



University of Venda
Creating Future Leaders

KCMQS PROJECT NO. N1001

Upgrading of Roof Structures and Stormwater Channels of The School of
Humanities and Social Sciences at the University of Venda,
Thohoyandou, Limpopo Province
(CIDB GRADING NO: 3GB)
VOLUME 2 OF 2

PROCUREMENT DOCUMENT

(Based on NEC3 Engineering and Construction Contract)

Date of Issue: 25 June 2021

Issued by:

Director Facilities Management

University of the Venda, Thohoyandou

Name of tenderer:

Telephone Number:

Email Address:

Fax Number:

Cellphone Number:

Closing date: AS PER TENDER INVITATION



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PREAMBLES FOR TRADE

PREAMBLES FOR TRADES

1. MODEL PREAMBLES FOR TRADES

The "Specification of Materials and Methods to be used - PW371" as issued by the Department of Public Works shall apply and shall be deemed to be incorporated herein.

The Bidders are referred to the above-mentioned document for the full description of materials to be used and work to be executed.

A copy of the above-mentioned document is available at the offices of the Principal Agent for inspection.

2. VARIATIONS AND/OR ADDITIONS TO MODEL PREAMBLES FOR TRADES

2.1 All work to be done in accordance to the detailed specification as per the Engineers and Architects drawings.

2.2 Where variations and/or additions to Model Preambles differ from Clauses contained in the "Specification of Materials and Methods to be used - PW371", the variations and/or additions to Preambles shall take precedence.

3. MATERIALS AND WORKMANSHIP

Materials and workmanship shall be the best of their respective kinds. Only undamaged materials may be used in the works. Work shall be to the satisfaction of the Architect/Engineer and shall be executed in accordance with good building practice and the relevant Manufacturer's instruction. Where the term "approved" is used in connection with materials and workmanship, it shall mean that such materials shall be to the approval, instructions or choice of the Architect.

4. STANDARD SPECIFICATIONS

Materials and Workmanship shall comply with the Standard Building Regulations (SBR), National Building Regulations (NBR), SABS1200, the specifications and codes of practice of the South African Bureau of Standards, and CSIR recommendations. In cases of variance, these "Specification of Materials and Methods to be used - PW371" and any supplementary preambles thereto shall have precedence over the above-mentioned regulations, specifications and codes of practice. In cases of variance between the SBR and NBR, the NBR shall have precedence.

The latest issues of the above-mentioned regulations, specifications and codes of practice, as well as those of any other specifying body, to which reference is made, shall be applicable.

References to standard specifications and/or building regulations in these "Specification of Materials and Methods to be used - PW371" are for the information of the Contractor and shall in no way relieve him of his obligations under the Contract.

SECTION 1:
PRELIMINARIES & GENERAL

**UPGRADING OF STORMWATER RETICULATION
AND WALKWAYS AT THE SCHOOL OF HUMANITIES
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v) The amount or the items of the Preliminaries are adjusted to take account of the theoretical financial effect which changes in time or value (or both) have on this section. Such adjustments shall be based on adjustments in the following categories as recorded in the Bills of Quantities:

- a) an amount which is not varied, namely fixed
- b) an amount which is varied in proportion to the contract value, namely value related; and
- c) an amount which is varied in proportional to the construction period as compared to the initial construction period excluding revisions to the construction period for which the contractor is not entitled to adjustment in terms of the contract, namely Time Related

Where no provision is made in Bills of Quantities to indicate which of the three categories in (v) apply or where no selection is made, the adjustments shall be based on the following breakdown:

- a) 10 percent is Fixed
- b) 15 percent is Value related
- c) 75 percent is Time Related

The adjustments of the Preliminaries shall apply notwithstanding the actual employment of resources in the execution of the works. The contract value used for the adjustment of the Preliminaries shall exclude any contingency sum and the amount for Preliminaries

SECTION A: CONDITIONS OF CONTRACT

CORE CLAUSES

GENERAL

Action (clause 10)

Actions (clause 10.1)

Carried to Collection

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PRELIMINARIES AND GENERAL
Bill No. 1
PRELIMINARIES AND GENERAL

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**UPGRADING OF STORMWATER RETICULATION
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	Fixed Related	Item	
	Value Related	Item	
	Time Related	Item	
<u>The Project Manager and the Supervisor (clause 14)</u>			
The Project Manager and the Supervisor (clause 14.1 - 14.4)			
	Fixed Related	Item	
	Value Related	Item	
	Time Related	Item	
<u>Adding to the Working Areas (clause 15)</u>			
Adding to the Working Areas (clause 15.1)			
	Fixed Related	Item	
	Value Related	Item	
	Time Related	Item	
<u>Early Warning (clause 16)</u>			
Early Warning (clause 16.1 - 16.4)			
	Fixed Related	Item	
	Value Related	Item	
	Time Related	Item	
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	Fixed Related	Item	
	Value Related	Item	
	Time Related	Item	
<u>The Contractor's design (clause 21)</u>			
The contractor's design (clause 21.1 - 21.3)			
	Fixed Related	Item	
	Value Related	Item	
	Time Related	Item	
<u>Using the Contractor's design (clause 22)</u>			
Using the Contractor's design (clause 22.1)			
	Fixed Related	Item	
	Value Related	Item	
	Time Related	Item	
<u>Design of Equipment (clause 23)</u>			
Design of Equipment (clause 23.1)			
	Fixed Related	Item	
	Value Related	Item	
	Time Related	Item	
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<u>People (clause 24)</u>				
People (clause 24.1 - 24.2)				
	Fixed Related	Item		
	Value Related	Item		
	Time Related	Item		
<u>Working with the Employer and Others (clause 25)</u>				
Working with the Employer and Others (clause 25.1 - 25.3)				
	Fixed Related	Item		
	Value Related	Item		
	Time Related	Item		
<u>Sub-contracting (clause 26)</u>				
Sub-contracting (clause 26.1 - 26.3)				
	Fixed Related	Item		
	Value Related	Item		
	Time Related	Item		
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<u>Other responsibilities (clause 27)</u>				
Other responsibilities (clause 27.1 - 27.4)				
	Fixed Related	Item		
	Value Related	Item		
	Time Related	Item		
<u>TIME</u>				
<u>Starting, Completion and Key dates (clause 30)</u>				
Starting date (clause 30.1)				
	Fixed Related	Item		
	Value Related	Item		
	Time Related	Item		
Completion date (clause 30.2)				
	Fixed Related	Item		
	Value Related	Item		
	Time Related	Item		
Key date (clause 30.3)				
	Fixed Related	Item		
	Value Related	Item		
	Time Related	Item		
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	Value Related	Item	
	Time Related	Item	
<u>Take over (clause 35)</u>			
Take over (clause 35.1 - 35.3)			
	Fixed Related	Item	
	Value Related	Item	
	Time Related	Item	
<u>Acceleration (clause 36)</u>			
Acceleration (clause 36.1 - 36.3)			
	Fixed Related	Item	
	Value Related	Item	
	Time Related	Item	
<u>TESTING AND DEFECTS</u>			
<u>Testing and inspections (clause 40)</u>			
Testing and inspections (clause 40.1 - 40.6)			
	Fixed Related	Item	
	Value Related	Item	
	Time Related	Item	
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Testing and inspections before delivery (Clause 41)

Testing and inspection before delivery (clause 41.1)

Fixed Related

Item

Value Related

Item

Time Related

Item

Searching for and notifying Defects (Clause 42)

Searching for and notifying Defects (Clause 42.1 - 42.2)

Fixed Related

Item

Value Related

Item

Time Related

Item

Correcting Defects (Clause 43)

Correcting Defects (Clause 43.1 - 43.4)

Fixed Related

Item

Value Related

Item

Time Related

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Accepting Defects (clause 44)

Accepting Defects (clause 44.1 - 44.2)

Fixed Related	Item
Value Related	Item
Time Related	Item

Uncorrected Defects (clause 45)

Uncorrected Defects (clause 45.1 - 45.2)

Fixed Related	Item
Value Related	Item
Time Related	Item

PAYMENT

Assessing the amount due (clause 50)

Assessing the amount due (clause 50.1 - 50.5)

Fixed Related	Item
Value Related	Item
Time Related	Item

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<u>Payment (clause 51)</u>				
Payment (clause 51.1 - 51.4)				
	Fixed Related	Item		
	Value Related	Item		
	Time Related	Item		
<u>Defined Cost (clause 52)</u>				
Defined Cost (clause 52.1)				
	Fixed Related	Item		
	Value Related	Item		
	Time Related	Item		
<u>The Bills of Quantities (clause 55)</u>				
The bills of quantities (clause 55.1)				
	Fixed Related	Item		
	Value Related	Item		
	Time Related	Item		
<u>COMPENSATION EVENTS</u>				
	Carried to Collection		R	
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Compensation events (clause 60)

Compensation events (clause 60.1 - 60.7)

Fixed Related

Item

Value Related

Item

Time Related

Item

Notifying compensation events (clause 61)

Notifying compensation events (clause 61.1 - 61.7)

Fixed Related

Item

Value Related

Item

Time Related

Item

Quotation for compensation events (clause 62)

Quotation for compensation events (clause 62.1 - 62.6)

Fixed Related

Item

Value Related

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Time Related

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Assessing compensation events (clause 63)

Assessing compensation events (clause 63.1 - 63.13)

Fixed Related

Item

Value Related

Item

Time Related

Item

The Project Manager's assessment (clause 64)

The Project Manager's assessment (clause 64.1 - 64.4)

Fixed Related

Item

Value Related

Item

Time Related

Item

Implementing compensation events (clause 65)

Implementing compensation events (clause 65.1 - 65.4)

Fixed Related

Item

Value Related

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	Time Related	Item	
<u>TITLE</u>			
<u>The Employer's title to Plant and Materials (clause 70)</u>			
Plant and Materials outside the working area (clause 70.1)			
	Fixed Related	Item	
	Value Related	Item	
	Time Related	Item	
Plant and Materials within the working area (clause 70.2)			
	Fixed Related	Item	
	Value Related	Item	
	Time Related	Item	
<u>Marking Equipment, Plant and Materials outside Working Areas (clause 71)</u>			
Marking Equipment, Plant and Materials outside Working Areas (clause 71.1)			
	Carried to Collection		R
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	Fixed Related	Item	
	Value Related	Item	
	Time Related	Item	
<u>Removing Equipment (clause 72)</u>			
Removing Equipment (clause 72.1)			
	Fixed Related	Item	
	Value Related	Item	
	Time Related	Item	
<u>Objects and materials within the site (clause 73)</u>			
Objects and materials within the site (clause 73.1 - 73.2)			
	Fixed Related	Item	
	Value Related	Item	
	Time Related	Item	
<u>RISK AND INSURANCE</u>			
	Fixed Related	Item	
	Value Related	Item	
	Time Related	Item	
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<u>Employer's risk (clause 80)</u>				
Employer's risk (clause 80.1)				
	Fixed Related	Item		
	Value Related	Item		
	Time Related	Item		
<u>Contractor's risk (clause 81)</u>				
Contractor's risk (clause 81.1)				
	Fixed Related	Item		
	Value Related	Item		
	Time Related	Item		
<u>Repairs (clause 82)</u>				
Repairs (clause 82.1)				
	Fixed Related	Item		
	Value Related	Item		
	Time Related	Item		
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	Time Related	Item	
<u>Indemnity (clause 83)</u>			
Indemnity (clause 83.1- 83.2)			
	Fixed Related	Item	
	Value Related	Item	
	Time Related	Item	
<u>Insurance cover (clause 84)</u>			
Insurance cover (clause 84.1 - 84.2)			
	Fixed Related	Item	
	Value Related	Item	
	Time Related	Item	
<u>Insurance policies (clause 85)</u>			
Insurance policies (clause 85.1 - 85.4)			
	Fixed Related	Item	
	Value Related	Item	
	Fixed Related	Item	
	Value Related	Item	
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<p align="center">Time Related</p> <p><u>If the Contractor does not insure (clause 86)</u></p> <p>If the Contractor does not insure (clause 86.1)</p>	<p align="center">Item</p>	
	<p align="center">Fixed Related</p>	<p align="center">Item</p>
	<p align="center">Value Related</p>	<p align="center">Item</p>
	<p align="center">Time Related</p>	<p align="center">Item</p>
<p><u>Insurance by the Employer (clause 87)</u></p> <p>Insurance by the Employer (clause 87.1 -87.3)</p>		
	<p align="center">Fixed Related</p>	<p align="center">Item</p>
	<p align="center">Value Related</p>	<p align="center">Item</p>
	<p align="center">Time Related</p>	<p align="center">Item</p>
<p><u>TERMINATION</u></p>		
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	Fixed Related	Item	
	Value Related	Item	
	Time Related	Item	
<u>Payment on termination (clause 93)</u>			
Procedures on termination (clause 93.1 - 93.2)			
	Fixed Related	Item	
	Value Related	Item	
	Time Related	Item	
<u>MAIN OPTION CLAUSES</u>			
<u>DISPUTE RESOLUTION</u>			
<u>Option W1</u>			
Dispute Resolution (clause W1.1)			
	Fixed Related	Item	
	Value Related	Item	
	Time Related	Item	
The Adjudicator (clause W1.2)			
	Fixed Related	Item	
	Value Related	Item	
	Time Related	Item	
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The Adjudication (clause W1.3)				
	Fixed Related	Item		
	Value Related	Item		
	Time Related	Item		
Review by the Tribunal (clause W1.4)				
	Fixed Related	Item		
	Value Related	Item		
	Time Related	Item		
<u>SECONDARY OPTION CLAUSES</u>				
<u>Price adjustment for inflation (Option X1)</u>				
Defined terms (clause X1.1)				
	Fixed Related	Item		N/A
	Value Related	Item		N/A
	Time Related	Item		N/A
Price Adjustment Factor (clause X1.2)				
	Fixed Related	Item		N/A
	Value Related	Item		N/A
	Time Related	Item		N/A
Compensation Event (clause X1.3)				
	Fixed Related	Item		N/A
	Value Related	Item		N/A
	Time Related	Item		N/A
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	Fixed Related	Item	
	Value Related	Item	
	Time Related	Item	
<u>Limitation of the Contractor's liability for his design to reasonable skill and care (Option X15)</u>			
Limitation of the Contractor's liability for his design to reasonable skill and care (Option X15.1 - X15.2)			
	Fixed Related	Item	
	Value Related	Item	
	Time Related	Item	
<u>Retention (Option X16)</u>			
Retention (Option X16.1 - X16.2)			
	Fixed Related	Item	
	Value Related	Item	
	Time Related	Item	
<u>Low performance damages (Option X17)</u>			
Low performance damages (Option X17.1)			
	Fixed Related	Item	
	Value Related	Item	
	Time Related	Item	
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	Time Related	Item	
<u>Facilities for the contractor</u>			
Living accommodation			
	Fixed Related	Item	
	Value Related	Item	
	Time Related	Item	
Ablution and latrine facilities			
	Fixed Related	Item	
	Value Related	Item	
	Time Related	Item	
Tools and Equipments			
	Fixed Related	Item	
	Value Related	Item	
	Time Related	Item	
Water supplies, electric power, communication, dealing with water and access			
	Fixed Related	Item	
	Value Related	Item	
	Time Related	Item	
Other fixed charge obligations			
	Fixed Related	Item	
	Value Related	Item	
	Time Related	Item	
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SECTION 2: EXTERNAL WORKS

**UPGRADING OF STORMWATER RETICULATION
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Item
No

SECTION NO. 2

BILL NO. 1

RETAINING WALLS

For preambles see "Model Preambles for Trades (2008 Edition)"

SUPPLEMENTARY PREAMBLES

Nature of ground

The nature of the ground is assumed to be sandy weathered granite, therefore "earth", but possibly interspersed with "rock"

Carting away of excavated material

Descriptions of carting away of excavated material shall be deemed to include loading excavated material onto trucks directly from the excavations or, alternatively, from stock piles situated on the building site

Cost of tests

The costs of making, storing and testing of concrete test cubes as required under clause 7 "Tests" of SABS 1200 G shall include the cost of providing cube moulds necessary for the purpose, for testing costs and for submitting reports on the tests to the architect. The testing shall be undertaken by an independent firm or institution nominated by the contractor to the approval of the architect. (Test cubes are measured separately)

Sizes in descriptions

Where sizes in descriptions are given in brick units, "one brick" shall represent the length and "half brick" the width of a brick

Carried to Collection

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RETAINING WALLS

**UPGRADING OF STORMWATER RETICULATION
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Face bricks

Bricks shall be ordered timeously to obtain uniformity in size and colour

Hollow walls etc

Descriptions of hollow walls shall be deemed to include leaving every fifth perpend of the bottom course of the external skin open as a weep hole.

Pointing

Descriptions of recessed pointing to fair face brickwork and face brickwork shall be deemed to include square recessed, hollow recessed, weathered pointing, etc

RETAINING WALLS

ALTERATIONS

REMOVAL OF EXISTING WORK

Breaking down and removing brickwork etc

1	One brick wall including carting away of rubble to a dumping ground located by the contractor	m2	50
---	---	----	----

Breaking up and removing mass concrete

2	Concrete strip footings including carting away of rubble to a dumping ground located by the contractor	m3	6
---	--	----	---

EXCAVATIONS

Excavation in earth not exceeding 2m deep

3	Trenches	m3	335
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4	Rip and scarify ground level to a depth of 150mm and consolidate to 90% mod. AASHTO density (bottom of trenches)	m2	223
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EXTERNAL WORK
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RETAINING WALLS

**UPGRADING OF STORMWATER RETICULATION
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	<u>Extra over all excavations for carting away</u>				
5	Surplus material from excavations and/or stock piles on site to a dumping site to be located by the contractor	m3	335		
	<u>Risk of collapse of excavations</u>				
6	Sides of trench and hole excavations not exceeding 1,5m deep	m2	280		
	<u>Keeping excavations free of water</u>				
7	Keeping excavations free of water			Item	
	<u>FILLING ETC</u>				
	<u>Earth filling of G9 material supplied by the contractor, compacted to 95% Mod AASHTO density, compacted in 150mm thick layers</u>				
8	Backfilling to trenches, holes, etc	m3	250		
	<u>Earth filling of G7 material supplied by the contractor, compacted to 95% Mod AASHTO density, compacted in 150mm thick layers</u>				
9	Backfilling to trenches compacted in layers of 150mm thick to form platforms for concrete strip footings (e/m)	m3	29		
	<u>Prescribed density tests on filling</u>				
10	"Mod. AASHTO Density" test	No	15		
	<u>SOIL POISONING</u>				
	<u>Soil insecticide to be executed with SABS compliance by a firm of specialists under a 5 year guarantee</u>				
11	To bottoms and sides of trenches etc	m2	503		
	<u>Weedkiller mixed in accordance to supplier's specifications</u>				
12	To bottoms and sides of trenches etc	m2	503		
	Carried to Collection				R
	Section No. 2				
	EXTERNAL WORK				
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	RETAINING WALLS				

**UPGRADING OF STORMWATER RETICULATION
AND WALKWAYS AT THE SCHOOL OF HUMANITIES
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<u>CONCRETE, FORMWORK AND REINFORCEMENT</u>				
<u>UNREINFORCED CONCRETE CAST AGAINST EXCAVATED SURFACES</u>				
<u>15MPa/19mm concrete</u>				
13	Surface blinding under footings and bases	m3	4	
<u>REINFORCED CONCRETE CAST AGAINST EXCAVATED SURFACES</u>				
<u>30MPa/20mm concrete</u>				
14	Strip footings	m3	22	
15	Concrete infill	m3	5	
<u>REINFORCEMENT</u>				
<u>Mild steel reinforcement to structural concrete work</u>				
16	10mm Diameter bars	t	0.88	
<u>High tensile steel reinforcement to structural concrete work</u>				
17	16mm Diameter bars	t	1.33	
<u>TEST CUBES</u>				
18	Making and testing 150 x 150 x 150mm concrete strength test cube (Provisional)	No	8	
<u>MASONRY</u>				
<u>Brickwork of NFX bricks (14 MPa nominal compressive strength) in class II mortar</u>				
19	One brick walls	m2	15	
Carried to Collection				
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**UPGRADING OF STORMWATER RETICULATION
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20	One brick walls in foundations	m2	9	
21	One and half brick walls	m2	45	
22	One and half brick walls in foundations	m2	15	
23	300mm Hollow walls of two half brick skins including vertical twist type wall ties in foundations (the wall filled with concrete infill e/m)			
		m2	15	
24	300mm Hollow walls of two half brick skins including vertical twist type wall ties (the wall filled with concrete infill e/m)			
		m2	53	
<u>BRICKWORK SUNDRIES</u>				
<u>Brickwork reinforcement</u>				
25	75mm Wide reinforcement built in horizontally	m	1 235	
26	150mm Wide reinforcement built in horizontally	m	181	
27	230mm Wide reinforcement built in horizontally	m	529	
<u>Weep holes:</u>				
28	Leave or form opening through one brickwall for pipe n.e 100mm diameter	No	25	
<u>FACE BRICKWORK</u>				
<u>Face bricks pointed with recessed horizontal and flush vertical joints (PC Amount R10 000-00/1000 Vat exclusive supplied and delivered to site)</u>				
29	Extra over brickwork for face brickwork in foundations	m2	132	
Carried to Collection				R
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**UPGRADING OF STORMWATER RETICULATION
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	<u>Brick-on-edge header course copings, sills, etc of face bricks pointed with recessed joints on all exposed faces (PC Amount R10 000-00/1000 Vat exclusive supplied and delivered to site)</u>			
30	Coping on top of one brick wall	m	22	
31	Coping on top of one and a half brick wall	m	38	
	<u>WATERPROOFING</u>			
	<u>4mm "Derbigum CG4" waterproofing</u>			
32	On retaining walls surfaces	m2	132	
	<u>"Delta MS8" dimpled drainage system</u>			
33	On retaining walls surfaces	m2	132	
	<u>SUBSOIL DRAINAGE</u>			
	<u>SUB-SOIL DRAINAGE</u>			
	<u>Stone filling of 19mm broken stone</u>			
34	300 x 300mm Box filled with 19mm loose concrete wrapped with Geomesh BSP all in accordance to the Engineer's instructions behind retaining walls	m	97	
	<u>uPVC slotted drain pipes, etc.</u>			
35	110mm Drain pipes laid in stone encasing (stone encasing e/m)	m	97	
	<u>Sand/cement fillet, groves, etc</u>			
36	100 x 100mm Smooth corner fillet	m	97	
	<u>STORMWATER CHANNELS, ETC.</u>			
	<u>EARTHWORKS</u>			
	Carried to Collection			R
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**UPGRADING OF STORMWATER RETICULATION
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	<u>Excavation in earth not exceeding 2m deep</u>		
37	Shallow excavation to form V-drain	m3	15
38	Cutting and shaping to form V-drain	m2	13
	<u>Earth filling of G7 material supplied by the contractor, compacted to 95% Mod AASHTO density</u>		
39	Filling in layers of compacted in layers of 150mm thick to form platforms for stormwater channels (e/m)	m3	17
	<u>SOIL POISONING</u>		
	<u>Soil insecticide to be executed with SABS compliance by a firm of specialists under a 5 year guarantee</u>		
40	Under floors etc, including forming and poisoning shallow furrows against foundation walls etc, filling in furrows and ramming	m2	148
	<u>Weedkiller mixed in accordance to supplier's specifications</u>		
41	Under floors etc including forming and poisoning shallow furrows against foundation walls etc, filling in furrows and ramming	m2	148
	<u>REINFORCED CONCRETE CAST AGAINST EXCAVATED SURFACES</u>		
	<u>25 MPa/20 mm concrete</u>		
42	Stormwater channels cast in panels	m3	18
	<u>Grooves, channels, mortices, sinkings, etc. in concrete</u>		
43	Segmental channel with 50mm depth on top of concrete	m	105
44	Form chamfer to edges of concrete	m	97
45	Shaping side of 1200mm wide stormwater channel to form form V shape in the middle	m	97

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**UPGRADING OF STORMWATER RETICULATION
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	<u>Smooth formwork to sides</u>			
46	Edges, risers, ends and reveals not exceeding 300mm high or wide	m	202	
	<u>REINFORCEMENT</u>			
	<u>Fabric reinforcement</u>			
47	Steeledale Mesh standard square fabric mesh, nominal mass 1,93 kg/m ² with nominal 5,6mm thick wires and 200 x 200mm pitch (code 193), complying with SANS 1024/2006 requirements, cut 300mm wide	m	105	
48	Steeledale Mesh standard square fabric mesh, nominal mass 1,93 kg/m ² with nominal 5,6mm thick wires and 200 x 200mm pitch (code 193), complying with SANS 1024/2006 requirements, cut 1200mm wide	m	97	
	<u>REMOVAL OF EXISTING WORK</u>			
	<u>Breaking up and removing mass concrete</u>			
49	Concrete surface bed approximately 500 x 100mm thick including carting away of materials to a dumping ground to be located by the contractor	m	76	
	<u>UNREINFORCED CONCRETE</u>			
	<u>30MPa/19mm concrete</u>			
50	Surface beds cast in panels	m ³	6	
	<u>CONCRETE SUNDRIES</u>			
	<u>Finishing top surfaces of concrete smooth with a power float</u>			
51	Surface beds, slabs, etc	m ²	38	
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**UPGRADING OF STORMWATER RETICULATION
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RETAINING WALLS

COLLECTION

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No**

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**UPGRADING OF STORMWATER RETICULATION
AND WALKWAYS AT THE SCHOOL OF HUMANITIES
AND SOCIAL SCIENCES AT THE UNIVERSITY OF VENDA**

Item
No

SECTION NO.2

BILL NO. 2

COVERED WALKWAYS, ETC.

ALTERATIONS

For preambles see "Model Preambles for Trades (2008 Edition)" and Supplementary preambles as specified in the Trades as well as Engineering Specifications attached to these documents.

REMOVAL OF EXISTING WORK

Note:

NATURE OF WORK Tenderers are advised to visit the site and to satisfy themselves as to the nature and extent of the work to be done and provide in their tenders for any items not specifically mentioned which they may deem necessary for the proper completion of the work. Tenderers are advised that the adjacent existing buildings will be in occupation during the progress of the work and due allowance must be made for the work being carried out at such times and in such manner as will least interfere with the routine of the occupants and as may be directed by the Project Manager

DIMENSIONS The Contractor is advised to take all dimensions affecting the existing buildings on the site, as he will be held solely responsible for all new work being of the correct sizes.

CLEANING OF SITE: The Contractor should allow for removing of rubble from site on daily basis, failing which the client might stop the construction until the site has been cleaned. None of the old stock bricks from the pulling down are to be re-used for any new work.

Carried to Collection

Section No. 2
EXTERNAL WORK
Bill No. 2
WALKWAYS

Quantity

Rate

Amount

R

**UPGRADING OF STORMWATER RETICULATION
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PIPES, ETC. Special care is to be taken not to interfere unnecessarily with any water supply pipes or other piping that may be met with and found necessary to disconnect or cut, are to be effectively stopped off and any new connections that may be necessary are to be made with proper fittings and to the satisfaction of the Project Manager to whom due notice must be given of any alterations to the existing services.

PROTECTION In taking down and removing existing work the utmost care is to be observed to avoid any structural or other damage to the remaining portions of the buildings. The Contractor must also protect all work not removed such as walls, floors, doors, windows or other joinery, loose and fixed fittings and electrical appliances etc., from damage during the progress of the work and provide all necessary materials for so doing. The Contractor will be held solely responsible for any damage to persons or property and for the safety of the structure throughout the whole of this Contract and must make good at his own expense any damage that may occur.

CREDITS, ETC. Old materials from the pulling down (except such as are described to be re-used or handed over) are to become the property of the Contractor who shall allow credit as provided for in the summary at the end of these Bills of Quantities. Old materials for re-use are to be carefully removed, stored and protected from injury including making good any damaged or defective parts as required before re fixing. Old materials described to be handed over are to be carefully removed and neatly stacked on site where directed. The remainder of the old materials and all rubbish to be immediately carted away and the site left clean and unencumbered. None of the old stock bricks from the pulling down are to be re-used for any new work.

MATERIALS, ETC. The materials to be used and work to be done to be similar in all respects to that described for new work insofar as they concur. All work in making good is to be properly jointed to the existing.

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**UPGRADING OF STORMWATER RETICULATION
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Unless otherwise stated, all materials from the alterations and demolitions will belong to the builder.

The builder should allow for the removal of all debris from site

EXCAVATION, FILLING, ETC

Breaking down and removing brickwork etc

1	220 x 110 x 50 Thick paving bricks including carting away of materials to a dumping ground to be located by the contractor	m2	74
2	Carefully remove 220 x 110 x 50 Thick paving bricks including keeping them aside for later use	m2	221

Taking down and removing roofs, floors, panelling, ceilings, partitions, etc

3	Steel gutters size approximately 200 x 300 x 200mm high	m	144
4	Circular metal roof covering and steel purlins	m2	323
5	2850mm High downpipes	No	12

Taking out and removing sundry joinery work

6	Timber beam from brickwork	m	7
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Taking out and removing piping, sanitary fittings, etc including disconnecting piping from fittings and preparing pipes for new fittings (e/m) (making good floor and wall finishes elsewhere)

7	Carefully excavate not exceeding 1m deep, remove concrete stormwater pipes and cart away (same trench to be used for new pipes)	m	144
8	Remove grid inlet size 450 x 450mm including frame and cart away	No	20

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**UPGRADING OF STORMWATER RETICULATION
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	<u>Keeping excavations free of water</u>			
9	Keeping excavations free of all water		Item	
	<u>STRUCTURAL STEELWORK</u>			
	<u>PURLINS, GIRTS, BRACING, ETC</u>			
	<u>Purlins and girts bolted to steel</u>			
10	200 x 75 x 20 x 3mm Cold formed lip channel	m	432	
	<u>ROOF COVERINGS ETC</u>			
	<u>PROFILED METAL SHEETING AND ACCESSORIES</u>			
	<u>Saflok 700 0.5mm Thick Colorplus AZ100, Colour to be confirmed, C.1.S finish with standard backing coat Cool Grey G550 interlocking roof sheeting with AZ100 spelter to both sides fixed to timber purlins not exceeding 1900mm centres and to ridge and eaves at not exceeding 1700mm centres. Saflok 700 ZincAL 0.8mm clips fastened with Fixtite Class 4 self tapping wafer head 10 x 22mm for timber fix all in accordance with manufacturer's recommendations.</u>			
11	Roof coverings with pitches not exceeding 25 degrees	m2	317	
12	Ridge capping 462mm girth, three times bent along girth.	m	72	
	<u>RAINWATER DISPOSAL</u>			
	<u>ROOF AND WALL INSULATION</u>			
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**UPGRADING OF STORMWATER RETICULATION
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<u>"Isoboard" Thermal Insulation</u>				
13	Roof insulation to be Isoboard® high density 32-36kg/m ³ rigid extruded polystyrene 100% closed cell insulation boards 60mm thick x 600mm wide with brown paper and polyethylene laminate slip sheet factory applied to upper surface, with tongue & groove joints fixed concurrent with roof covering over timber purlins at maximum 1500mm centres with 5mm gap between boards butt-joined over purlins. Ridge vents are recommended to be allowed for in the roof covering (elsewhere specified) in order to prevent deflection due to heat build up above the boards. • Thickness: 60mm • Application: Roof insulation	m2	317	
<u>3mm Thick Steel gutters with carbomastic finish on the inside</u>				
14	300 x 200mm Eaves gutters four (4) times with one plate size 300 x 250 x 8mm thick welded on the side and 100 x 200 x 8mm steel plate welded on top of downpipe (e/m) both plates two (2) times drilled for bolts	m	144	
15	Extra over eaves gutter for 300 x 200mm stopped end welded	No	2	
16	Extra over eaves gutter for cutting through for 150mm diameter opening with two plate size 100 x 200 x 8mm thick welded on top and at the bottom of downpipes(e/m) , both plates two (2) times drilled for bolts	No	13	
<u>Cast iron pipes</u>				
17	150mm Diameter x 2900mm high rainwater pipes fixed to wall with T-brackets (e/m)	No	13	
18	150mm Bend	No	13	
Carried to Collection				R
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**UPGRADING OF STORMWATER RETICULATION
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	<u>Gutters fixing brackets, etc.</u>		
19	Downpipe T-bracket formed of 4mm Thick x 100mm wide plate wrapped around 150mm diameter down pipe with two (2) x 100 x 200 x 8mm thick plate 6mm fillet welded plate at ends	No	26
20	T-bracket formed of 300 x 250 x 8mm thick plate with 100 x 200 x 8mm thick plate 6mm fillet welded at the bottom	No	26
	<u>Holes, etc.</u>		
21	Drill 14mm diameter slotted holes through 8mm thick plate	No	53
22	Drill 14mm diameter holes through 8mm thick plate	No	106
23	Drill 14mm diameter holes through brick wall	No	106
	<u>Bolts, etc.</u>		
24	75mm Long M12 Bolt and nut with two (2) washers	No	53
25	75mm Long M12 Hilti HLC sleeve anchors	No	106
	<u>ON METAL</u>		
	<u>Plascon Velvagio Satin to interior new mild steel. Surface to be clean and dry. Remove surface contaminants using Metalcare Aquasolv Degreaser (GR 1) with bristle brush or Brillo pads. Rinse thoroughly with tap water until surface is water break-free. Remove rust and millscale by abrasive blasting to ISO 8501 - 01:1988 - Sa2½ or by hand/mechanical wire brushing to St3 of the same standard. Allow to dry completely and prime within 4 hours of cleaning. Prime with one coat Metalcare Mild Steel Primer (UC 501) with an overcoating time of 16 hours and finish with two coats Velvagio Satin (VLO) with 16 hours drying time between coats, for a maintenance cycle of 7 years in a C1 - inland environment.</u>		
26	On steel columns and beams	m2	242
	Carried to Collection		
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**UPGRADING OF STORMWATER RETICULATION
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**PAINTWORK, ETC TO PREVIOUSLY
PAINTED WORK**

ON METAL

Plascon Velvagio Satin to existing solvent based coated exterior mild steel (RD 683). Remove all paint and rust completely. Apply Plascon Rust Remover (RR 1) to rusted areas and scrub with hard bristle brush to remove rust. Rinse thoroughly with tap water. Repeat process if rust is not removed. Dry surface rapidly to prevent flash rust formation. In areas where rust cannot be removed completely, remove all loose rust by scraping and wire brushing, then apply Plascon Rusist Rust Converter (EMS 21) copiously, but only to areas where tightly adherent rust remains. Allow coating to turn black (minimum 4 hours) before overcoating. Remove Rust Converter with water where it has not reacted and turned black. Ensure surfaces are clean, dry and sound. Apply either Plascon Universal Undercoat (UC 1) or Professional Undercoat (PU 800) to bare and repaired areas. Allow 16 hours to dry; or apply Plascon Multisurface Primer (WUP 1) to bare and repaired areas. Allow 2 hours to dry. Finish with two coats of Velvagio Satin (VLO) with 16 hours drying time between coats, for a maintenance cycle of 3 years in a C1 - inland environment.

27	On steel columns and beams	m2	140
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STORMWATER DRAINAGE, ETC.

STORMWATER DRAINAGE

The following in trenches for pipes (pipes e/m)

28	Excavation not exceeding 2m deep	m3	97
29	Cut sides of holes and trim properly for laying of storm water pipes maximum 600mm deep (e/m)	m	171
30	Rip and scarify ground level to a depth of 150mm and consolidate to 90% mod. AASHTO density (minimum CBR 3)	m2	143

Carried to Collection

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**UPGRADING OF STORMWATER RETICULATION
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31	Risk of collapse to sides of trench and hole excavation not exceeding 1,5m deep	m2	364	
32	Backfilling to trenches, holes, with selected materials obtained from excavations compacted in 150mm layers to 90% Mod AASHTO density to form fill blanket	m3	129	
33	Backfilling to trenches, holes, with selected materials supplied by the contractor compacted in 150mm layers to 90% Mod AASHTO density to form fill blanket	m3	43	
34	Backfilling to trenches, holes, with selected granular supplied by the contractor materials compacted in 150mm layers to 90% Mod AASHTO density to form bedding cradle	m3	11	
35	Extra over all excavations for carting away surplus material from excavations and/or stock piles on site to a dumping site n.e 1km from site	m3	54	
36	Keeping excavations free of water			Item
	<u>uPVC pipes</u>			
37	300mm pipes laid in trenches (e/m)	m	143	
	<u>Extra over uPVC pipes for fittings</u>			
38	1000mm Long channel formed of 300mm pipe cut in half	No	13	
	<u>THE FOLLOWING IN STORMWATER DAYLIGHTS, ETC</u>			
	<u>Excavation in earth not exceeding 2m deep</u>			
39	Excavation in trenches not exceeding 2m deep (Ground beams)	m3	0.1	
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**UPGRADING OF STORMWATER RETICULATION
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40	Reduced levels under floors <u>Extra over all excavations for carting away</u>	m3	0.2
41	Surplus material from excavations and/or stock piles on site to a dumping site to be located by the contractor <u>Risk of collapse of excavations</u>	m3	0.2
42	Sides of trench and hole excavations not exceeding 1,5m deep <u>Compaction of surfaces</u>	m2	1
43	Compaction of ground surface under stormwater outlet floors including scarifying for a depth of 150mm, breaking down oversize material, adding suitable material where necessary and compacting to 90% Mod AASHTO density <u>REINFORCED CONCRETE CAST AGAINST EXCAVATED SURFACES</u> <u>25MPa/19mm concrete</u>	m2	1
44	Ground beams	m3	0.1
45	Stormwater outlet slab, etc. <u>SMOOTH FORMWORK (DEGREE OF ACCURACY II)</u> <u>Smooth formwork to sides</u>	m3	0.2
46	Edges, risers, ends and reveals not exceeding 300mm high or wide <u>CONCRETE SUNDRIES</u> <u>Finishing top surfaces of concrete smooth with a wood float/steel trowel</u>	m	3
47	Surfaces of stormwater outlets, etc.	m2	1

Carried to Collection

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**UPGRADING OF STORMWATER RETICULATION
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MASONRY

Brickwork of NFP bricks in class II mortar

48	One brick walls (stormwater outlet)	m2	1
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BRICKWORK SUNDRIES

Brickwork reinforcement

49	150mm Wide reinforcement built in horizontally	m	22
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Holes

50	Leave or form opening through one brickwall for pipe exceeding 400mm and n.e 500mm diameter	No	1
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EXTERNAL PLASTER

Cement plaster on brickwork

51	On walls	m2	1
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52	On narrow widths	m2	0.2
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53	On raking narrow widths	m2	0.3
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WATER DISSIPATION BLOCKS, ETC

Kerbs, etc

54	Precast concrete figure 7 kerb (SABS 927) cut in 300mm long block and fixed in concrete slabs as water dissipation blocks	No	1
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**THE FOLLOWING IN CATCHPITS,
JUNCTION BOXES AND INLET MANHOLES,
ETC.**

EXCAVATIONS

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**UPGRADING OF STORMWATER RETICULATION
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	<u>Excavation in earth not exceeding 2m deep</u>				
55	Excavation not exceeding 2m deep	m3	136		
	<u>Extra over all excavations for carting away</u>				
56	Surplus material from excavations and/or stock piles on site to a dumping site to be located by the contractor	m3	48		
	<u>Risk of collapse of excavations</u>				
57	Sides of trench and hole excavations not exceeding 1,5m deep	m2	195		
58	Sides of trench and hole excavations exceeding 1,5m not exceeding 3m deep	m2	26		
	<u>Keeping excavations free of water</u>				
59	Keeping excavations free of water				
				Item	
	<u>FILLING ETC</u>				
	<u>Earth filling obtained from the excavations and/or prescribed stock piles on site, compacted to 93% Mod AASHTO density</u>				
60	Backfilling to trenches, holes, etc	m3	88		
	<u>Compaction of surfaces</u>				
61	Compaction of ground surface under floors etc including scarifying for a depth of 150mm, breaking down oversize material, adding suitable material where necessary and compacting to 95% Mod AASHTO density	m2	80		
	<u>Prescribed density tests on filling</u>				
62	"Modified AASHTO Density" test	No	13		
	<u>UNREINFORCED CONCRETE CAST AGAINST EXCAVATED SURFACES</u>				
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**UPGRADING OF STORMWATER RETICULATION
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	<u>15MPa/19mm concrete</u>			
63	Surface blinding under footings and bases	m3	1.41	
	<u>REINFORCED CONCRETE CAST AGAINST EXCAVATED SURFACES</u>			
	<u>30MPa/19mm concrete</u>			
64	Slabs of catchpits, etc.	m3	4.22	
65	Bottoms of catchpits, etc.	m3	4.22	
	<u>TEST CUBES</u>			
66	Allow for preparing a set of three (3) concrete strength test cubes, each size 150 x 150 x 150mm, sending them to an approved Testing Laboratory for testing and paying all charges in connection therewith.	No	2	
	<u>SMOOTH FORMWORK (DEGREE OF ACCURACY II)</u>			
	<u>Smooth formwork to sides</u>			
67	Slabs over catchpits, etc	m2	13	
	<u>Smooth formwork to sides</u>			
68	Edges, risers, ends and reveals not exceeding 300mm high or wide	m	77	
	<u>REINFORCEMENT</u>			
	<u>Fabric reinforcement</u>			
69	Steeledale Mesh standard square fabric mesh, nominal mass 1,93 kg/m ² with nominal 5,6mm thick wires and 200 x 200mm pitch (code 193), complying with SANS 1024/2006 requirements, in sheets 2,4 x 6m long. (Bottom slab)	m2	28	
	Carried to Collection			R
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**UPGRADING OF STORMWATER RETICULATION
AND WALKWAYS AT THE SCHOOL OF HUMANITIES
AND SOCIAL SCIENCES AT THE UNIVERSITY OF VENDA**

70	Steeledale Mesh standard square fabric mesh, nominal mass 1,93 kg/m ² with nominal 5,6mm thick wires and 200 x 200mm pitch (code 193), complying with SANS 1024/2006 requirements, in sheets 2,4 x 6m long. (Slab)	m2	28
<u>CONCRETE SUNDRIES</u>			
<u>Finishing top surfaces of concrete smooth with a wood float/steel trowel</u>			
71	Surface beds, slabs, etc	m2	28
72	Bottoms of catchpits, etc	m2	28
<u>MASONRY</u>			
<u>Brickwork of NFP bricks in class II mortar</u>			
73	One brick walls	m2	97
<u>BRICKWORK SUNDRIES</u>			
<u>Brickwork reinforcement</u>			
74	150mm Wide reinforcement built in horizontally	m	1 146
<u>Holes</u>			
75	Leave or form opening through one brickwall for pipe exceeding 200mm and n.e 300mm diameter	No	13
<u>INTERNAL PLASTER</u>			
<u>Cement plaster on brickwork</u>			
76	On walls	m2	79
<u>COVERS, ETC.</u>			

Carried to Collection

R

Section No. 2
EXTERNAL WORK
Bill No. 2
WALKWAYS

**UPGRADING OF STORMWATER RETICULATION
AND WALKWAYS AT THE SCHOOL OF HUMANITIES
AND SOCIAL SCIENCES AT THE UNIVERSITY OF VENDA**

Gratings, covers, etc

77	450 x 450mm Stormwater catchpit grating with frame formed of 50 x 50 x 6mm angle iron, fixed to wall with fixing lugs welded to angle iron and fixed to walls (PC Amount R1 500-00 Vat each supplied)	No	20
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PAVINGS, ETC.

EXCAVATION, FILLING, ETC

Open face excavation in earth over site

78	Excavate in pickable earth to reduce ground level below paving and cart away excavated material to a dumping place to be found by the contractor (cut to spoil)	m3	44
79	Rip and scarify ground level to a depth of 150mm and consolidate to 93% mod. AASHTO density (minimum CBR 5)	m2	295
80	Extra over excavation for excavation in soft rock	m3	1
81	Extra over excavation for excavation in hard rock	m3	1

Paving layers

The following to be natural selected gravel layers evenly spread and consolidated in layers and dimensions as specified and on the drawings. All thicknesses to be consolidated thicknesses.

Where described as "imported" the gravel to be supplied and carted on by the contractor from an approved borrow pit

82	Imported G6 material laid in 150mm thick layers and compacted to 95% mod. AASHTO density. Minimum CBR = 15%, PI <= 12 or 3 GM + 10; Grading Modules = 2,7 >= GM >= 0,75	m2	295
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Section No. 2
EXTERNAL WORK
Bill No. 2
WALKWAYS

**UPGRADING OF STORMWATER RETICULATION
AND WALKWAYS AT THE SCHOOL OF HUMANITIES
AND SOCIAL SCIENCES AT THE UNIVERSITY OF VENDA**

PAVING

Brick paving

83	<i>Lay previously set aside</i> 220 x 100 x 50mm thick paving bricks laid in stretcher bond on and including 25mm thick washed river sand founding layer and covered with plaster sandlayer vibrated into joints with a plate vibrator in patches not exceeding 2500 x 2500mm wide	m2	221
84	220 x 100 x 50mm Thick brick pavers laid stretcher bond on and including 25mm thick washed river sand founding layer and covered with plaster sandlayer vibrated into joints with a plate vibrator	m2	74
85	Weed-killing treatment of surface under paving	m2	295

Sundries

86	Extra over cutting paving blocks to fit edge	m	144
87	Mass concrete (25MPa) in 60 x 60mm edge filler strip finished smooth on top with a wood float, including all excavation, formwork, etc	m	144

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Section No. 2
EXTERNAL WORK
Bill No. 2
WALKWAYS

**UPGRADING OF STORMWATER RETICULATION
AND WALKWAYS AT THE SCHOOL OF HUMANITIES
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Bill No	Section No. 2	Page No	Amount
	EXTERNAL WORK		
	<u>SECTION SUMMARY - EXTERNAL WORK</u>		
1	RETAINING WALLS	39	
2	WALKWAYS	55	
	Carried to Final Summary		R
	Section No. 2 EXTERNAL WORK		

SECTION 3: PROVISIONAL SUMS

**UPGRADING OF STORMWATER RETICULATION
AND WALKWAYS AT THE SCHOOL OF HUMANITIES
AND SOCIAL SCIENCES AT THE UNIVERSITY OF VENDA**

Item
No

Quantity

Rate

Amount

SECTION NO. 5

BILL NO.1

PROVISIONAL SUMS

For preambles see "Model Preambles for Trades (2008 Edition)" and Supplementary preambles as specified in the Trades

SUPPLEMENTARY PREAMBLES

NOTE: Tenderers are referred to the definition of general attendance on nominated sub-contractors given in Clause 9 of the Preliminaries

NOTE: Under no circumstances may any Prime Cost - Provisional Amount, etc be extended at an amount lower than the amount given in the Bill

Carried to Collection

R

Section No. 3
PROVISIONAL SUMS
Bill No. 1
PROVISIONAL SUMS

**UPGRADING OF STORMWATER RETICULATION
AND WALKWAYS AT THE SCHOOL OF HUMANITIES
AND SOCIAL SCIENCES AT THE UNIVERSITY OF VENDA**

**THE FOLLOWING PROVISIONAL SUMS ARE FOR
WORK TO BE EXECUTED BY SELECTED
SUBCONTRACTORS**

The following Provisional Sums are for specialists work to be executed by a selected Sub-contractor who upon appointment in terms of the Conditions of Contract shall be deemed to be a Domestic Sub-Contractor to the Contractor

A Selected Sub-Contractor shall be a Sub-contractor executing work for which a sum of money is provided for in the Bills of Quantities or a Sub-contractor executing additional specialist work which arises as a result of an instruction by the Principal Agent/Engineer

Tender documents for such work shall be prepared by the Principal Agent/Engineer in consultation with and to the approval of the Contractor and such tender document shall be issued by the Principal Agent/Engineer to a list of tenderers agreed upon between the Principal Agent/Engineer and Contractor. Tenders shall be submitted to the Principal Agent/Engineer

The Selected Sub-contractor shall be chosen by the Principal Agent/Engineer and the Contractor, and the Contractor shall satisfy himself that such selected sub-contractor can meet the requirements of the Sub-Contract agreement and the Contractor shall inform the Principal Agent/Engineer accordingly

The procedure relating to the method of selection, obtaining of tenders, adjudication thereof and the appointment of the Selected Sub-contractor shall not create any contractual relationship between the Client and the Selected Sub-contractor

Electrical installation

- 1 Provide the amount of R100 000.00 (one hundred thousand rand) for removal and re-installation of services by Specialists
- 2 Allow for profit on above if required
- 3 Allow for giving every facility to Specialists as described

Item
Item
Item

100 000.00

Carried to Collection

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Section No. 3
PROVISIONAL SUMS
Bill No. 1
PROVISIONAL SUMS

**UPGRADING OF STORMWATER RETICULATION
AND WALKWAYS AT THE SCHOOL OF HUMANITIES
AND SOCIAL SCIENCES AT THE UNIVERSITY OF VENDA**

Section No. 3

PROVISIONAL SUMS

Bill No. 1

PROVISIONAL SUMS

COLLECTION

Total Brought Forward from Page No.

**Page
No**

57

58

Amount

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R

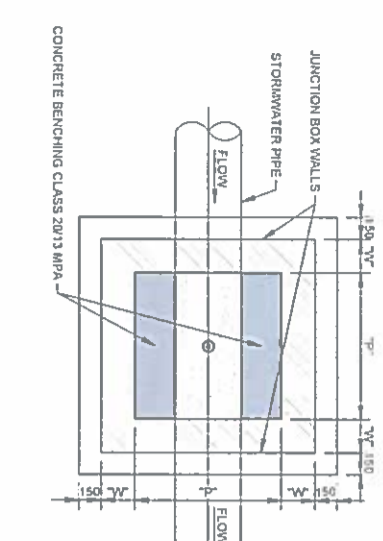
Section No. 3
PROVISIONAL SUMS
Bill No. 1
PROVISIONAL SUMS

FINAL SUMMARY

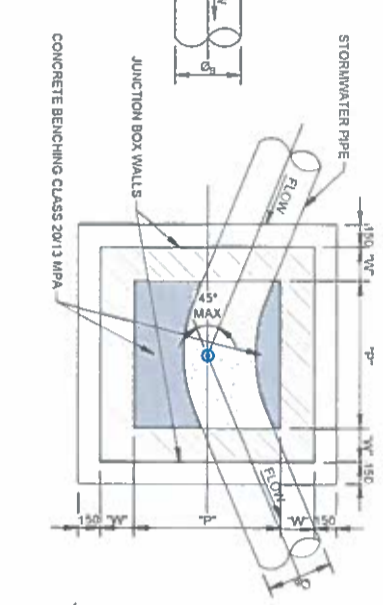
**UPGRADING OF STORMWATER RETICULATION
AND WALKWAYS AT THE SCHOOL OF HUMANITIES
AND SOCIAL SCIENCES AT THE UNIVERSITY OF VENDA**

Section No	Page No	Amount
<u>FINAL SUMMARY</u>		
1	PRELIMINARIES AND GENERAL	30
2	EXTERNAL WORK	56
3	PROVISIONAL SUMS	59
Sub Total 1 - BUILDING COSTS		R
<u>CONTINGENCY SUM</u>		
Allow the amount of R150 000-00 (One hundred and fifty thousand rand) for Contingencies for building work, to be used as directed by the Principal Agent and deducted in whole or in part if not required		Item
		150 000.00
Sub total BUILDINGS (VAT excl.)		R
Value Added Tax		
Add: VAT		R
Sub Total (VAT INCL.) CARRIED TO TENDER FORM		R
Carried to Final Summary		R

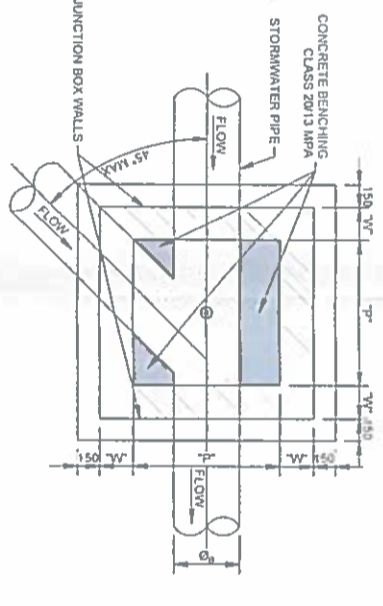
ENGINEER'S DRAWINGS



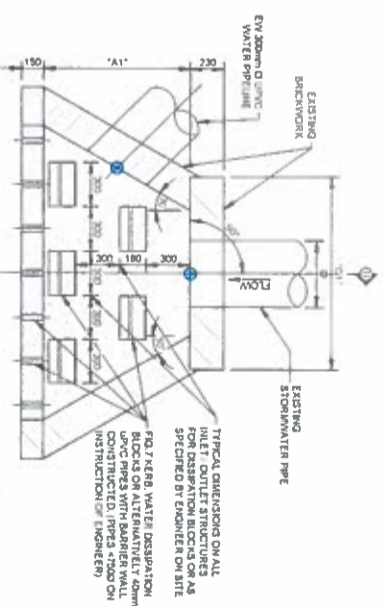
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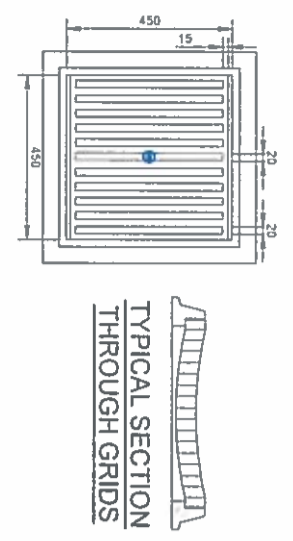
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SCALE 1:25



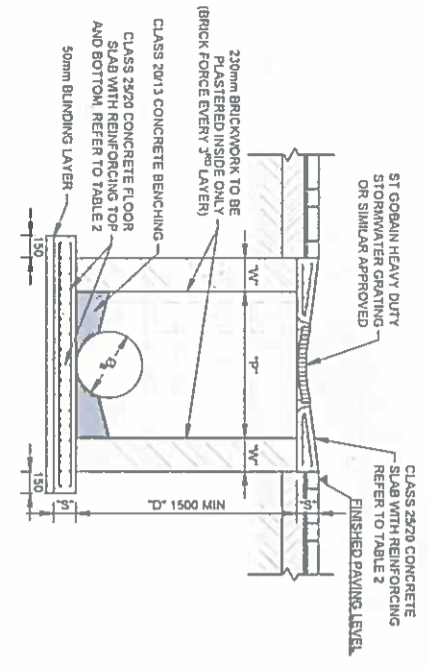
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SCALE 1:25



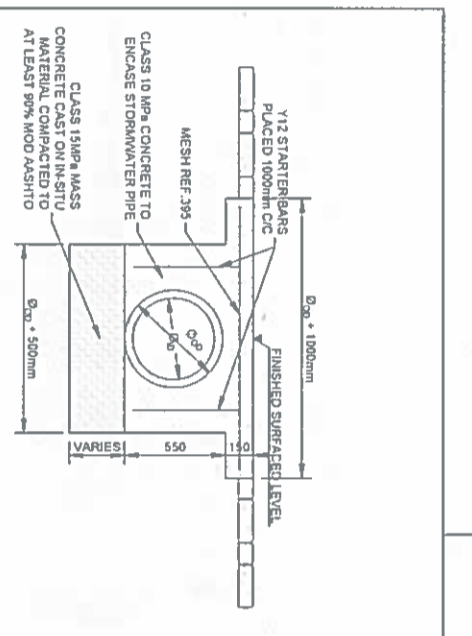
DETAIL G
PLAN VIEW: OUTLET STRUCTURE
SCALE 1:20



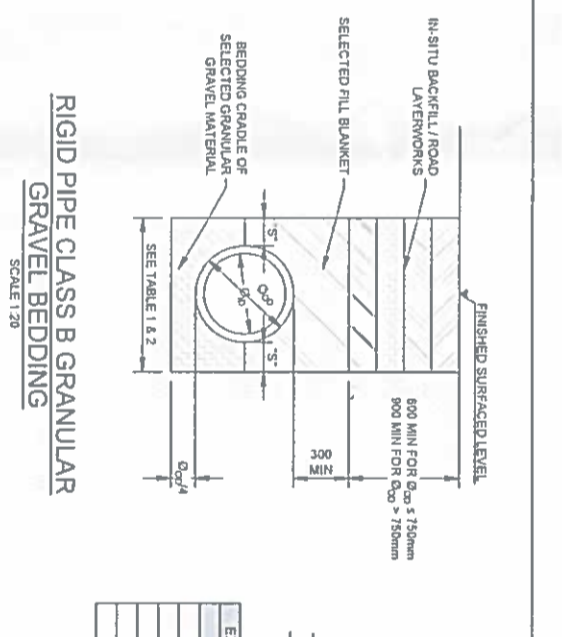
450x450



TYPICAL SECTION OF A JUNCTION BOX AND GRID INLET COMBINATION CHAMBER
SCALE 1:25



TYPICAL SECTION THROUGH STORMWATER PIPE ENCASEMENT
SCALE 1:20

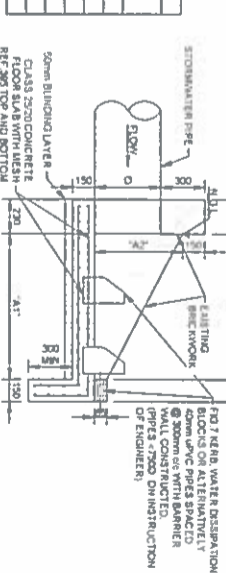


RIGID PIPE CLASS B GRANULAR GRAVEL BEDDING
SCALE 1:20

TABLE 4: INLET OR OUTLET DIMENSION (mm) FOR STD STRUCTURES

PIPE NOMINAL DIAMETER	450mm	600mm	750mm	900mm	1050mm	1200mm
A1	1000	1300	1600	1900	2200	2500
A2	600	750	900	1050	1200	1350
B1	843	1016	1189	1363	1536	1709
B2	2536	3022	3529	4025	4522	5018
C1	1310	1460	1610	1760	1910	2060
C2	850	1000	1150	1300	1450	1600

DIMENSIONS TO STANDARD STORMWATER STRUCTURES
SCALE 1:20



SECTION D-D: INLET & OUTLET STRUCTURE
SCALE 1:20

TABLE 5: SIDE ALLOWANCE FOR TRENCH EXCAVATIONS OF RIGID PIPES SANS 1200 DB - PIPE TRENCHES

EXTERNAL DIAMETER OF PIPE BERGEL (mm)	125	700	1000	2000
OVER	300	300	400	600
UP TO AND INCLUDING				
SIDE ALLOWANCE ON EACH SIDE (mm)	300	400	600	800

TABLE 5: SIDE ALLOWANCE FOR TRENCH EXCAVATIONS OF RIGID PIPES SANS 1200 DB - PIPE TRENCHES
SCALE 1:20

TABLE 1: JUNCTION BOX DIMENSIONS

Ø _o	Ø _i	Ø _o - Ø _i	1.35 x Ø _i
450	1000	1250	1250
600	1000	1250	1250
750	1100	1350	1350
900	1300	1600	1600
1050	1400	1750	1750
1200	1600	1850	1850
1350	1700	2100	2100
1500	1800	2250	2250
2000	2000	2500	2500

TABLE 2: WALL AND SLAB DIMENSIONS AT IN DEPTH INTERVALS

DEPTH (D _o)	WALL THICKNESS (T _W)	SLAB THICKNESS (T _S)	MESH REF.	WIRE SIZE
< 1.5m	200mm	150mm	395	6mm
1.5 - 2.5m	250mm	200mm	617	10mm
2.5 - 3.5m	300mm	250mm	617	10mm
3.5 - 4.5m	350mm	300mm	888	12mm
4.5 - 5.5m	400mm	350mm	888	12mm
> 5.5m	500mm	400mm	888	12mm

TABLE 3: BEDDING WEIGHT IN ONE METRE (kg/m)

WIRE SIZE	MASS kg/m	50	75	100	125	150	175	200	225	250	275	300
12	0.888	17.76	11.84	8.88	7.1	5.97	5.07	4.44	3.94	3.55	3.23	2.96
11	0.746	14.92	9.95	7.46	5.97	4.97	4.36	3.73	3.37	2.98	2.71	2.49
10	0.617	12.33	8.23	6.17	4.94	4.11	3.53	3.09	2.74	2.46	2.24	2.06
9	0.499	9.99	6.66	4.99	3.99	3.33	2.85	2.5	2.22	2.01	1.81	1.66
8	0.395	7.9	5.26	3.95	3.16	2.63	2.26	1.97	1.75	1.58	1.44	1.32
7.1	0.311	6.22	4.14	3.11	2.49	2.07	1.78	1.55	1.38	1.24	1.13	1.04
6.3	0.245	4.8	3.27	2.45	1.96	1.61	1.4	1.22	1.09	0.98	0.89	0.82
5.6	0.193	3.87	2.58	1.93	1.52	1.29	1.13	0.97	0.86	0.78	0.71	0.64
4	0.099	1.98	1.32	0.99	0.79	0.66	0.57	0.44	0.4	0.36	0.33	0.33

TABLE 4: INLET OR OUTLET DIMENSION (mm) FOR STD STRUCTURES

PIPE NOMINAL DIAMETER	450mm	600mm	750mm	900mm	1050mm	1200mm
A1	1000	1300	1600	1900	2200	2500
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C1	1310	1460	1610	1760	1910	2060
C2	850	1000	1150	1300	1450	1600

STORMWATER - DETAILS
JUNCTION BOX, GRID INLETS & PIPE TRENCH DETAILS

DATE: SEPTEMBER 2020
SCALE (AS SHOWN): PAPER SIZE A1
SCALE REF: 0.5, 0.25, 0.125, 0.1, 0.05, 0.025, 0.0125

CLIENT: HUMAN SOCIAL SCIENCE BUILDING IN UNIVEN

PROJECT: UNIVERSITY OF VENDA

DESIGNED BY: W STEENKAMP
DRAWN BY: O GALANE
CHECKED BY: L23285V001/Ra
APPROVED BY: W STEENKAMP

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LEGEND

NOTES

- SETTING OUT NODE
- THE SOFFITS OF PIPES ARE TO BE LAID EITHER LEVEL OR LOWER IN THE DOWNSTREAM DIRECTION
- TABLE 3 FOR STRUCTURAL DETAILS ACCORDING TO DEPTH OF STRUCTURE
- ALL CONCRETE FLOOR AND COVER SLABS TO BE CLASS 25/20 MPA CONCRETE
- ALL CONCRETE BENCHING TO BE CLASS 20/13 ALL BRICKWORK TO BE PLASTERED ON THE INSIDE
- REFER TO SECTION 502 OF THE STANDARD SPECIFICATIONS FOR MUNICIPAL CIVIL ENGINEERING WORKS
- ALL STORMWATER PIPES TO BE A MINIMUM 50mm COVER
- ALL EXPOSED CONCRETE EDGES TO BE ROUNDED WITH A NOSING TOOL
- BRICK FORCE TO BE PLACED IN EVERY THIRD COURSE
- BENCHING LAYER TO BE A MINIMUM THICKNESS OF 50mm
- MINIMUM COVER OF REINFORCING TO BE 40mm
- STORMWATER INSIDE INLET TO BE CHANNELLED BY CLASS 20/13 CONCRETE BENCHING
- ALL PRECAST TRENCH SECTIONS AND LIDS TO BE CLASS 20/13 CONCRETE
- POSITION OF MANHOLES SHALL BE DIRECTLY ABOVE THE PI OF ADJOINING STORMWATER PIPES
- ALL CONCRETE MANHOLE COVERS SHALL HAVE THE LETTERS 'SW' FORMED OR ENGRAVED ON TOP EACH LETTER SHALL BE 50mm WIDE AND 75mm HIGH
- HEAVY DUTY TYPE 1A CAST IRON COVERS TO BE PLACED IN TRAFFICKED AREAS
- STORMWATER STRUCTURE IN ACCORDANCE WITH SANS 1200
- FOR MORE INFORMATION ONLY

