the Contractor in an approved manner, and checked and accepted by the Engineer to ensure that a firm basis has been established measurement and setting out purposes. Should the Contractor fail to comply with this clause, the Engineer reserves the right to base the final measurement on other survey data.

CONSTRUCTION MATERIALS

General

Great importance is attached in maintaining a high standard of quality in the various materials made use of by the Contractor during the course of the Contract.

No material whatsoever may be used on the Works without the prior approval of the Engineer, who may undertake field or laboratory tests to determine its suitability. Notwithstanding this, the Contractor shall be wholly responsible for ensuring at all times that all materials used comply, in every respect, with the provisions of this section of the Specification.

The Engineer shall have the right to instruct the Contractor to remove from the site, at his own expense any material proved to be sub-standard, notwithstanding the fact that this material may have already been incorporated in the Works, and to replace it with approved material.

Selected Fill for Embankments etc.

Selected fill shall consist of material approved by the Engineer and free from humus, organic impurities, anthill material or other deleterious or objectionable matter.

The material shall be uniformly graded from coarse to fine, and its properties shall be such as to fall within the limits set out in Appendix I - Schedule of Required Properties for Soils and Gravels, and will be identical to material currently used by the Council or the Ministry of Roads in road construction.

In the case of deep fills the Engineer may, at his discretion, relax these requirements in order to make use of materials excavated from adjacent cuttings or borrow pits.

Sub-base and Base

Base layers shall consist of materials approved by the Engineer and free from humus, organic impurities, anthill material, clay or other deleterious or objectionable matter.
Hereafter the Base will be termed "Base 1" and the sub-base layers "Base 2",

"Base 3", etc., proceeding from the uppermost downwards.
The materials will usually be obtained from naturally occurring deposits of quartz, lateritic or other gravels, or soft, semi-decomposed rock. Crushed stone may also be utilized. The material finally used on the road shall be uniformly graded from fine to coarse without an excess or deficiency of any particular size, and their properties shall fall within the limits set out in Appendix I.
Should the lack of uniformity of a particular deposit cause its particle size distribution and/or plasticity or other properties to vary from place to place, the Engineer may instruct the Contractor to stockpile the material. It shall then be the Contractor's responsibility to ensure that segregation does not occur and that the quality of the material does not deteriorate due to careless or inefficient bulldozing operations.

Where the Engineer issues instructions for material to be mechanically stabilised it shall be the Contractor's responsibility to ensure that the Engineer is informed immediately if there is any change in the quality of the material being excavated, in order that he may adjust the designed mix proportions. The Contractor shall not stabilise any material knowing its properties to be different from those assumed for the design.

Crushed Stone

(a) Crushed stone used as a base or sub-base material shall be composed of hard, durable fragments or rock, cubical in shape and free from an excess of flat, elongated, soft or disintegrated pieces or other objectionable matter, and shall be to the approval of the Engineer.
(b) Where crushed stone is used as an alternative to gravel a separate specification shall be issued.

Concrete

The materials to be used in the manufacture of Concrete are to be to BS 8110 standards.

Sampling and Testing

It shall be the Contractor's responsibility to provide at his own expense and, where required by the Engineer, samples of all materials he proposes to use in the Works in the quantities required by the Engineer. The testing of such material will be undertaken by the Engineer, and the cost will not be borne by the Contractor.

Sampling and testing of materials and workmanship already incorporated in the Works (e.g. density tests on gravels) shall be the responsibility of the Contractor, and the cost will be borne by the Contractor.

Additional tests, should a disagreement arise, shall be arranged by the Engineer and the cost shall be borne by:

a) The Client, if the tests prove that the standard of the works are as specified.
b) The Contractor if the tests prove that the works are defective.

Samples of specimens:

Before commencing the work, the Contractor shall deposit at the Engineer's office samples of the cement, the aggregate for concrete, the sand and any other materials the Engineer may require, and which are proposed to be on the work. He shall obtain the approval of the

Engineer to these samples and the whole of the materials used by him shall be equal in every way to the deposited approved samples.
If, during the course of the works the source or type of any material be changed, further samples shall be deposited with the Engineer and approval obtained before delivery of the materials concerned. Irrespective of any contrary requirements specified other than in this specification, the requirements specified shall apply to samples and tests of materials and to the costs of such samples and tests.
Samples or test pieces of materials, if specified herein or instructed to be supplied by the Contractor, shall be so supplied, prepared and delivered at the Contractor's own cost.

Cement:
The cement shall be normal Portland Cement from a Zimbabwean manufacturer approved by the engineer and shall comply in all respects with C.A.S A46: 1972. The cement shall be delivered in sacks marked with the manufacturer's name. Cement shall be stored in approved sheds, and no cement shall be removed from storage until it is required for use. Should the finished concrete work be condemned in consequence of the Contractor's using defective cement, or should any delay arise due to cement being condemned or to failure of supplies, the Contractor shall in no wise be absolved from the terms and conditions of the contract in consequence thereof. He shall further, at his own cost, supply cement of approved quality to replace, any which has been condemned.

Sand:
The sand shall be clean and sharp, free from loam and organic matter and shall be from sources approved by the engineer. Sand derived from stone crushing shall be acceptable. Sand used for concrete and plaster shall comply in all respects with S.A.B.S 718; 1962. All sand shall be thoroughly washed if considered necessary by the engineer.

COMPACTION

General
The provisions of this section shall apply to all those portions of the Works where some form of compaction is called for on the Drawings (or in other Sections of this Specification) or is ordered by the Engineer.
Three different kinds of Compaction shall be considered, viz: Traffic Compaction, Controlled Compaction, and Compaction of Backfill. These are defined as follows:

(a) Traffic Compaction : Traffic Compaction is the process whereby loose material is compacted as the result of the normal or deliberate movement over it of as much construction equipment and transport and/or normal road traffic as is possible during the normal course of construction.

(b) Controlled Compaction: Controlled Compaction is the process whereby loose material is compacted to a specific density by means of watering, mixing, and rolling with various types of compacting equipment under careful control.

(c) Backfill Compaction: Backfill compaction is compaction applied to material backfill in trenches or around structures, or in other inaccessible places where normal road compaction equipment cannot be used.

Traffic Compaction
This process will be applied normally only to the compaction of earth embankments.

The material to be compacted shall be brought up in layers not exceeding the thickness specified in the drawings. Sufficient water shall be added layer by layer to bring the material to its optimum moisture content, and during the process of compaction each layer shall be kept shaped by frequent passes of a blade grader, or by grading with a scraper on its return run.
To obtain the full benefit action the construction plant and transport shall be routed over the material in such a manner that the full surface area of each layer has been under load (impacted by tracks, wheels, or on some other way) before the next layer of material is placed. It shall be the Contractor's responsibility to ensure that this effective distribution of traffic is achieved by the erection of temporary diversion barriers, or by making other arrangements.

The commencement of the construction of a second layer will not be permitted until the Engineer is satisfied that the above process has been satisfactorily carried out, and the material is well consolidated. The Engineer shall have the right to instruct the Contractor to organise his work so as to ensure the maximum volume of construction traffic over the section under compaction. The Contractor may however, with the approval of the Engineer, make special arrangements for compacting the material with approved pneumatic or other compaction equipment in order to expedite the earthwork's programme.
Great importance is attached to the material being at the correct moisture content during compaction and it shall be the Contractor's responsibility to ensure that this is so

Should the Engineer still be dissatisfied with the degree of compaction achieved after Traffic Compaction has been carried out in full conformity with this Specification, he may instruct the Contractor to undertake further compaction by means of specified compaction equipment.

Controlled Compaction.
This process will be applied normally only to the sub grade and base layers.

(a) Method
After the layer concerned has been placed and levelled in accordance with the provisions of the respective Sections of this Specification, the material shall be scarified and thoroughly broken down to the full depth of the layer by means of rotary tillers, harrows, or other approved equipment. This process shall be continued until there are no clods or lumps left, and until the tilt is uniform throughout. Water shall then be added from approved distributors and mixed with the material by the use of approved equipment until the Engineer is satisfied with the uniformity of the mix and with its moisture content. It shall be the Contractor's responsibility to maintain the moisture content in the mixture once it has been approved.

Wherever possible water shall be added on the day previous to rolling to assist in its uniform distribution throughout the layer, and due allowance shall be made for loss due to evaporation, both during the period the material is awaiting compaction and during the compaction itself.

Rolling shall be carried out by sheep foot, pneumatic, wobble wheel, flat, vibrating or other approved rollers or compactors, used in such combination as to produce in the material a high density which is uniform throughout the depth of the layer.

(b) Compaction Requirements

The degree of compaction required for the work is as specified below and is measured in terms of the maximum dry density of the material.

1. Road bed/fill - 90% Mod AASHTO density in 150mm thick layers.
2. Sub-grade - 93% Mod AASHTO density in specified layer thickness.
3. Base III & IV -98% Mod AASHTO density in specified layer thickness.
4. Base II - 100% Mod AASHTO density in specified layer thickness.
5. Base I - 100% Mod AASHTO density in specified layer thickness.

Where the above road elements are as defined in Item 5.2 of this specification.

These are minimum requirements for the density tests and values below those specified will only be permitted when the Engineer is satisfied as to the overall strength and material quality of the road section in question.

The Contractor is responsible for ensuring that the various elements of the road when tested in the standard manner (see Appendix I of this specification), comply with the specified requirements.

Backfill Compaction

The methods of achieving the required degree of consolidation for compaction covered by this paragraph may vary considerably. The Contractor shall, however, ensure by careful control that the material is placed properly in uniform layers not more than 200mm thick, and well compacted by means of heavy iron hand tampers, pneumatic or mechanical rammers, vibrating tampers or compactors, etc. He shall also ensure that the material is kept at the specified moisture content during compaction. The Engineer shall have the right to specify mechanical compactions if in his opinion manual methods are not achieving the desired results.

Particular emphasis is placed upon the necessity for adequate compaction behind abutments and wing-walls, of bridges and culverts and in the backfill to pipe culverts, to avoid subsequent local settlement. Any settlement which does occur during the period of maintenance of 6 months shall be made good by the Contractor at his own expense, including the reinstatement of the surfacing (even though this surfacing does not form part of the Contract).

Compaction Definitions and Tests

These will be identical to current Ministry of Roads practice and are contained in Appendix I of this Specification.

SITE CLEARANCE

Description of Work

That part of the road reserve specified on the Drawings, or indicated by the Engineer's staff, shall be cleared of all trees, bush, logs, stumps, roots, heavy growth of grass, decayed vegetable, boulders and other objectionable or obstructing matter.

The width cleared will normally extend to 80% of the road reserve on either side of the road centre line. This may be increased to improve visibility on the inside of curves or to give clearance at the toes of high embankments. In all cases the Contractor must obtain prior instructions from the Engineer.

Large trees of pleasing appearance, or of shade utility may, at the discretion of the Engineer, be left standing within the area.

Stumps and large roots which will be buried under 1,2m or more of fill may be allowed to remain, provided the trees are cut to within 300mm below the original ground surface.

Where black cotton or other vlei soil is encountered and such material is not required to be removed, the soil shall be disturbed as little as possible. Surface growth shall be removed by cutting or burning, leaving the root system relatively undisturbed.

All trees, stumps, brush and other debris removed in the above operations shall be cleared from the vicinity of the road and water courses, and stacked neatly at the edge of the road reserve. The cleared material is to be removed to an approved dumping site within 500m free haul and spread. If required by the Council these stacks of timber shall be disposed of by burning at such locations and in such manner as to obviate the risk of veld, bush or forest fires. The road reserve shall be left with a neat and finished appearance, free from unsightly debris.

If site clearing is done by heavy machinery care shall be taken to remove as little topsoil as possible. No allowance will be made for any material so removed and its subsequent replacement in the case of fills shall be at the Contractor's expense.

Topsoil shall be disposed of as instructed by the Engineer.

EARTHWORKS

General

The Section on earthworks comprises all work, excluding clearing and preparing the site, necessary to bring the road structure up to formation level. It includes the preparation of the roadbed, excavation work, including the excavation of side drains where these are of the wide machine excavated type and material excavated is used is used for road construction. This also includes the construction and compaction of sub-grade fills, and the preparation and compaction of the sub-grade.

Definitions

(a) The Road Bed is defined as that part of the original ground upon which the road structure proper rests. It is the surface uncovered after clearing and preparing the site, the

completion of all excavations and removal of unsuitable material, and prior to the placing of any fill.

(b) **The Sub-grade** is the top 150mm of the road structure after all excavation and fill work has been completed and prior to the laying of the gravel sub-base(s). Thus in the case of cuts the top of the sub-grade is synonymous with the roadbed.

(c) **Sub-grade Fill** is the material that has to be laid over the roadbed in order to bring the formation to the selected subgrade required level.

(d) **Formation:** Surface of the ground in its final shape after completion of earthworks.

Preparation of the Road Bed

After clearing and preparing the site, those sections of roadbed, which are to receive sub-grade fill, shall be roughly shaped by grader and thoroughly watered and rolled to the satisfaction of the Engineer. Where such areas of roadbed have a side slope greater than 20% they shall be benched. Benches shall be constructed parallel with the road centre line, and sloping into the hillside; they shall be wide enough to accommodate the equipment used for constructing the fills, and shall be well watered and rolled to the satisfaction of the Engineer.

No sub-grade fill construction will be allowed until the roadbed has been approved by the Engineer.

All cambers shown on finished road must be formed at subgrade level.

Cuttings

Cuttings are to be constructed and finished true to the profiles, slopes, width and levels shown on the Drawings or required by the Engineer.

Where rock is encountered in the roadbed, it shall be excavated to a depth of not less than 150mm below formation level, and replaced by approved sub-grade fill material.

Where clay or other unstable or unsuitable material is encountered in the roadbed, the Engineer may order its removal and replacement by approved sub-grade fill.

Where for convenience (or inadvertently) excavation is carried deeper or beyond the limits shown on the Drawings or directed by the Engineer, the Contractor will be required to replace the excavated material by approved material, compacting it to the satisfaction of the Engineer, all at the Contractor's expense.

The material arising from the excavation of cuttings shall be disposed of as directed by the Engineer. It may either be used as selected sub-grade fill, stockpiled on the side of the road for subsequent dressing of high fill slopes, or run to spoil, depending on its suitability and the fill requirements.

Fills

Fills are to be constructed and finished true to the profiles, slopes, widths and levels shown on the Drawings or required by the Engineer.

They shall be constructed of approved material (Ref: Section 2 of this Specification) and shall under no circumstances contain stumps, trees, brush, grass or other deleterious or unsuitable matter. The Engineer may, at his discretion, relax the standards for fill material laid down in Section 2 in order to make use of material with a high clay content arising from excavations. Such material if authorised shall only be placed in the bottom and centre of fills, and shall not be placed within 600mm of the outside slopes of embankments or within 500mm of the formation or as directed by the Engineer.

Broken rock or boulders may only be used in fills if the larger stones are well distributed amongst smaller stones and finer material in such a way as to produce a dense compact embankment. Stones larger than 150mm in any dimension shall not be left within 150mm of the formation.
No fills may be commenced until the Engineer has given approval to the prepared roadbed.
All fills shall be constructed in successive layers not normally exceeding 300mm in loose depth. If however the size of stones in an essentially rock fill prohibits this, then it shall be constructed in as thin layers as possible, subject to a maximum of 500mm. In all fills the first layer shall extend over the full width between the toes of the embankment, successive layers being made narrower in order to accommodate the required embankment slopes. At all times during construction the edges of embankments shall be at a higher level than the centre.
Material for fills may be obtained either from the excavation of cuttings, side drains, culverts, etc., or from approved borrow areas, depending upon the suitability and availability of the excavated material.

Borrow Pits
The Contractor may only borrow material from pits approved by the Engineer. This approval may be withdrawn at any time should the quality of the material deteriorate, and the Contractor will then be required to open new borrow pits elsewhere. The Contractor will be responsible for the opening up of any new borrow pits required, including the clearing of trees and the removal of any top soil unsuitable for use as fill. The Contractor shall take any necessary precautions such as sloping banks, contour ridging, fencing, etc., to ensure that borrow pits are not the cause of erosion starting and will not constitute a danger to stock, persons or property. At the completion of the Contract the Contractor will be required to clean and tidy up all borrow pits to the Engineer's satisfaction.

Spoiling Areas
Wherever possible excavated material will be made use of as sub-grade fill, but where the material is unsuitable or surplus to requirements it shall be spoiled. The location of suitable spoiling areas shall be the responsibility of the Contractor, but shall be subject to the approval of the Engineer. Such areas will normally be either inside the road servitude or immediately adjacent, but in certain residential areas it may be necessary to locate and use more remote spoiling areas.

Organisation of Earthworks
Excavation and filling shall be so organised as to make the most efficient and economical use of the materials available. Excavated material shall not be spoiled indiscriminately, but if suitable and within an economical haul shall be used as
sub-grade fill. Where the supply of suitable material exceeds the demand the Engineer may order such material to be used to widen embankments.

The Engineer reserves the right to instruct the Contractor how to organise his cutting and filling operations so as to result in the lowest overall cost, where haulage rates are priced independently.

Sub-grade

On completion of all cutting and filling operations the sub-grade as defined in this section of the Specification shall be shaped accurately to the levels, cambers and cross falls shown on the Drawings or specified by the Engineer, and Control Compacted in accordance with the provisions of Section 3 of this Specification to the relative densities required.

SUB-BASE

Definition

The sub-base (or Base 2, Base 3, etc.) is the layer or layers of approved selected material immediately overlying the sub grade, but excluding the base and surfacing courses, which are superimposed on the sub-base.

Material

All material used as sub-base shall conform to the standards laid down in Section 2, MATERIALS, and in addition, must be approved by the Engineer. Great importance is attached to the continuing uniformity of the materials used, and it shall be the Contractor's responsibility to ensure that quality is maintained. The Contractor may be asked to remove from the site, at his own expense, any sub-base material already delivered but which falls below the standards specified, and to replace it with other approved material. All materials should be stock piled in advance to enable testing and approval for its use. On request the Engineer will arrange for material to be tested free of charge.

Description of Work

The Contractor will not be allowed to commence the construction of the sub-base course until the sub grade has been approved by the Engineer. Should the sub grade have lost its shape since being compacted it must first be restored to its proper level, shape and condition by watering, grading and rolling.

The compacted thickness of sub-base shown on the Drawings may vary, but normally will not be less than 150mm. Thicker sub-base courses will be constructed in two or more layers, such that the compacted thickness of each layer is never greater than 150mm nor less than 75mm. This rule may only be varied by the written instructions of the Engineer. Each layer will be constructed in the same fashion as specified hereunder, although the required degree of compaction may vary.

After being dumped on the road, the sub-base material shall be thoroughly mixed by blading from side to side by means of a grader to overcome any segregation that may have occurred during transit. It shall then be spread to the full width of the subgrade and shaped accurately to the levels, cambers and cross falls shown on the Drawings or specified by the Engineer, due allowance being made for the reduction in levels which occur during compaction.

The layer shall then be control compacted at optimum moisture content in accordance with the provisions of Section 3 of this Specification to the required density as shown on the Drawings or indicated by the Engineer.

The compacted layer shall receive a final grading, watering and rolling before being checked for level, shape and density.
The above process is repeated for any succeeding layers, but work on these may not commence until the previous layer has been approved by the Engineer.

Treated Materials
It may happen that the only available sub-base deposits are unsuitable for use in the condition in which they can be excavated. The reason for this may be one or more of the following:

(a) A lack of uniformity in the deposit causing its particle size distribution and/or plasticity properties to vary from place to place.

(b) The material as a whole having a preponderance of oversize stone.

(c) The particle size distribution indicates that the material will be structurally unstable in use.

(d) Plasticity values which are too high for the required purposes.

The Engineer may order one or more of the following steps to be taken to overcome this disadvantage.

(i) The material shall be stockpiled at source by bulldozers and tested before use. This operation must be carefully controlled at all times to ensure that the quality of material does not deteriorate. It must be done in such a way as to ensure proper mixing of the materials without segregation, and the work must be properly planned so as to obtain the maximum quantity from the deposit. The method of working shall at all times be subject to the approval of the Engineer. It shall be the Contractor's responsibility to stockpile the correct quantity of material required for the Works.

(ii) The material to be crushed and/or screened after excavation;

(iii) The material to be laid as excavated, and then blinded insitu by approved filler;

(iv) The material to be stabilized by the addition of suitable proportions of another material whose particle size distribution is such that the combination is mechanically stable;

(v) The material to be stabilized either by means of cement, and/or lime, or by bitumen.

Should any of these steps be considered necessary they will be covered by a Supplementary Specification.
Gravel Pits

The location of sub-base deposits will be the responsibility of the Contractor; these will be tested and proved by the Engineer. The Contractor will, be responsible for the opening up of new pits or the development of old ones, including the clearing of any trees or bush and the removal of any overburden. He will also be responsible for the construction and maintenance of the necessary haul roads, and he will not be entitled to claim a longer haul distance over existing roads merely because of not having constructed a new and more direct haul road.

The Contractor shall take any necessary precautions such as sloping banks, contour ridging, fencing, etc., to ensure that sub-base pits are not the cause of erosion starting and will not constitute a danger to stock, persons or property. At the completion of the Works the Contractor will be required to clean and tidy up all sub-base pits to the satisfaction of the Engineer.

The method of working the gravel pit shall require the Engineer's approval, whether or not the material is stockpiled, and he will bear in mind possible future requirements of the pit in considering the Contractor's proposals.

Only where haulage rates are priced independently and more than one pit is available, the Engineer reserves the right to instruct the Contractor to obtain material from any particular pit he so desires, and the Contractor shall not be entitled to additional compensation in respect of the transportation of excavation equipment from one to the other. In making such decisions the Engineer will bear in mind the quality of the material available, and the haul distances involved.

BASE (1) ONE

Definition

The base is the layer of approved selected material immediately overlying the sub-base and excluding the surfacing course.

Material

All Base 1 material shall conform to the standards laid down in Section 2 of this Specification, and in addition must be approved be the Engineer. Great importance is attached to the continuing uniformity of the materials used, and it shall be the Contractor's responsibility to ensure that quality is maintained. The Contractor may be asked to remove from the site at his own expense any Base 1 material already delivered, but which falls below the standards specified, and to replace it with other approved material. On request the Engineer will arrange for material to be tested free of charge.

Description of Work

The Contractor will not be allowed to commence the construction of the base course until the sub-base has been approved by the Engineer. Should the sub-base have lost its shape since being compacted it must first be restored to its proper level, shape and condition by grading, watering and rolling.

The required compacted thickness of Base 1 is shown on the Drawings and is usually 150mm. It may in certain circumstances be as little as 100mm or thicker than 150mm. In the latter case it shall be constructed in two or more layers such that the compacted thickness of each layer is never greater than 100mm nor less than 75mm. This rule shall be invariable except by the written instruction of the Engineer.

Each layer will be constructed in the same fashion as specified hereunder.

After being deposited on the road, the base material shall be thoroughly mixed by blading from side to side by means of a grader or other approved plant to overcome any segregation that may have occurred during transit. It shall then be spread to the full width of the Base 2 and shaped accurately to the levels, cambers and cross falls shown on the Drawings or specified by the Engineer, due allowance being made for the reduction in levels which occur during compaction.

The layer shall then be control compacted at optimum moisture content in accordance with the provisions of Section 3 of this Specification to the required density as shown on the Drawings or indicated by the Engineer.
The compacted layer shall receive a final grading, watering and rolling before being checked for level, shape and density.

A Water bound Macadam base course may be specified as an alternative to the above standard form of construction. This type of work would be dealt with under a Supplementary Specification.

Drains

General

Drains will be in accordance with the latest Zimbabwe's Standards and the design should be the rational method with reference to the Ministry of Local Government Design Manual for Roads and Storm water drainage. They will mainly be trapezoidal and lined unless where indicated otherwise by the Engineer, in which case they will be stone pitched or concrete lined in approved formwork, true to line and level.

Culverts:
Will be to designs as given by the Engineer and in accordance Ministry of Local Government Design Manual for Roads and Storm water drainage."

Entrance Slabs:
The design of which shall be approved by the Engineer before being allowed for use.
Surfacing

Surfacing of the pavement shall be as specified in the drawings and shall be done as soon as construction of base I is complete.

Road line Markings
Road line markings are to be done by the Contractor after surfacing is complete and approved by the Engineer. The markings are to conform to the Ministry of Roads' standard and are to be as indicated on the drawings.

Materials

The whole of the materials shall be new and the said materials and workmanship shall be the best of their several kinds and subject to approval by the engineer, who shall have full power to reject all such materials and workmanship which may not, in his opinion, conform to the terms of this specification. Materials delivered to the works shall be equal to the approved samples. Delivery shall be made sufficiently in advance of construction requirements to enable further samples to be selected and tested by the engineer before using the materials on the works. Should any material or part of the work, during the execution of the contract or the period of maintenance, be destroyed or damaged by weather or become defective, or cease to be in accordance with the provisions of the contract arising from whatever cause, it shall at once be made good by the Contractor at his own expense.

COMPLETION

Prior to acceptance of the finished road by Client the Contractor is to ensure that the site is left in a neat and tidy condition with all temporary construction work removed to the satisfaction of the Engineer.

Handover to Client shall be by written notification and written acceptance.

SEGMENTED PAVING

SCOPE

This specification covers the paving of roads and other areas with precast concrete segmental blocks laid closely together, the joints between the units being filled with jointing sand.

MATERIALS

General

The block units shall be free from cracks that detract from their general appearance and structural integrity.

Block Strength

Blocks unless subject to wheel loadings exceeding 30 kN shall have an average wet strength of at least 22.5 MPa and individual blocks shall have a wet strength of at least 17 MPa.

Sand for Bedding and Jointing

Sand for bedding and jointing shall be free from substances that may be deleterious to blocks. In addition the sand grading shall conform to that given in a) or b) below except where evidence satisfactory to the Engineer has been provided of the successful previous use of sand having a different grading to that specified.

a)Bedding sand/crusher dust

Nominal Sieve size mm	% passing
4,75	95 - 100
2,36	80 - 100
1,18	50 - 95
0,60	25 - 70
0,15	5 - 30

0,075	0 - 15

b)Jointing sand shall pass a 1,18 mm sieve and shall contain 10-50% of material that passes a 0,075 mm sieve.

CONSTRUCTION

Preparation

General

Where the paving is to be constructed on newly constructed earthworks, the pavement layers shall be constructed according to roadwork specification R. Where depressions have to be filled they shall be filled and compacted with the material of the depressed layer and not bedding sand.

Existing Subbase too high

Any portion of an existing sub base that is too high shall be lowered, harrowed and reconstructed to such depth that, after compaction, the sub base layer is of the same standard and thickness throughout.

Edge restraints

Edge restraints consisting of kerbs or channels or other approved edge strips, as scheduled or given on the drawings, shall be constructed on the subbase (or other specified formation) before any units are laid.

Placing and Compacting the sand bed

Bedding sand shall be spread over the subbase and evenly screeded in the loose condition so as to achieve a compacted thickness of 25 +- 5 mm. When the sand is spread, its moisture content shall be 6 +- 2 %. The sand bed shall be laid slightly in advance of the placement of the units but only to the extent that the particular area of pavement can be completed on the same day. Where the sand bed is accidentally compacted before the units are laid, it shall be raked and evenly rescreeded in a loose condition.

Laying Blocks

The principal lines of the paving unit pattern as laid shall be as specified or given on the drawings, and as agreed with the Engineer before laying commences. If the said principal lines are not so specified, given or agreed, the units shall be laid in a herringbone pattern if the block shape permits and, where units cannot be so laid, they shall be laid with the long axis at right angles to the line of traffic. Except where curved patterns are required, the lines of the unit pattern shall be visually straight and parallel to major kerbs or buildings or other structures, as most appropriate and as approved.
Where appropriate, lines shall be set up at right angles to each other to control the alignment of the units. Joint widths shall be between 2 mm and 6 mm.

Whole units shall be laid first. Full depth closure units of special size or cut or part units split from whole units shall be fitted into gaps around the perimeter and around service installations such as manholes.

Where plant has to be moved over an uncompacted newly laid pavement, boards shall be laid to prevent disturbance of the units.

Filling gaps in block pattern

Each gap where a closure block cannot be used, shall be filled, after thorough pre-wetting of all blocks bounding the gap, with concrete that has a 24 h cube strength of at least 15 MPa and contains aggregate of maximum nominal size 9,5 mm. Filling shall be kept to an absolute minimum and shall be to full unit depth in all cases. The concrete shall be cured for at least 24 h by covering it with moist sand or approved plastics sheeting or hessian firmly held down at the edges.
Where concrete is used for filling gaps, no compaction shall be carried out within 1 m of such filling until 24 h after the filling has been completed or until the specified cube strength of 15 MPa has been attained, whichever occurs first.

Compaction of blocks

The manner of compaction of units shall be such that damage to the units is prevented. At least two compaction passes shall be made over the paving as soon as practicable after laying, and before the introduction of any jointing sand. By the end of each day, compaction shall be completed to not closer than 1 m from any free edge. A uniform even surface shall be obtained over the paved area.
Damaged units shall be replaced and compacted before joint filling is carried out.
No vehicle traffic shall be allowed over the paving until all joints have been filled.

Joint Filling

The joints shall not be filled until all closure units have been inserted, all the necessary adjustments to line and level have been made and the pavement has been subjected to at least two passes of the compactor.
Sand that complies with 2.3(b) shall be broomed into the joints until they are full, and sufficient passes of a plate compactor shall be made to settle the joint filling. The procedure shall be repeated until the joints remain full after compaction.
On completion of compaction, all excess sand shall be broomed off and disposed of. Damage caused during compaction shall be made good by the Contractor at his own expense.

TOLERANCES

Paving Laid

The finished surface of the paving shall in the opinion of the Engineer present a regular and smooth appearance to the eye.

Quality Control

Frequency of checks on smoothness on a road shall be as specified in Clause 5 of Roadworks Specification R. On all other paved areas a check shall be carried out at least every 300m2.

Item		Tolerance
Foundation	a) Top of subbase level	+- 10 mm
	b) Top of subbase smoothness measured on a 3m straight edge in any direction	+10 mm
	c)Thickness of 25 mm compacted bedding	+- 5 mm

Finished paving shall 3 months after opening to traffic conform to the following:

a) Line of pattern from a 3 m straight edge	10mm Max
b) Smoothness from a 3 m straight edge	+10-15 mm

TESTING

Checking

The Contractor shall carry out sufficient checks to satisfy himself that the materials used and the workmanship (construction, tolerance and strength) attained comply consistently with the specified requirements. Checks will be carried out by the Engineer and the results made available to the Contractor.

Standard of Finished Work not to Specification

The Engineer may carry out such checks as he deems necessary at any point or at any depth or on any layer. Where the Engineer's checks reveal that the material used or that the construction or tolerance standard achieved does not comply with the applicable requirements of the specification, or that the compaction specified has not been attained, the Contractor shall so rectify the work that the materials, construction and tolerance comply with the said requirements and the compaction specified is attained.

Subbase and foundation layers

The subbase and formation layers shall be subject to testing in terms of Road Pavement Layerworks Specification R.

Blocks

The relevant test in SABS 1058 shall be used to determine whether blocks comply with the requirements for wet strength given in 2.2.

Ponding

Where the Engineer is of the opinion that, notwithstanding compliance by the Contractor with the requirements of 5.2 ponding may occur on the finished surface, the Engineer may order the whole or any part(s) of the surface to be flooded with water to determine whether ponding will occur. Rectification of areas where ponding is found to occur shall be carried out by the Contractor at his own expense. If ponding does not occur the Employer shall bear the cost of the test.

SEWERS

The following variations are applicable to the Standard Specification SABS 1200 LD 1982: Sewers and the Equivalent Standards Association of Zimbabwe Standards (SAZS). Where there is a conflict between the standards SABS shall be adopted.

Scope

Excavation, construction and materials shall conform to the relevant standards and specifications elsewhere in this document.

Materials

Pipes and fittings shall be of uPVC and shall be to the types specified in the schedules and Drawings. uPVC pipes shall comply with the relevant requirements of SAZS 219:1978 and shall have suitable approved flexible joints.

Alternative Materials for Pipes, Fittings and Joints

Should the Contractor propose to use pipes and fittings of materials other than those referred to in 2.1, he shall submit for approval detailed specifications including full details of the types of joints and specials he proposes to use with such pipes and fittings. The Contractor shall not use such pipes or fittings until he has obtained written approval for their use from the Engineer.

Testing

Each sewer pipe shall be tested as specified in the Standard specifications and the Contractor shall be deemed to have allowed in his rates for laying of pipes, such tests as may be directed by the Engineer. The Contractor shall unless instructed otherwise, carry out air tests in convenient lengths between manholes. The air pressure shall be equivalent to 2.5KPa head of water and the loss shall not exceed 1.25Kpa over a period of three (3) minutes.

Brick Manholes

The walls of a manhole shall unless directed otherwise by the Engineer, be plastered externally above natural ground to a depth of 250mm below ground and internally using steel trowel to a smooth and true surface free of sharp edges and corners. The thickness of plaster shall be not less than 10mm and not more than 20mm. All salient angles and arises shall be slightly rounded, and all internal angles shall be finished true, square and smooth.

Manhole cover frames shall be grouted solidly into manhole shafts. Covers shall fit into frames with only marginal play for expansion and ease of removal but otherwise airtight.

Step Irons.

Step irons shall comply with the applicable requirements for malleable CI step irons of BS 1247 and shall be on length suitable for fixing in brick, cast-in-situ concrete, or precast concrete, as applicable.

Manhole Covers and Frames.

Manhole covers and frames shall comply with the relevant requirements of SABS 558, and except where other types are scheduled, shall be of heavy duty type (Type 2A) in the case of manholes in roads and other areas subject to road-traffic loads, and of medium duty (Type 4) in the case of manholes in areas not subject to such loads. If such covers and frames are not available, then alternatives may be acceptable provided these are approved in writing by the Engineer.

PRECAST CONCRETE MANHOLES

Precast concrete manholes shall be constructed in accordance with the manufacturers' specifications, and in accordance with the project drawings. For manholes deeper than two metres, the clear height of the main chambers inclusive of starters shall be 2.5 metres with the rest of the height being occupied by the reducer slab, access shaft and associated slab.

CONNECTION OF SEWERS TO EXISTING MANHOLES

New Sewers shall be connected to existing sewers or manholes only during off peak hours and the Contractor shall notify the Engineer in writing of his intentions at least five (5) working days in advance. The notification shall be copied and handed over to the Council at the same time.

The Contractor shall plan his work so that the connection takes a minimum period of time and causes little disruption to the use of the existing system. The Contractor shall plan to carry out connections when anchor blocks have reached sufficient strength to prevent movement of the new pipes. Alternately the Contractor may construct temporary supports to the new pipeline the design of which shall have been approved by the Engineer in advance. The cost of such temporary supports shall be borne by the Contractor.
The rate tendered for connecting new pipelines to an existing service shall include for all fittings, materials, labour, equipment, tools and any other thing required by the Contract for the connection to the satisfaction of the Engineer. Payment shall be as scheduled in the Bills of Quantities for different diameters of pipes irrespective of depth.

TOLERANCES

Overall Centre-Line Control and Manhole Locations

The permissible deviation of the location in plan of the centre-line of Gravity or pressure sewers from the designated location shall be ± 50mm or such deviation as may be authorized in writing by the Engineer.

Where physical constraints are encountered on site, the Contractor shall immediately notify the Engineer who shall within three (3) working days issue directives on how to deal with the encountered physical constraints.

Manhole Invert levels

The permissible deviation from the designated manhole invert levels shall be ± 5mm.

TESTING

Notice

The Contractor shall notify the Engineer at least 48 hours in advance of his intention to test any sewer or section of sewers to enable the Engineer or his representative to be present when the test(s) take place. The Contractor shall at the same time notify the Engineer as to the type of test(s) he intends to carry out. Test(s) shall only be carried out when the Engineer is satisfied the sewer or sections of sewer are ready for testing and with the type and mechanical condition of equipment to be used for test(s).

Testing of Manholes for Watertightness

All manholes not more than 150mm above natural ground shall be tested separately from the pipeline for watertightness.

In addition to the tests described in the specifications, the Engineer may instruct the Contractor to carry out the following test on manholes.

The manhole shall after sealing off all connections, be filled with water and left for twenty four (24) hours, when the water level shall be recorded and left to stand for a further period of twenty four (24) hours. The water level shall be recorded again. The manhole shall be considered to have failed the test if the water level drops more than 150mm at the end of the second period of twenty-four hours.

All failed manholes shall be remedied by the Contractor and retested at Contractor's own cost. The Contractor shall only be paid for the initial test. The tendered rate for testing manholes shall include for all materials, labour, equipment, etc. required to carry out the tests.

Measurement and Payment

Manholes and Inspection Chambers (sub-clauses 8.2.3 & 8.2.5)

Separate items will be scheduled for different types and sizes of Manholes and chambers.

Tendered unit rates for Manholes and Chambers shall include for full compensation for the excavation in all materials, construction of manholes and inspection chambers as detailed in the drawings. The tendered rate shall be for full compensation for excavating, backfilling, compacting around manholes and chambers, disposal of excess excavated materials, construction of brick manholes or installation of precast rings, space blocks, etc. and any other thing required in the construction of manholes and inspection chambers.

The unit of measurement shall be the number (No.) of manholes or chambers constructed. Measurement shall be in increments of 0.5m as scheduled in the Bills of Quantities.

Benching in manholes and chambers

Benching shall be laid at a grade 1 in 6 and shall be battered back equally from each side of the manhole channels such that the opening at the level of the soffit of the pipes has a width of 1.2 times the diameter of the pipe. Benching shall not be paid for separately and the rates for this work shall be deemed to have been included in the rates for construction of manholes.

Valve and Hydrant Chambers

The tendered rates for the Construction of scheduled chambers shall include full compensation for the excavation of pits, construction of chambers as detailed in the drawings, backfill and compaction, disposal of excess excavated material, building in short lengths of pipes, fittings, etc. The unit of measurement shall be the number (No.) of chambers constructed. Measurement shall be in increments of 0.5m as scheduled in the Bills of Quantities.

Trenches Excavation

Payment for excavation of trenches shall be as scheduled in the Bills of Quantities. The width of trenches for measurement of volumes of intermediate and hard excavations shall be taken as D + 600. Where D = Diameter of pipe.

WATER PIPELINES

The following variations are applicable to the standard specification SABS 1200 L - 1993: Medium Pressure Pipelines and the Equivalent Standards Association of Zimbabwe Standards (SAZS). Where there is a conflict between the standards SABS shall be adopted. These specifications shall apply to wastewater rising mains as well as to water pipelines.

ADDITIONAL SCHEDULES

BASIC PRICE LIST

Tenderers to list below the basic price list of materials and attach a comprehensive basic price list for all material required for this contract.

ITEM	MATERIAL	SUPPLIER	PRICE/UNIT	DATE OF QUOTE
1				
2				
3				
4				
5				
6				

SCHEDULE

LABOUR RATES

Tenderers shall list below the rates for the various labour classes they intend to use for the works.

ITEM	CLASS	RULING NEC RATE	TENDER RATE	BASE DATE NEC RATE
1				
2				
3				
4				
5				
6				

…….

…….