

CSIR
 PILOT MANUFACTURING FACILITY
 BUILDING 14C
 DETAIL DESIGN

Item No		Quantity	Rate	Amount
	<p><u>SECTION NO 2: BUILDERS WORK</u></p> <p><u>BILL NO 1</u></p> <p><u>ALTERATIONS</u></p> <p><u>PREAMBLES</u></p> <p>For preambles see "Model Preambles for Trades"</p> <p><u>SUPPLEMENTARY PREAMBLES</u></p> <p><u>View site</u></p> <p>Before submitting his tender the contractor shall visit the site and satisfy himself as to the nature and extent of the work to be done and the value of the materials contained in the buildings or portions of the buildings to be demolished. No claim for any variations of the contract sum in respect of the nature and extent of the work or of inferior or damaged materials will be entertained</p> <p><u>Old materials to become the property of the contractor</u></p> <p>Old materials from alterations, except where described to be re-used or handed over, become the property of the contractor</p> <p><u>Old materials to be carted away</u></p> <p>Old materials from the alterations, except where described to be re-used or handed over, as well as all rubbish, etc must be regularly carted from the site and not be allowed to accumulate on or around the site</p>			
	Carried to Collection		R	
	<p>Section No. 2 BUILDERSWORK Bill No. 1 Alterations</p>			

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<p><u>Alterations</u></p>	<p>In taking down and removing existing work the utmost care shall be observed to prevent any structural or other damage to remaining portions of the building. The Contractor shall ensure the stability of all structures during alteration work</p>				
	<p>Special care shall be exercised during the progress of the work to ensure that any electrical installations, water supply pipes, telephone and other services which may be encountered are not interfered with and notice shall be given to the principal agent if any disconnection or alterations become necessary</p>				
	<p>The Contractor shall take all precautions necessary to prevent any nuisance from dust whilst carrying out the work</p>				
	<p>Items described as "removed", "removal", "removing", etc shall include for removal from its original position on the premises and carting away from the site and disposal at the contractor's cost</p>				
	<p>Materials described as "set aside for re-use" shall be carefully dismantled where necessary, cleaned, neatly stored under cover and protected from damage until required for re-use. Any damage caused to such materials during removal, storage or re fixing shall be made good at the Contractor's expense</p>				
	<p>Descriptions for removal of brickwork, concrete, partitions, etc shall include all finishes to such items</p>				
	<p><u>Disposal of debris</u></p>				
	<p>The Contractor shall be responsible for the removal from the site and disposal of all materials, debris and rubbish resulting from the alterations</p>				
	<p><u>Cleaning and making good existing surfaces</u></p>				
	<p>The Contractor shall clean and remove all projections, glue marks, etc to existing work where walls, ceilings, floor coverings, doors, frames, etc have been removed</p>				
	<p>Carried to Collection</p>				
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<u>General</u>					
<p>The contractor shall carry out the whole of the works with as little mess and noise as possible and with a minimum of disturbance to adjoining premises and their tenants. He shall provide proper protection and provide, erect and remove when directed, any temporary tarpaulins that may be necessary during the progress of the works, all to the satisfaction of the principal agent Water supply pipes and other piping that may be encountered and found necessary to disconnect or cut, shall be effectually stopped off or grubbed up and removed, and any new connections that may be necessary shall be made with proper fittings, to the satisfaction of the principal agent Prices for taking out of doors, windows, etc shall include for removal of all beads, architraves, ironmongery, etc Prices for taking out and removing doors and frames shall include for removing door stops, cabin hooks, etc and making good floor and wall finishes to match existing</p>					
<u>REMOVAL OF EXISTING WORK</u>					
<u>Breaking up and removing reinforced concrete, including cutting off and removing reinforcement</u>					
1	125mm Thick surface beds	m2	9		
2	25mm Thick slabs	m2	9		
<u>Taking out and removing doors, windows, frames etc from brickwork</u>					
3	Aluminium single door 900 x 2100mm high including door frame complete	No	1		
4	Glazed steel window 4100 x 1200mm high	No	1		
<u>BUILDING UP OPENINGS</u>					
<u>Brickwork in NFP bricks in class II mortar in building up openings:</u>					
5	One brick walls	m2	9		
6	Half brick walls	m2	14.76		
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7	Cutting, toothing and bonding new to existing brickwork, complete	m2	3.35		
<u>MAKING GOOD OF FINISHES ETC</u>					
<u>Making good cement screeds</u>					
8	Floors where screeds have been excavated	m2	9		
<u>OPENINGS THROUGH EXISTING WALLS, ETC.</u>					
<u>Breaking out for and forming openings through brick walls for new doors and frames, including prestressed concrete lintels, making good cement plaster and face brick and into reveals and with 20 MPa concrete thresholds with steel trowelled finish (new doors and frames and making good paintwork elsewhere)</u>					
9	Opening size 1200 x 2100mm high through one brick wall (D05)	No	1.00		
<u>Altering openings</u>					
10	Altering opening in one brick wall where 900 x 2100mm high steel framed door was removed to form opening for new aluminium door 1650 x 2100mm high overall by breaking out brickwork on both sides and bottom, including pre-stressed concrete lintels, making good brickwork, cement plaster on both sides and into reveals (new window and paint measured elsewhere) (D06)	No	1		
11	Altering opening in one brick wall where 4100 x 1200mm high steel framed window was removed to form opening for new hoisting PGSS equipment 4900 x 5600mm high overall by breaking out brickwork on both sides and bottom, including balancing (existing window, and paint measured elsewhere)	No	1		
<u>PROVISIONAL SUMS</u>					
<u>ALTERATION FOR PGSS MACHINE</u>					
12	Allow the amount of R 10 000.00 (Ten Thousand Rands) for altering an opening to fit PGSS machine and building up the altered opening		Item		10,000.00
Carried to Collection				R	
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13	Add for profit		%	
14	Add for Attendance		%	
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	<p><u>SECTION NO 2: BUILDERS WORK</u></p> <p><u>BILL NO 2</u></p> <p><u>EARTHWORKS</u></p> <p><u>PREAMBLES</u></p> <p>For preambles see "Model Preambles for Trades"</p> <p><u>SUPPLEMENTARY PREAMBLES</u></p> <p><u>Nature of ground</u></p> <p>The nature of the ground is assumed to be loose sandy material, therefore "earth", but possibly interspersed with "soft rock" or "hard rock"</p> <p>The nature of the ground is assumed to be gravel, therefore "earth", but possibly interspersed with "soft rock" or "hard rock"</p> <p>The nature of the ground is assumed to be silty clay with loose river boulders varying in size up to approximately 450mm diameter, all of which will be deemed as "earth", but possibly interspersed with "hard rock"</p> <p>Trial holes indicate that the nature of the ground is silty clay to a depth of approximately 500mm with fine to medium loose sandy material below, therefore "earth"</p> <p>A soils investigation has been carried out on the site by the engineer and the report is annexed to these bills of quantities. The soils report indicates that the ground varies between silty sand, reworked soil of mixed origin and residual shale, all of which will be deemed as "earth". All very hard unweathered shale, ironstone, etc, the removal of which necessitates the use of explosives or heavy duty hydraulic percussion hammers (peckers), will be classified as "hard rock"</p>			
	Carried to Collection		R	
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<p><u>Subterranean water</u></p> <p>No subterranean water is expected</p> <p>The water table is expected to vary between approximately ?m and ?m below natural ground level. The removal of subterranean water is given separately</p> <p><u>Carting away of excavated material</u></p> <p>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</p> <p><u>Filling</u></p> <p>Notwithstanding the reference to prescribed multiple handling in clause 1 of the Standard System of Measuring Building Work, prices for filling and backfilling shall include for all selection and any multiple handling of material</p> <p><u>EXCAVATIONS</u></p> <p><u>Excavation in earth exceeding 1m not exceeding 2m deep</u></p>					
1	Reduced levels	m3	3		
<p><u>Extra over trench and hole excavations in earth for excavation in</u></p>					
2	Soft rock	m3	0.3		
3	Hard rock	m3	0.2		
<p><u>Extra over all excavations for carting away</u></p>					
4	Surplus material from excavations and/or stock piles on site to a dumping site to be located by the contractor	m3	3		
<p><u>FILLING ETC</u></p> <p><u>G6 Earth filling imported by the contractor, compacted to 95% Mod AASHTO density</u></p>					
5	Over site to make up levels	m3	23		
<p>Carried to Collection</p>					R
<p>Section No. 2 BUILDERSWORK Bill No. 2 Earthworks</p>					

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	<p><u>Prescribed density tests on filling</u></p>			
6	<p>"Modified AASHTO Density" test</p>	No	1	
	<p><u>SOIL POISONING</u></p>			
	<p><u>Soil insecticide</u></p>			
7	<p>Under surface beds</p>	m2	11	
	<p style="text-align: center;">Carried to Collection</p>			<p style="text-align: center;">R</p>
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	<p><u>SECTION NO 2: BUILDERS WORK</u></p> <p><u>BILL NO 3</u></p> <p><u>CONCRETE, FORMWORK AND REINFORCEMENT</u></p> <p><u>PREAMBLES</u></p> <p>For preambles see "Model Preambles for Trades"</p> <p><u>SUPPLEMENTARY PREAMBLES</u></p> <p><u>Cost of tests</u></p> <p>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)</p> <p><u>Formwork</u></p> <p>Description of formwork shall be deemed to include use and waste only (except where described as "left in" or "permanent"), for fitting together in the required forms, wedging, plumbing and fixing to true angles and surfaces as necessary to ensure easy release during stripping and for reconditioning as necessary before re-use</p> <p>The vertical strutting shall be carried down to such construction as is sufficiently strong to afford the required support without damage and shall remain in position until the newly constructed work is able to support itself</p> <p>Formworks to soffits of solid slabs etc shall be deemed to be slabs not exceeding 250mm thick unless otherwise described</p>			
	Carried to Collection			
	<p>Section No. 2 BUILDERSWORK Bill No. 3 Concrete, Formwork & Reinforcement</p>		R	

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	<p><u>SECTION NO 2: BUILDERS WORK</u></p> <p><u>BILL NO 4</u></p> <p><u>WATERPROOFING</u></p> <p><u>PREAMBLES</u></p> <p>For preambles see "Model Preambles for Trades"</p> <p><u>SUPPLEMENTARY PREAMBLES</u></p> <p><u>Waterproofing</u></p> <p>Waterproofing of roofs, basements, etc shall be laid under a ten year guarantee. Waterproofing to roofs shall be laid to even falls to outlets etc with necessary ridges, hips and valleys. Descriptions of sheet or membrane waterproofing shall be deemed to include additional labour to turn-ups and turn-downs</p> <p><u>One layer of 250 micron "Consol Plastics Gunplas USB Green" waterproof sheeting sealed at laps with "Gunplas Pressure Sensitive Tape"</u></p>			
1	In channels	m2	19	
	<p style="text-align: center;">Carried Forward to Summary of Section No. 2</p> <p>Section No. 2 BUILDERSWORK Bill No. 4 Waterproofing</p>		R	

Item No		Quantity	Rate	Amount
	<p><u>SECTION NO 2: BUILDERS WORK</u></p> <p><u>BILL NO 5</u></p> <p><u>CARPENTRY AND JOINERY</u></p> <p><u>PREAMBLES</u></p> <p>For preambles see "Model Preambles for Trades"</p> <p><u>SUPPLEMENTARY PREAMBLES</u></p> <p><u>Particle board:</u></p> <p>Particle board shall comply with the following specifications:</p> <p>a) SABS 1300 Particle board: exterior and flooring type</p> <p>b) SABS 1301 Particle board: interior type</p> <p><u>Joinery:</u></p> <p>Descriptions of frames shall be deemed to include frames, transomes, mullions, rails, etc</p> <p>Descriptions of hardwood joinery shall be deemed to include pelleting of bolt holes</p> <p><u>Fixing</u></p> <p>Items described as "nailed" shall be deemed to be fixed with hardened steel nails or shot pins to brickwork or concrete. All fixings to be HDG</p> <p><u>Decorative laminate finish:</u></p> <p>Laminate finish shall be glued under pressure. Edge strips shall be butt jointed at junctions with adjacent similar finish</p>			
	Carried to Collection			
	<p>Section No. 2 BUILDERSWORK Bill No. 5 Carpentry and Joinery</p>		R	

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	<p>Descriptions of frames shall be deemed to include frames, transomes, mullions, rails, etc. Descriptions of hardwood joinery shall be deemed to include pelleting of bolt holes. Items described as "nailed" shall be deemed to be fixed with hardened steel nails or shot pins to brickwork or concrete. Laminate finish shall be glued under pressure. Edge strips shall be butt jointed at junctions with adjacent similar finish</p> <p><u>FLOORS AND SKIRTINGS</u></p> <p><u>SKIRTINGS</u></p> <p><u>Resin covered skirting</u></p> <p>1 50mm High cove skirting m 164</p>			
	<p>Carried to Collection</p>		<p>R</p>	
	<p>Section No. 2 BUILDERSWORK Bill No. 5 Carpentry and Joinery</p>			

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Item No		Quantity	Rate	Amount
1	<p><u>BILL NO 6</u></p> <p><u>FLOOR COVERINGS, PLASTIC LININGS, ETC</u></p> <p><u>PREAMBLES</u></p> <p>For preambles see "Model Preambles for Trades"</p> <p><u>SUPPLEMENTARY PREAMBLES</u></p> <p><u>Descriptions:</u></p> <p>Items described as "nailed" shall be deemed to be fixed with hardened steel nails or pins or shot pinned to brickwork or concrete</p> <p>Items described as "plugged" shall be deemed to include screwing to fibre, plastic or metal plugs at not exceeding 600mm centres, and where described as "bolted" the bolts have been given elsewhere</p> <p><u>FLOOR COVERINGS</u></p> <p><u>EPOXY</u></p> <p><u>"Vuka" or similar approved decorative slip resistant solvent free epoxy system with coloured quartz and a clear epoxy resin. Prepare existing surface. Prime concrete surface with a solvent free epoxy and apply first layer of epoxy and pigmented aggregate system. Allow 15 hours to dry. Install second coat epoxy and pigmented aggregate and allow 15 hours to dry. Apply last layer of resin to thickness of 450 microns ensuring the system has a DFT of 3.0mm and allow 24 hours to dry.</u></p> <p>On floors</p>	m2	215	
	<p style="text-align: right;">Carried Forward to Summary of Section No. 2</p> <p>Section No. 2 BUILDERSWORK Bill No. 6 Floor Coverings</p>		R	

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	<p><u>SECTION NO 2: BUILDERS WORK</u></p> <p><u>BILL NO 7</u></p> <p><u>CEILINGS, PARTITIONS AND ACCESS FLOORING</u></p> <p><u>PREAMBLES</u></p> <p>For preambles see "Model Preambles for Trades"</p> <p><u>SUPPLEMENTARY PREAMBLES</u></p> <p><u>Fixing</u></p> <p>Items described as "nailed" shall be deemed to be fixed with hardened steel nails or pins, or to be shot-pinned, to brickwork or concrete</p> <p>Items described as "plugged" shall be deemed to include screwing to fibre, plastic or metal plugs at not exceeding 500mm centres, and where described as "bolted", the bolts have been given elsewhere</p> <p><u>Ceilings</u></p> <p>Unless otherwise described ceilings shall be deemed to be horizontal</p> <p><u>Openings</u></p> <p>Prices for openings for light fittings, ventilation grilles, air conditioning diffusers, etc in ceilings are to include for any necessary additional support, trimming around, etc</p> <p><u>Steel components</u></p> <p>All steel components for ceilings, partitions, etc are to be galvanised in accordance with SANS 121</p>			
	Carried to Collection			
	<p>Section No. 2 BUILDERSWORK Bill No. 7 Ceilings, Partitions & Access Flooring</p>		R	

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<u>CEILING ETC</u>			
<u>SUSPENDED CEILINGS</u>			
<u>75mm Isowalls or similar approved, ceiling on exposed suspension grid system including hangers, necessary hold-down clips and wedges, etc ceiling fixing and installation by specialist</u>			
1	Ceilings suspended not exceeding 1m below concrete soffits	m2	71
2	Ceilings suspended exceeding 2m but not exceeding 3m below concrete soffits	m2	91
<u>Cornices, perimeter trims, etc to suspended ceilings</u>			
3	Shadow line plugged to brick or concrete wall	m	131
<u>NAILED UP CEILINGS</u>			
<u>75mm Isowall or similar approved, ceiling fixed on to and including steel brander in strict accordance with manufacturer's details and instructions</u>			
4	Ceilings including brander at 300mm centres	m2	54
<u>Aluminium edge trims</u>			
5	Aluminium edge trims	m	33
<u>PARTITIONS ETC</u>			
<u>75mm Isowall partitions or similar approved</u>			
6	Partitioning 3.6m high with bottom and top tracks plugged	m	38
7	Partitioning 6.1m high with bottom and top tracks plugged	m	19
8	Extra over partition 3.6m high for vertical abutment	No	3.00
9	Extra over partition 6.1m high for vertical abutment	No	1.00
10	Extra over partition 3.6m high for T - Intersections	No	4
Carried to Collection			
Section No. 2 BUILDERSWORK Bill No. 7 Ceilings, Partitions & Access Flooring			R

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	<p><u>SECTION NO 2: BUILDERS WORK</u></p> <p><u>BILL NO 8</u></p> <p><u>METALWORK</u></p> <p><u>PREAMBLES</u></p> <p>For preambles see "Model Preambles for Trades"</p> <p><u>SUPPLEMENTARY PREAMBLES</u></p> <p><u>Descriptions of bolts, anchors, etc</u></p> <p>Descriptions of bolts shall be deemed to include nuts and washers</p> <p>Descriptions of expansion anchors and bolts and chemical anchors and bolts shall be deemed to include nuts, washers and mortices in brickwork or concrete</p> <p>Items described as "holed for bolt(s)" shall be deemed to exclude the bolts unless otherwise described</p> <p>Items described as "plugged" shall be deemed to include screwing to fibre, plastic or metal plugs at not exceeding 600mm centres</p>			
	Carried to Collection			
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<p>Subcontractor executing aluminium work to be a registered AAAMSA member, manufacturer and installation to include ironmongery scheduled. Extrude aluminium to be fabricated from alloy 6063 in temper T6 in accordance with the latest addition of BS 1474. Glazing to be selected, fixed and marked in accordance with SANS 50572. Warranty against delamination and or colour delidation of safety glass and or hermetically sealed glazing to be provided, valid for a minimum of five years. Frames to receive glazing capable of withstanding the wind loads to be determined by a competent person, but shall not be less that 100Pa. Windows assembly to be stainless steel screws through out, contact between steel and aluminium to be prevented by means of example double sided tape. Compatibility between sealant and frame surface to be confirmed in writing before application. Fixing of aluminium windows to steel window linings to be with stainless steel, self tapping screws. Wire glass, if used as safety glass, to conform to SANS 1263 part 1. Glazed installations to be protected during construction and to be handed over perfect. AAAMSA test certificate A1, and SAGGA certificate of conformance to be provided for all aluminium work installed. Full detailed shop drawings to be provided for approval by the Architect prior to manufacture.</p>	<p><u>ALUMINIUM WINDOWS, DOORS, ETC</u></p>	<p><u>Purpose-made clear 6mm safety glass, normal-strength, glazed anodised aluminium window with fixed panels and perimeter sealed all round internally and externally with non-pickable epoxy joint sealant> Fittings and installation by specialist</u></p>	<p>1 2000 x 1000mm High window, including all ironmongery</p>	<p>No</p>	<p>1</p>	<p>2 1000mm x 1000mm High window, including all ironmongery</p>	<p>No</p>	<p>3</p>	<p><u>Purpose made charcoal aluminium full panel glass door as per architect specification, complete with subframes, ironmongery, glass, sealing, etc and fixing to brickwork or drywalls. Fittings and installation by specialist</u></p>	<p>3 Purpose made door 1650 x 2032mm high (D06,D07)</p>	<p>No</p>	<p>4</p>	<p>Carried to Collection</p>	<p>R</p>	<p>Section No. 2 BUILDERSWORK Bill No. 8 Metalwork</p>
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1	<p><u>SECTION NO 2: BUILDERS WORK</u></p> <p><u>BILL NO 9</u></p> <p><u>PLASTERING</u></p> <p><u>PREAMBLES</u></p> <p>For preambles see "Model Preambles for Trades"</p> <p><u>INTERNAL PLASTER</u></p> <p><u>Apply one coat plaster 5-8mm thick to pre-wetted/soaked wall and wood trowel to a smooth and even finish. Plaster single wall surfaces in one operation.</u></p> <p>On walls</p>	m2	216	
	<p>Carried Forward to Summary of Section No. 2</p> <p>Section No. 2 BUILDERSWORK Bill No. 9 Plastering</p>		R	

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	<p><u>SECTION NO 2 - BUILDERSWORK</u></p> <p><u>BILL NO 10</u></p> <p><u>PLUMBING AND DRAINAGE</u></p> <p>For preambles see "Model Preambles for Trades"</p> <p><u>SUPPLEMENTARY PREAMBLES</u></p> <p><u>"Polycop" polypropylene pipes:</u></p> <p>Polypropylene pipes 54mm diameter and under shall be seamless copper coloured class 16 pipes jointed with "Fast-fuse" heat welded thermoplastic or brass compression fittings as designed for use with copper pipes as stated</p> <p>Pipes shall be firmly fixed to walls etc with coloured nylon snap-in pipe clips with provision for accommodating thermal movement and jointed and fixed strictly in accordance with the manufacturer's instructions</p> <p>All pipe diameters are nominal external</p> <p><u>"Polylink" polypropylene pipes:</u></p> <p>Polypropylene pipes 63mm diameter and over shall be class 12 pipes jointed with cast iron "Supraclamp" running joints</p> <p>Fusion welded bends, once or twice mitred as necessary, and tees shall be factory manufactured</p> <p>Fusion welded bends and tees shall include jointing to pipes with PVC rubber ring double Z joint couplers</p> <p>Branch tees shall include flanged and bolted joints to "Polycop" branch pipes in addition and for brass compression male iron to copper straight couplers</p>			
	Carried to Collection		R	
	<p>Section No. 2 BUILDERSWORK Bill No. 10 Plumbing and Drainage</p>			

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<p>Reducers shall include jointing to pipes with PVC rubber ring double Z joint couplers and reducers shall be of sufficient overall length to accommodate same</p> <p>All pipes shall be jointed and fixed strictly in accordance with the manufacturer's instructions</p> <p>All pipe diameters are nominal external</p> <p><u>Concrete pipes:</u></p> <p>Pipes shall be jointed with ogee joints with rubber collars or socket and spigot joints with rubber rings</p> <p><u>Vitrified clay pipes:</u></p> <p>Pipes shall rest on solid ground and, where necessary, pockets of sufficient size shall be cut around joints to enable the jointing to be properly performed or, alternatively, pipes shall be bedded full length on and including unreinforced concrete laid in a semi-dry state immediately before pipes are laid</p> <p>Sewer and drainage pipes and fittings shall be jointed and sealed with butyl rubber rings</p> <p><u>uPVC pipes and fittings:</u></p> <p>Soil, waste and vent pipes and fittings shall be solvent weld jointed</p> <p><u>uPVC pressure pipes and fittings:</u></p> <p>Pipes for water supply shall be of the class stated</p> <p>Pipes of 40mm diameter and smaller shall be plain ended with solvent welded uPVC loose sockets and fittings</p> <p>Pipes of 50mm diameter and greater shall have sockets and spigots with push in type integral rubber ring joints. Bends shall be uPVC and all other fittings shall be cast iron, all with similar push-in type joints</p>			
<p style="text-align: center;">Carried to Collection</p> <p>Section No. 2 BUILDERSWORK Bill No. 10 Plumbing and Drainage</p>		<p style="text-align: center;">R</p>	

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<p><u>Copper pipes:</u></p>	<p>Pipes shall be hard drawn and half-hard pipes of the class stated. Class 0 (thin walled hard drawn) pipes shall not be bent. Class 1 (thin walled half-hard), class 2 (half-hard) and class 3 (heavy walled half-hard) pipes shall only be bent with benders with inner and outer formers. Fittings to copper waste, vent and anti-syphon pipes, capillary solder fittings and compression fittings shall be "Cobra Watertech" type. Capillary solder fittings shall comply with ISO 2016. Only compression fittings shall be used in walls or in ground</p>	<p><u>Fixing of pipes</u></p>	<p>Unless specifically otherwise stated, descriptions of pipes shall be deemed to include fixing to walls etc, casting in, building in or suspending not exceeding 1m below suspension level</p>	<p><u>Lead pipes and fittings</u></p>	<p>All soldered joints shall be wiped and brass unions shall be used for jointing lead to steel</p>	<p><u>Reducing fittings</u></p>	<p>Where fittings have reducing ends or branches they are described as "reducing". In the case of pipes with diameters not exceeding 60mm only the largest end or branch size is given. Should the contractor wish to use other fittings and bushes or reducers he may do so on the understanding that no claim in this regard will be entertained. In the case of pipes with diameters exceeding 60mm all sizes are given and no claim for extra bushes, reducers, etc will be entertained</p>	<p><u>Wire gratings</u></p>	<p>Descriptions of gutter outlets etc shall be deemed to include wire balloon gratings</p>	<p><u>Septic tanks</u></p>	<p>Descriptions of septic tanks shall be deemed to include excavation, bedding and jointing, concrete base slabs, jointing to drains and backfilling, compaction, etc all in accordance with the manufacturer's instructions</p>	<p>Carried to Collection</p>	<p>R</p>	<p>Section No. 2 BUILDERSWORK Bill No. 10 Plumbing and Drainage</p>
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<p><u>Exposed concrete surfaces</u></p>	<p>Exposed surfaces of concrete stormwater channels, cover slabs, inspection eye marker slabs, gulley tops, cleaning eye tops, catchpits, inspection chambers, etc shall be finished smooth with plaster</p>	<p><u>Excavations</u></p>	<p>No claim for rock excavation will be entertained unless the contractor has timeously notified the quantity surveyor thereof prior to backfilling</p> <p>"Soft rock" and "hard rock" shall be as defined in "Earthworks"</p>	<p><u>Laying, backfilling, bedding, etc. of pipes</u></p>	<p>Pipes shall be laid and bedded and trenches shall be carefully backfilled in accordance with manufacturers' instructions</p> <p>Where no manufacturers' instructions exist pipes shall be laid in accordance with clauses 5.1 and 5.2 of each of the following: SABS 1200 L : Medium-pressure pipelines LD : Sewers LE : Stormwater drainage Pipe trenches etc shall be backfilled in accordance with clauses 3, 5.5, 5.6, 5.7 and 7 of SABS 1200 DB : Earthworks (Pipe trenches) Pipes shall be bedded in accordance with clauses 3.1 to 3.4.1, 5.1 to 5.3 and 7 of SABS 1200 LB : Bedding (Pipes). Unless otherwise described bedding of rigid pipes shall be class B bedding</p>	<p><u>Flush pans</u></p>	<p>Flush pans shall have straight or side outlets and "P" or "S" traps as necessary</p>	<p><u>Stainless steelbasins, sinks, wash troughs, urinals, etc.</u></p>	<p>Units shall have standard aprons on all exposed edges and tiling keys against walls where applicable</p>	<p>Carried to Collection</p>	<p>R</p>	<p>Section No. 2 BUILDERSWORK Bill No. 10 Plumbing and Drainage</p>

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<p>1</p>	<p><u>Waste unions</u></p> <p>Descriptions of waste unions shall be deemed to include rubber or vulcanite plugs and chains fixed to fittings</p> <p><u>Steel sectional water tanks</u></p> <p>Tanks shall comply with SABS CKS 114</p> <p><u>"Densyl" petrolatum anti-corrosion tape as manufactured by Denso SA (Pty) Ltd.</u></p> <p>Pipes to be taped shall be coated with the appropriate primer and the tape shall be applied with minimum 15mm lap per spiral unless otherwise described</p> <p>Couplings and fittings to pipes shall be taped in strict accordance with the manufacturer's instructions including all mastic, tape, "Layflat" sheeting, securing of same, etc</p> <p><u>TESTING</u></p> <p>Testing sewer pipe system</p> <p style="text-align: right;">No</p>	<p>1.00</p>	<p>R</p>	<p>Carried to Collection</p>
<p>Section No. 2 BUILDERSWORK Bill No. 10 Plumbing and Drainage</p>				

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Section No. 2 BUILDERSWORK Bill No. 10 Plumbing and Drainage <u>COLLECTION</u>			
	Page No		Amount
Total Brought Forward from Page No.	30		
	31		
	32		
	33		
	34		
	35		
	36		
Carried Forward to Summary of Section No. 2		R	
Section No. 2 BUILDERSWORK Bill No. 10 Plumbing and Drainage			

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Item No		Quantity	Rate	Amount
1	<p><u>SECTION NO 2: BUILDERS WORK</u></p> <p><u>BILL NO 12</u></p> <p><u>PAINTWORK</u></p> <p><u>PREAMBLES</u></p> <p>For preambles see "Model Preambles for Trades"</p> <p><u>SUPPLEMENTARY PREAMBLES</u></p> <p><u>DESCRIPTIONS</u></p> <p>Descriptions of paintwork shall be deemed to include for all cutting in</p> <p><u>PAINT SPECIFICATIONS</u></p> <p>All painting shall be done in accordance with "Plascon" or other approved specifications unless otherwise described</p> <p>All painting shall be done in accordance strictly with "Plascon" specifications only and including a "Certificate of Compliance"</p> <p>Note: Surface to be dry, sound and clean and cured for a minimum of 14 days, with a moisture content measured with a doser hygrometer (or equivalent) of BD 2 scale - 8% or less.</p> <p><u>PAINT ON FLOATED PLASTER</u></p> <p><u>One coat alkali resistant primer and two coats "Dulux Tuffcote" or equivalent approved emulsion paint:</u></p> <p>Internal walls</p>	m2	216	
	<p>Carried to Collection</p>		R	
	<p>Section No. 2 BUILDERSWORK Bill No. 11 Paintwork</p>			

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<p>Section No. 2</p> <p>BUILDERSWORK</p> <p>Bill No. 11</p> <p>Paintwork</p> <p><u>COLLECTION</u></p> <p>Total Brought Forward from Page No.</p> <p style="text-align: right;">Carried Forward to Summary of Section No. 2</p> <p>Section No. 2 BUILDERSWORK Bill No. 11 Paintwork</p>	<p style="text-align: center;">Page No</p> <p style="text-align: center;">38</p> <p style="text-align: center;">39</p>		<p style="text-align: center;">Amount</p> <hr style="border-top: 1px dashed black;"/> <hr style="border-top: 1px dashed black;"/>
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Item No		Quantity	Rate	Amount
<u>SECTION NO 2: BUILDERS WORK</u>				
<u>BILL NO 13</u>				
<u>PROVISIONAL SUMS</u>				
<u>PROVISIONAL SUMS FOR SUBCONTRACT WORKS</u>				
<u>900 X 900mm OPENING HATCHES</u>				
1	Allow the amount of R 20 000.00 (Twenty Thousand Rands) for new opening in Isowalls for hatches including accessories "to architect's specification"	Item		20,000.00
2	Add for profit		%	
3	Add for Attendance		%	
<u>ALTERATION TO EXISTING CEILING</u>				
4	Allow the amount of R 10 000.00 (Ten Thousand Rands) for alteration to existing ceiling to architect's specification	Item		10,000.00
5	Add for profit		%	
6	Add for Attendance		%	
<u>SEALING OF ROLLER SHUTTER INTERNALLY</u>				
7	Allow the amount of R 5 000.00 (Five Thousand Rands) for new door seal to architect's specification	Item		5,000.00
8	Add for profit		%	
9	Add for Attendance		%	
<u>LOCKABLE CAGE</u>				
10	Allow the amount of R 20 000 (Twenty Thousand Rands) for new lockable cage to architect's specification	Item		20,000.00
Carried to Collection				R
Section No. 2 BUILDERSWORK Bill No. 12 Provisional Sums				

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11	Add for profit			%	
12	Add for Attendance			%	
Carried to Collection				R	
Section No. 2 BUILDERSWORK Bill No. 12 Provisional Sums					

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Item No		Quantity	Rate	Amount
<u>SECTION NO 3: ELECTRICAL WORK</u>				
<u>BILL NO 1</u>				
<u>PRELIMINARIES AND GENERAL</u>				
<u>Items of a preliminary and general nature</u>				
1	Mark-up of drawings for as-built purposes (as-built CAD drawings will be compiled by the consultant based on the contractor's markups)	Item		
2	Provision of all manuals and handover documentation during commissioning	Item		
3	Earthing and bonding of the electrical installation	Item		
4	Additional items of a preliminary and general nature to be listed and priced below	Item		
Carried Forward to Summary of Section No. 3				R
Section No. 3 ELECTRICAL WORK Bill No. 1 PRELIMINARIES AND GENERAL				

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Item No		Quantity	Rate	Amount
	<u>SECTION NO 3: ELECTRICAL WORK</u>			
	<u>BILL NO.2</u>			
	<u>LOW TENSION DISTRIBUTION</u>			
	<u>Uninterruptible Power Supply</u>			
	<u>Supply and installation of UPS with enclosure, alarms, controls, etc. as per detailed electrical technical specifications</u>			
1	3 kVA double conversion on-line UPS with battery backup time of 60 minutes	No	1	
	DISTRIBUTION BOARDS			
	Supply and installation of a pre-manufactured low voltage distribution board and energy meter, complete with sheetmetal tray, frames,sub-frames, busbars, breakers, legend card, circuit breakers, fuses, relay, volt-meter, ammeter, transformer, earth, leakage unit, time, switch, etc.			
	DB-M1			
2	As per DB-M1 single line diagram	No	1	
	<u>IT BOX</u>			
	<u>Supply and installation of a pre-manufactured IT distribution box, complete with sheet metal tray, powder coated frames and door.</u>			
3	300 x 300 x 110 mm flush mounted box	No	1	
	<u>SUNDRIES</u>			
4	Test and commission, balancing, labelling and provision of CoC for the complete electrical installation	No	1	
	<u>CABLES</u>			
	Carried to Collection			
	Section No. 3 ELECTRICAL WORK Bill No. 2 LOW TENSION DISTRIBUTION			R

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<u>600/1000V PVC/SWA/PVC copper cable laid in surface mount cable ladder</u>					
5	35mm ² 4-core PVC/SWA/PVC copper cable	m	6		
6	25mm ² BCEW	m	6		
Carried to Collection					
Section No. 3 ELECTRICAL WORK Bill No. 2 LOW TENSION DISTRIBUTION					
				R	

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Section No. 3 ELECTRICAL WORK Bill No. 2 LOW TENSION DISTRIBUTION <u>COLLECTION</u>			
	Page No		Amount
Total Brought Forward from Page No.	46		
	47		
Carried Forward to Summary of Section No. 3		R	
Section No. 3 ELECTRICAL WORK Bill No. 2 LOW TENSION DISTRIBUTION			

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Item No		Quantity	Rate	Amount
	<u>SECTION NO 3: ELECTRICAL WORK</u>			
	<u>BILL NO.3</u>			
	<u>LIGHTING</u>			
	<u>GALVANISED CONDUIT</u>			
	Note: Conduit includes all bends, tee-pieces, joints, locknuts etc.			
	<u>Surface mounted to brickwork, concrete, steel, wood, roof members, etc. not exceeding 3000mm above floor level</u>			
1	20mm Diameter	No		Rate Only
	<u>RIGID PVC CONDUIT</u>			
	<u>Note: Conduit includes all bends, tee-pieces, joints, locknuts etc.</u>			
	<u>Chased and/or fixed in brickwork not exceeding 3000mm above floor level (making good of chase by others)</u>			
2	20mm Diameter	m	150	
	<u>CONDUIT BOXES AND FITTINGS</u>			
	<u>PVC type fixed onto conduit</u>			
3	Round conduit box for 20mm diameter conduit	No	91	
4	100 x 50 x 50mm Deep wall box	No	34	
5	100 x 100 x 50mm Deep wall box	No	20	
	<u>Cover plates for conduit boxes</u>			
6	White steel cover plate for 20mm round conduit box	No	25	
7	White steel cover plate for 100 x 50 x 50mm Deep wall box	No	15	
	Carried to Collection			R
	Section No. 3 ELECTRICAL WORK Bill No. 3 LIGHTING			

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<u>LUMINAIRES AND EQUIPMENT</u>					
<u>Supply and install luminaires complete with lamps, connections,etc. mounted in position</u>					
<u>Type F1</u>					
19	Type F1: 35W 4000K, 600x600 LED Recessed panel light, IP20 . Beka Schreder, or similar approved.	No	27		
20	Type F1/E: As F1, but with fitting to operate from a self-diagnostic maintained type battery pack with 50% light output for 60 min standby back-up time.	No	7		
<u>SUNDRIES</u>					
21	Supply Type F1 Light Fitting for attic stock	No	3		
22	Supply Type F1/E Light Fitting for attic stock	No	3		
Carried to Collection					
Section No. 3 ELECTRICAL WORK Bill No. 3 LIGHTING					R

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Section No. 3 ELECTRICAL WORK Bill No. 3 LIGHTING <u>COLLECTION</u>			
	Page No		Amount
Total Brought Forward from Page No.	49		
	50		
	51		
Carried Forward to Summary of Section No. 3		R	
Section No. 3 ELECTRICAL WORK Bill No. 3 LIGHTING			

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Item No		Quantity	Rate	Amount
<u>SECTION NO 3: ELECTRICAL WORK</u>				
<u>BILL NO.4</u>				
<u>POWER POINTS</u>				
<u>WIRING CHANNELS</u>				
Note: The rates for wiring channels shall include for hangers, splices, jointing, drilling etc				
<u>Hot dipped galvanised steel channel complete with galvanised cover suspended from steel trusses or concrete slab with and including hangers, etc. exceeding 3000 mm above floor level</u>				
1	P9000 Channel (1 mm thick)	m	21	
<u>CABLE TRAYS</u>				
Note: Conduit includes all bends, tee-pieces, joints, locknuts, jointing, drilling etc.				
<u>Hot dipped galvanised steel cable tray suspended from steel trusses or concrete slab, including hangers, etc., not exceeding 3000 mm above floor level</u>				
2	300 mm medium duty cable Ladder	m	15	
3	150 mm medium duty cable tray	m		Rate Only
<u>GALVANISED CONDUIT</u>				
Note: Conduit includes all bends, tee-pieces, joints, locknuts etc				
<u>Surface mounted to brickwork, concrete, steel, wood, roof members, etc. not exceeding 3000mm above floor level</u>				
4	25mm Diameter	m		Rate Only
Carried to Collection				R
Section No. 3 ELECTRICAL WORK Bill No. 4 POWER POINTS				

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<u>GALVANISED BOXES AND FITTINGS</u>					
<u>Galvanized draw boxes fixed onto conduits</u>					
5	100x100mm galvanised draw box for power outlet	m	10		
6	100x100mm galvanised draw box for HDMI and DATA	m	10		
7	100 x 100 x 50mm Deep wall box	No	14		
<u>RIGID PVC CONDUIT</u>					
<u>Note: Conduit includes all bends, tee-pieces, joints, locknuts etc</u>					
<u>Chased and/or fixed in brickwork/drywall or cast in concrete not exceeding 3000mm above floor level (making good of chase by others)</u>					
8	25mm Diameter	m	379		
<u>POWER SKIRTING</u>					
Note: The rates for power skirting shall include for splices, joining, drilling, and cut openings etc.					
<u>Power skirting complete with cover surface mounted to brickwork or concrete</u>					
9	Two channel two-compartment	m			Rate Only
<u>Switches, etc. complete with cover plate as required, fixed to power skirting</u>					
10	16A Combined Three-pin switched socket outlet, SANS 164-1 & 164-2	No			Rate Only
11	16A Three-pin dedicated switched socket outlet (colour red), SANS 164-1	No			Rate Only
12	Cover complete with IT point outlet	No			Rate Only
13	Cover complete with Telephone point outlet	No			Rate Only
Carried to Collection					
Section No. 3 ELECTRICAL WORK Bill No. 4 POWER POINTS					R

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<u>SWITCHED SOCKET OUTLETS, ISOLATORS ETC</u>					
<u>Socket outlets and isolators installed in brickwork complete with cover plate and flush galvanised wall box</u>					
14	16A Combined Three-pin switched socket outlet, SANS 164-1 & 164-2 galvanised wall box	No	5		
15	16A Three-pin dedicated switched socket outlet (colour red), SANS 164-1 100x100x50mm galvanised wall box, SANS 164-1	No	4		
16	16A Double Three-pin switched socket outlet in 100x100x50mm galvanised wall box/recessed SANS 164-1	No	6		
17	32A 2-pole switched isolator	No	2		
18	32A 2-pole switched isolator weather proof	No	2		
19	63A 2-pole switched isolator	No			Rate Only
<u>Socket outlets and isolators with cover plate and box surface mounted to brickwork / dry wall</u>					
20	16A Three-pin switched socket outlet with plastic cover plate installed in weatherproof PVC box, SANS 164-1	No			Rate Only
21	32A 3 phase 5-pin industrial socket outlet (colour Red)	No	3		
22	32A 3 phase 5-pin industrial socket outlet Weatherproof (colour Red)	No	1		
23	20A 2-pole weatherproof IP65 lockable rotary isolator	No			
24	32A 2-pole weatherproof IP65 lockable rotary isolator	No	2		
25	32A 4-pole weatherproof IP65 lockable rotary isolator	No	1		
26	63A 4-pole weatherproof IP65 lockable rotary isolator	No	1		
27	125A 4-pole weatherproof IP65 lockable rotary isolator	No			Rate Only
Carried to Collection					
Section No. 3 ELECTRICAL WORK Bill No. 4 POWER POINTS				R	

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<u>CONDUCTORS</u>					
<u>PVC insulated stranded copper conductor drawn into wire ways</u>					
28	4mm ²	m	135		
29	6mm ²	m	60		
<u>EARTHING</u>					
<u>Bare copper earth conductor installed with cable (cable measured elsewhere)</u>					
30	2,5 mm ²	m	68		
31	4 mm ²	m	60		
<u>CABLES</u>					
<u>Cable installed in conduits</u>					
32	4 mm ² 4-core	m			Rate Only
33	6 mm ² 4-core	m	15		
34	16 mm ² 4-core	m	45		
<u>CABLE TERMINATIONS</u>					
<u>Termination for cables</u>					
35	4 mm ² 4-core	No			Rate Only
36	6 mm ² 4-core	No	2		
37	16 mm ² 4-core	No	2		
<u>EARTHING</u>					
<u>Bare copper earth conductor installed with cable (cable measured elsewhere)</u>					
38	2,5 mm ²	m			Rate Only
39	4 mm ²	m	15		
Carried to Collection					R
Section No. 3 ELECTRICAL WORK Bill No. 4 POWER POINTS					

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40	10 mm ²	m	45		
<u>EARTH CONDUCTOR TERMINATION</u>					
<u>Termination for bare and insulated copper conductors including lugs and connections</u>					
41	2,5 mm ²	No			Rate Only
42	4 mm ²	No	2		
43	10 mm ²	No	2		
Carried to Collection					
				R	
Section No. 3 ELECTRICAL WORK Bill No. 4 POWER POINTS					

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Section No. 3 ELECTRICAL WORK Bill No. 4 POWER POINTS <u>COLLECTION</u>			
	Page No		Amount
Total Brought Forward from Page No.	53		
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	55		
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Carried Forward to Summary of Section No. 3		R	
Section No. 3 ELECTRICAL WORK Bill No. 4 POWER POINTS			

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Bill No	Section No. 3 ELECTRICAL WORK <u>SECTION SUMMARY - ELECTRICAL WORK</u>	Page No		Amount
1	PRELIMINARIES AND GENERAL	45		
2	LOW TENSION DISTRIBUTION	48		
3	LIGHTING	52		
4	POWER POINTS	58		
	Carried to Final Summary		R	
	Section No. 3 ELECTRICAL WORK			

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Item No		Quantity	Rate	Amount
<u>SECTION NO 4: MECHANICAL WORK</u>				
<u>BILL NO 1</u>				
<u>PREAMBLES TO BILLS OF QUANTITIES</u>				
1	These Bills of Quantities contain pages numbered consec	Item		
2	Before the Tenderer submits his tender he should check the number of pages, and if any are found missing or duplicated, or the figures or writing indistinct, he should apply to the Engineer at once and have same rectified as no liability whatsoever will be admitted by the Engineer in respect of errors in tender due to the foregoing.	Item		
3	The Bills of Quantities form part of and must be read in conjunction with the Specification, which document contains the full description of the work to be done and material and equipment to be used and unless otherwise described in the Bills of Quantities, reference should be made to the Specification for the full meaning of descriptions of work to be done and materials and equipment to be used in this service.	Item		
4	All item rates and extensions must be priced in detail before submission of Tenders.	Item		
5	The total tender price in the bill shall constitute the contrac price of the successful Tenderer.	Item		
6	Tenderers are advised to check their item extensions and total additions, as no claim for arithmetical errors will be considered.	Item		
Carried to Collection			R	
Section No. 4 MECHANICAL WORK Bill No. 1 PREAMBLES				

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7	No alteration, erasure or addition is to be made in the text of the Bills of Quantities. Should any alteration, erasure addition be made, it will not be recognised but the original wording of the Bills of Quantities will be adhered to.	Item		
8	The priced Bills of Quantities of the successful Tenderer will be checked and the Engineer reserves the right to call for adjustments to any individual price and to rectify any discrepancy whilst the Total Tender Price, as submitted, remains unaltered.	Item		
9	The responsibility for the accuracy of the quantities written into the Bills remains with the person who prepared the Bills. The Tenderer shall be relieved of responsibility of measuring quantities at the tender stage, and the tender sum submitted shall be in respect of the quantities set out in the Bills, although he will be required to make his assessment of items such as brackets, fixings, etc., from details stated in the Bills and shall include in the item price for such small installation materials as are required for the complete installation in accordance with the specification.	Item		
10	<u>The quantities and descriptions in these Bills of Quantities are provisional and are not to be used for ordering materials. Equipment in terms of quality shall be as per the Specification</u>	Item		
11	Variations in the scope and extent of the work included in the Bills shall be allowed to meet the Employer's requirements and shall be measured and costed at rates entered in the Bills, where appropriate, and shall form an addition to or deduction from rom the total of the Bills. Any items or variation for which rates have not been included in the Bills shall be agreed and priced as non-scheduled items in accordance with the provisions of the contract.	Item		
Carried to Collection			R	
Section No. 4 MECHANICAL WORK Bill No. 1 PREAMBLES				

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12	Unless a separate rate for the supply and for the installatic of any items is specifically called or, the supply and installation costs of any item shall be fully included in the unit price.	Item		
13	The description of each item shall, unless otherwise stated herein, be held to include making, conveying and delivery, unloading storing, unpacking, hoisting, setting, fitting and fixing in position, cutting and waste, patterns, models and templates, plant, temporary works, return of packings, establishment charges, profit and all other obligations arising out of the Conditions of Contract.	Item		
14	All measurements are nett, unless otherwise stated, and Tenderers must allow in the rate for wastage.	Item		
15	Hangars, supports, splices, joining drilling etc shall form part of unit rate.	Item		
16	All materials or equipment specified under a trade name, catalogue or reference number shall, for competitive tender pricing, be exactly as described in this tender.	Item		
17	Prices for individual items in this Bill of Quantities must be exclusive of VAT. Provision has been made in the Final Summary of this document for the lump sum addition of VAT	Item		
18	The Client and/or Engineer shall not be responsible for any losses incurred due to loss of interest through the VAT system.	Item		
19	Tenderers shall price the Preliminary and General (P & G's) in terms of the Conditions of Contract and in consultation with the Main Contractor and the main programme	Item		
Carried to Collection			R	
Section No. 4 MECHANICAL WORK Bill No. 1 PREAMBLES				

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<p>20</p>	<p>Payment of the P & G's shall be in terms of the progress on site and services rendered and shall be divided into three sections per claim; F= Fixed percentage; V= Value related percentage and T= Time related percentage; as determined by the contractor in section C, Preliminaries</p> <p><u>AIR CONDITIONING INSTALLATION</u></p> <p><u>Ducting</u></p>	<p>Item</p>		
<p>21</p>	<p>Where transformations or reducers occur, the larger size ductwork has been measured over the fitting. Descriptions of ductwork shall be deemed to include jointing materials, sealants, couplers in the running stiffeners, length and access inspection panels in and duct and piping support systems</p>	<p>Item</p>		
<p>22</p>	<p>Dimensions, as seen on plan are given in the following sequence:</p>	<p>Item</p>		
<p>23</p>	<p>(a) Horizontal parallel to the line of sight</p>	<p>Item</p>		
<p>24</p>	<p>(b) Vertical at right angles to the line of sight</p>	<p>Item</p>		
<p>25</p>	<p>Descriptions of fittings shall be deemed to include for cutting, forming openings and jointing to ducting.</p>	<p>Item</p>		
<p>26</p>	<p>Fire dampers shall be installed where indicated. Small ducts shall be reinforced with angle iron at wall penetrations, as indicated.</p>	<p>Item</p>		
<p>Carried to Collection</p>			<p>R</p>	
<p>Section No. 4 MECHANICAL WORK Bill No. 1 PREAMBLES</p>				

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<p>27</p>	<p><u>Air diffusion</u></p> <p>Description of air terminals, grilles, louvres and the like shall be deemed to include necks, frames, supports and flexible connections.</p>	<p>Item</p>		
<p>28</p>	<p><u>Fans</u></p> <p>Description of fan assemblies shall be deemed to include supports from the structure, flexible or other connections to ductwork, vibration isolation mounting and airtight inspection doors. Electrical interface equipment included.</p>	<p>Item</p>		
<p>29</p>	<p><u>Sound attenuators</u></p> <p>Descriptions of sound attenuators shall be deemed to include flanged or flexible connections to ductwork and supports from the structure.</p>	<p>Item</p>		
<p>30</p>	<p><u>Piping</u></p> <p>Description of piping shall be deemed to include joints, flanges, fittings, supports, brackets, painting etc.</p>	<p>Item</p>		
<p>31</p>	<p><u>Valves</u></p> <p>Descriptions of valves shall be deemed to include flanged or screwed connections to piping, reducers, supports, etc.</p>	<p>Item</p>		
<p>Carried to Collection</p>			<p>R</p>	
<p>Section No. 4 MECHANICAL WORK Bill No. 1 PREAMBLES</p>				

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<p>32</p>	<p><u>Assembling</u></p> <p>Descriptions of manufactured items shall be deemed to include for complete assembling and handing over in a proper working order.</p>	<p>Item</p>		
<p>33</p>	<p><u>Pricing</u></p> <p>It is expected from the Tenderer to price each individual item of this bill of quantities and no alterations, omissions or additions shall be made to the bill or specification.</p>	<p>Item</p>		
<p>34</p>	<p><u>Value Added Tax (VAT)</u></p> <p>Prices for individual items in this bill must be exclusive of Provision has been made in the Final Summary of this bill the lump sum addition of VAT</p>	<p>Item</p>		
<p>35</p>	<p><u>Ductwork etc</u></p> <p>Galvanised sheet steel low velocity supply air ducts etc, fixed horizontally, complete with necessary joints, connections, cutting, longitudinal seams, transverse joints, cross breaking and/or beading, duct stiffening, tie rods, hangers, rivets, screws, bolts and other fastening equipment, sealing and short lengths, as described.</p>	<p>Item</p>		
<p style="text-align: center;">Carried to Collection</p>			<p>R</p>	
<p>Section No. 4 MECHANICAL WORK Bill No. 1 PREAMBLES</p>				

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Section No. 4 MECHANICAL WORK Bill No. 1 PREAMBLES <u>COLLECTION</u>			
	Page No		Amount
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	61		
	62		
	63		
	64		
	65		
Carried Forward to Summary of Section No. 4		R	
Section No. 4 MECHANICAL WORK Bill No. 1 PREAMBLES			

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Item No		Quantity	Rate	Amount
	<u>SECTION NO 4: MECHANICAL WORK</u>			
	<u>BILL NO 2</u>			
	<u>PRELIMINARIES</u>			
	Preliminaries in accordance with the Nominated / Selected Sub-contractor Agreement items not priced with the Bills of Quantities and for which payment is sought.			
	<u>Additional tests required by the Engineer</u>			
	<u>(i) Pressure test the entire pipe systems</u>			
1	a) HVAC System		SUM	
2	b) Water Supply		SUM	
3	c) Hydronic system		SUM	
4	(ii) Integrity test of all refrigerant pipework and refrigerant charge		SUM	
5	(iii) Test drain / condensate piping for flow to nearest drain point		SUM	
6	(iv) Fire damper tests		SUM	
7	(v) (viii) Provide 'Certificate of Compliance' for entire Mechanical		SUM	
	<u>Electrical installation</u>			
	<u>Training</u>			
8	(i) Presenting a training course to Client for all mechanical systems.		SUM	
	<u>Operating and Maintenance Manuals</u>			
9	(i) Provide four (4) hard copies of the operating and maintenance manuals with respective drawings in hard file		SUM	
	Carried to Collection			R
	Section No. 4 MECHANICAL WORK Bill No. 2 PRELIMINARIES			

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10	(ii) Provide an electronic copy of the manual and drawings	No	1		
11	(iii) Supply copies all builders' work drawings required for HVAC purposes	Sets	4.0		
<u>Workshop drawings and Engineering</u>					
12	(i) Workshop drawings to be submitted and approved before construction commences				SUM
13	(ii) Required builder's work drawings				SUM
14	(iii) Required electrical work drawings				SUM
15	(iv) Engineering				SUM
16	(v) Complete installed service drawings - (As built)				SUM
<u>General</u>					
<u>The HVAC sub-contractor shall be responsible for the provision of, and /or, the carrying-out of, the following work as part of this contract</u>					
17	(v) Certificate of Compliance with Specification for the HVAC installation including HVAC electrical, extract systems, etc.				SUM
18	(vi) Submissions and Samples of actual equipment				SUM
19	(vii) Twelve months maintenance contract from handover of all systems.				SUM
Carried to Collection					R
Section No. 4 MECHANICAL WORK Bill No. 2 PRELIMINARIES					

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Section No. 4 MECHANICAL WORK Bill No. 2 PRELIMINARIES <u>COLLECTION</u>			
	Page No		Amount
Total Brought Forward from Page No.	67		
	68		
Carried Forward to Summary of Section No. 4		R	
Section No. 4 MECHANICAL WORK Bill No. 2 PRELIMINARIES			

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Item No		Quantity	Rate	Amount
<u>SECTION NO 4: MECHANICAL WORK</u>				
<u>BILL NO 3</u>				
<u>HVAC & R Equipement</u>				
<u>DX Package Unit</u>				
<p>Supply and Installation of a Dx Package Unit into position as per drawings. Exact position to be determined on site. The installation to be complete with a condenser, supports, electrics and other necessary accessories complete.</p> <p>The package Unit to also Have the following:</p> <ul style="list-style-type: none"> - Primary Filtration (G4) - Secondary Filtration (F9) - HEPA Filtration 				
1	RTU-01 (8.5kW @ 743 l/s)	No	1	
<u>Cassette DX split units</u>				
<p><u>Supply and inbstation of Dx Cassette units with condenser, 15m refrigerant piping, electrics, 20m long (including fittings) 25mm in diameter Class 4 PVC condensate piping and a wall controller complete:</u></p>				
2	Dx Cass-01 - 1.5 kW		SUM	
<u>Supply and Installation of Coldrooms</u>				
3	2.4x2.4x2.4 Coldroom with Temperature range (3-5 deg C)	No	2	
<p>Coldroom Spec:</p> <ul style="list-style-type: none"> - Ploystyrene panels with minimum thickness of 100mm - Condenser to be of the Hermetic or semi-hermetic type 				
Carried to Collection				R
<p>Section No. 4 MECHANICAL WORK Bill No. 3 HVAC & R EQUIPMENT</p>				

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	<ul style="list-style-type: none"> - Condenser shall be of air cooled type - Evaporator units shall be of the forced air cooled type - Cold room doors must be of standard, robust construction and can be either of the hinged (slam on) or sliding type 			
4	2x2x2.4 Coldroom with Temperature range (3-8 deg C) (Outside Coldroom)	No	1	
5	Psum (Chilled water piping and Accessories)		SUM	
Section No. 4 MECHANICAL WORK Bill No. 3 HVAC & R EQUIPMENT	Carried to Collection		R	

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Section No. 4 MECHANICAL WORK Bill No. 3 HVAC & R EQUIPMENT <u>COLLECTION</u>				
	Page No		Amount	
Total Brought Forward from Page No.	70			
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Section No. 4 MECHANICAL WORK Bill No. 3 HVAC & R EQUIPMENT				

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Item No		Quantity	Rate	Amount
<u>SECTION NO 4: MECHANICAL WORK</u>				
<u>BILL NO 4</u>				
<u>DUCTING</u>				
<u>Supply and installation of air distribution system complete with 50mm internal sonic liner, supply and return grilles and supports, as per engineers drawings.</u>				
1	Rectangula Duct: 450x450mm	m	25	
2	Rectangula Duct: 450x300mm	m	3	
3	Rectangula Duct: 200x300mm	m	3	
4	Flexible duct: Ø150mm	m	3	
5	Transformation Piece - Rectangular to Round - 450x450-450x300	No	1	
6	Transformation Piece - Rectangular to Round - 450x450-450x300	No	1	
7	Transformation Piece - Rectangular to Round - 450x300-300x200	No	1	
8	Transformation Piece - Rectangular to Round - 400x250-200x200	No	3	
9	Transformation Piece - Rectangular to Round - 450x550-1000x250	No	1	
10	Transformation Piece - Rectangular to Round - 450x550-800x400	No	2	
11	Laminar Flow Supply Air Grilles (SAG01) - 600x600mm	No	3	
12	Return Air Grilles (RAG01) - 1000x250mm	No	1	
13	Constant Air Volume Supply Diffusers (CVD01)	No	2	
Carried to Collection				R
Section No. 4 MECHANICAL WORK Bill No. 4 DUCTING				

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14	Motorised Dample (MD) - 450x450mm	No	1		
15	Balancing Dampers - Ø150mm BD	No	2		
16	Balancing Dampers - Ø200mm BD	No	3		
17	Fire Dampers - 200x200mm	No	3		
18	Fire Dampers - 450x450mm	No	1		
19	Elbows: 450x450mm	No	4		
Carried to Collection					
Section No. 4 MECHANICAL WORK Bill No. 4 DUCTING					R

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Section No. 4 MECHANICAL WORK Bill No. 4 DUCTING <u>COLLECTION</u>			
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Total Brought Forward from Page No.	73		
	74		
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Section No. 4 MECHANICAL WORK Bill No. 4 DUCTING			

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Item No		Quantity	Rate	Amount
<u>SECTION NO 4: MECHANICAL WORK</u>				
<u>BILL NO 5</u>				
<u>Water Supply</u>				
<u>Supply and install COPPER piping Class 1, according to the drawings and specifications complete.</u>				
1	ø15	m	10	
2	ø22	m	20	
<u>PIPING FITTINGS AND VALVES</u>				
<u>Supply and install COPPER pipe fittings, as per specifications: 90° Elbow</u>				
3	ø15	No	6	
4	ø22	No	8	
<u>Equal Tee:</u>				
5	ø15	No	6	
6	ø22	No	8	
<u>Reducer:</u>				
7	ø15 - ø22	No	8	
8	ø22 - ø50 Copper to GMS PIPE Coupler	No	1	
9	Balle Valves: 22Ømm	No	1	
10	Angle ball Valves - 15Ømm	No	8	
11	Pressure Reducing Valves: 22Ømm (4 bar)	No	4	
Carried to Collection				
Section No. 4 MECHANICAL WORK Bill No. 5 WET SERVICES				R

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Section No. 4 MECHANICAL WORK Bill No. 5 WET SERVICES <u>COLLECTION</u>			
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	77		
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Section No. 4 MECHANICAL WORK Bill No. 5 WET SERVICES			

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Bill No	Section No. 4 MECHANICAL WORK <u>SECTION SUMMARY - MECHANICAL WORK</u>	Page No		Amount
1	PREAMBLES	66		
2	PRELIMINARIES	69		
3	HVAC & R EQUIPMENT	72		
4	DUCTING	75		
5	WET SERVICES	78		
	Carried to Final Summary		R	
	Section No. 4 MECHANICAL WORK			

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Item No		Quantity	Rate	Amount
<u>SECTION NO 4: FIRE INSTALLATION</u>				
<u>BILL NO 1</u>				
<u>Fire Detection</u>				
<u>Supply and Installation of fire detection accessories:</u>				
1	1mm 2-Core Ph30 Fire rated cable including all necessary accessories	m	100	
2	Addressable manual call point, Red	No	1	
3	Loop sounder with strobe light	No	1	
4	Heat Detectors	No	4	
5	Smoke Detectors	No	2	
6	CO2 Detectors	No	2	
<u>Fire Protection</u>				
7	Class A double fire Door	No	1	
8	Class A Single fire Door	No	2	
9	CO2 Fire Extinguisher	No	2	
<u>Emergency Fire Signage</u>				
10	Signage Type - E1(Single Sided) (190x190)	No	2	
11	Signage Type - E2(Single Sided) (190x190)	No	3	
12	Signage Type - E3(Single Sided) (190x190)	No	5	
13	Signage Type - F13(Single Sided) (190x190)	No	5	
14	Signage Type - F45(Single Sided) (190x190)	No	2	
Carried to Final Summary				R
Section No. 5 FIRE INSTALLATION Bill No. 1 FIRE PROTECTION				

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Section No	<u>FINAL SUMMARY</u>	Page No		Amount
1	PRELIMINARIES	1		
2	BUILDERSWORK	44		
3	ELECTRICAL WORK	59		
4	MECHANICAL WORK	79		
5	FIRE INSTALLATION	80		
	Sub Total		R	
	Add VAT @15%		R	
	Sub Total		R	
	Carried to Form of Tender		R	