


**Samora Machel New Police Station  
Portion 01 of STAND 8972 (Samora Machel)**

Brought Forward				R
<u>Supply the following "Hubble, Solar MD, Freedom One, Deye, Weco" or other equally approved 51,2V, IP54 enclosure (excluding battery terminals), rack mounted complete with LiFe - Lithium-Ion cell technology, SOC status indicator, LED indicators, 80% Depth of discharge capable low self discharge, integrated battery monitoring system with current limiting function, over charge protection, over discharge and over temperature battery protection and 2m canbus cable. Complete with warantee to match inverter.</u>				
414	12 x Deye 5,12kWh (Bos-G 61,4 kWh HV battery combo)	No	3	
415	Extra on last to install	No	3	
416	Rack for 12 No. high voltage batteries	No	3	
417	Extra on last to install	No	3	
418	Supply high Voltage control box for 120VDC - 750VDC as DEYE-HV- B750/100A-EU or other equally approved	No	2	
419	Extra on last to install	No	1	
420	Supply Victron Lynx's distributor 1000 with 4 battery connections	No	3	
421	Extra on last to install	No	3	
422	Supply DP DC 500V 300A fuse holders (suitable for cylindrical fuses)	No	3	
423	Extra on last to install	No	3	
424	Supply DP DC 500V 400A fuse holders (suitable for cylindrical fuses)	No	2	
425	Extra on last to install	No	2	
426	Supply 300A 500V DC fuses (cylindrical)	No	3	
427	Extra on last to install	No	3	
428	Supply 400A 500V DC fuses (cylindrical)	No	2	
429	Extra on last to install	No	2	
Carried Forward				R
Bill No. 15 Electrical Works <div style="text-align: center;">  </div>				

**Samora Machel New Police Station  
Portion 01 of STAND 8972 (Samora Machel)**

**Brought Forward**

R

**Data cabling**

430	Supply Cat6e grey	m	120
431	Extra on last to install	m	120
432	RJ 45 Terminations for Cat 6e	No	8
433	Supply Cat6e grey 1 meter flyleads (RJ45 to RJ45)	No	2
434	Extra on last to install	No	2
435	Supply Cat6e grey 5 meter flyleads (RJ45 to RJ45)	No	1
436	Extra on last to install	No	1

**DC CABLING**

**PVC Insulated 1000V DC stranded Cu Cable**

437	Supply '25mm <sup>2</sup> - Red / Black	m	190
438	Extra on last to install	m	190
439	Supply '35mm <sup>2</sup> - Red / Black	m	60
440	Extra on last to install	m	60
441	Supply '50mm <sup>2</sup> - Red / Black	m	180
442	Extra on last to install	m	180
443	Supply 70mm <sup>2</sup> - Red / Black	m	90
444	Extra on last to install	m	90
445	Supply '95mm <sup>2</sup> - Red / Black	m	120
446	Extra on last to install	m	120

**Termination using crimped lugs**

447	25mm <sup>2</sup> - Red / Black	No	32
448	35mm <sup>2</sup> - Red / Black	No	16
449	50mm <sup>2</sup> - Red / Black	No	32

**Carried Forward**

R

Bill No. 15  
Electrical Works

**252**



M.B SS

**Samora Machel New Police Station  
Portion 01 of STAND 8972 (Samora Machel)**

Brought Forward		R	
450	70mm <sup>2</sup> - Red / Black	No	52
451	95mm <sup>2</sup> - Red / Black	No	40
<b><u>LUMINAIRES</u></b>			
<b><u>Supply the following luminaires, inclusive of lamps as per drawing No. 32307-601-0</u></b>			
452	Type A	No	492
453	Type Ae	No	43
454	Type A1	No	21
455	Type A1e	No	4
456	Type A2	No	35
457	Type A2e	No	5
458	Type B	No	89
459	Type Be	No	12
460	Type C	No	70
461	Type Ce	No	8
462	Type C1	No	18
463	Type D	No	42
464	Type De	No	2
465	Type E	No	35
466	Type F	No	32
467	Type G	No	4
468	Type J	No	36
469	Type J1	No	22
470	Type J2	No	26
Carried Forward		R	

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Electrical Works

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**Samora Machel New Police Station  
Portion 01 of STAND 8972 (Samora Machel)**

Brought Forward				R
471	Type J3	No	16	
472	Type J4	No	18	
<b><u>Install and connect the following luminaires inclusive of lamps as per drawing No. 32307-601-0</u></b>				
473	Type A	No	492	
474	Type Ae	No	43	
475	Type A1	No	21	
476	Type A1e	No	4	
477	Type A2	No	35	
478	TypeA2e	No	5	
479	Type B	No	89	
480	Type Be	No	12	
481	Type C	No	70	
482	Type Ce	No	8	
483	Type C1	No	18	
484	Type D	No	42	
485	Type De	No	2	
486	Type E	No	35	
487	Type F	No	32	
488	Type G	No	4	
489	Type J	No	36	
490	Type J1	No	22	
491	Type J2	No	26	
Carried Forward				R

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Electrical Works

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MB SS

**Samora Machel New Police Station  
Portion 01 of STAND 8972 (Samora Machel)**

	<b>Brought Forward</b>			<b>R</b>
492	Type J3	No	16	
493	Type J4	No	18	
	<b><u>POWER SKIRTING</u></b>			
494	Supply two Compartment 2 cover, epoxy powder coated power skirting, surface mounted, inclusive of cover	m	669	
495	Extra on last to install	m	669	
496	Supply End caps	No	102	
497	Extra on last to install	No	102	
498	Supply 90° bends	No	201	
499	Extra on last to install	No	201	
	<b><u>INTERCOM &amp; METAL DETECTOR</u></b>			
	<b><u>SUPPLY, INSTALL, TEST AND COMMISSION INTERCOM WITH COLOUR VIDEO SYSTEM COMPLETE WITH ALL HARDWARE, SOFTWARE, TERMINATIONS, FIXINGS ETC.</u></b>			
	<b><u>AIPHONE OR EQUAL APPROVED SYSTEM</u></b>			
	<b><u>CENTRAL EQUIPMENT</u></b>			
500	Supply master station unit suitable for 10 slave stations and hands free with 3.5" colour LCD display	No	1	
501	Extra on last to install	No	1	
	<b><u>FIELD EQUIPMENT</u></b>			
502	Supply door station with audio and video, flush mounted with stainless steel face	No	5	
503	Extra on last to install	No	5	
504	Supply door maglock release connection via a I/O interface to access control system located in IT Room	No	5	
505	Extra on last to install	No	5	
	<b><u>Carried Forward</u></b>			<b>R</b>

Bill No. 15  
Electrical Works

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MB 55

**Samora Machel New Police Station  
Portion 01 of STAND 8972 (Samora Machel)**

Brought Forward			R
<b><u>CABLING</u></b>			
506	Supply Cat 6A cabling	m 3 341	
507	Extra on last to install	m 3 341	
508	RJ45 termination	No 24	
509	4 core 1.0mm Cu PVC PVC cable	m 1 204	
510	Extra on last to install	m 1 204	
511	Terminated in above equipment	No 12	
512	Supply Metal Detector or other equally approved complete with connectors, adapters , fixings, power sockets, cables, consumables and all material to complete required	No 1	
513	Extra on last to install	No 1	
514	Test and commission walk through metal detector incorporating 42 zones with illuminating indicator strip	Item	
<b><u>EARTHING AND LIGHTNING PROTECTION</u></b>			
515	Undertake soil resistivity test, witnessed by the Engineer inclusive of submitting a typed test report/certificate	Item	
516	Supply 70mm <sup>2</sup> PVC insulated copper earth wire	m 188	
517	Extra on last to install	m 188	
518	Earthing tails clamped to top of column rebar	No 2	
519	Bonding of earth tails to sheet trusses/roof sheeting	No 52	
520	Bonding of pile caps steel to column steel	No 4	
521	Supply 25mm conduit	m 188	
522	Extra on last to install	m 188	
523	Supply 10mm aluminium ridge conductor	m 314	
524	Extra on last to install	m 314	
Carried Forward			R
Bill No. 15 Electrical Works			

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MB SS

**Samora Machel New Police Station  
Portion 01 of STAND 8972 (Samora Machel)**

Brought Forward				R
525	Supply stainless steel lugs	No	52	
526	Extra on last to install	No	52	
527	Supply stainless steel bolts and nuts	No	52	
528	Extra on last to install	No	52	
529	Supply stop cork box	No	52	
530	Extra on last to install	No	52	
531	Supply 1.8m earth spike	No	52	
532	Extra on last to install	No	52	
<b><u>EARTHING AND BONDING</u></b>				
533	Allowance for general electrical earthing and bonding in accordance with SABS 0142		Item	
534	Test and commissioning inclusive of test report		Item	
<b><u>SOIL RESISTIVITY SURVEY</u></b>				
535	Allow to survey the site to establish any prevailing conditions and carry out soil resistivity testing in the locations adjacent to the kiosk. A detailed report indicating test results and requirements to achieve the necessary earth resistance for each area is to be submitted to the Electrical Engineer.		Item	
536	Resistivity Test survey in earth	No	1	
537	Test report indicating electrode requirements etc. to achieve 1 ohm or less		Item	
<b><u>TRENCHING</u></b>				
<b><u>Excavate by hand for cable trench or earth mats including backfill with sifted sand, cable trench 350mm wide x 600mm deep x 1 500mm long</u></b>				
538	In earth	No	1	
539	In Shale	No	2	
Carried Forward				R
Bill No. 15 Electrical Works				

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M.B SS

**Samora Machel New Police Station  
Portion 01 of STAND 8972 (Samora Machel)**

Brought Forward				R
540	In hard rock	No	2	
<b><u>BONDING TO EARTH ELECTRODES</u></b>				
541	Supply 20mm lengths of 95mm <sup>2</sup> Green PVC insulated copper conductors fitted into sleeves and trench complete with lugs, ferrules and termination clamps between substation earth bar and earth electrode.	No	1	
542	Extra on last to install	No	1	
<b><u>EARTH MATS</u></b>				
543	Supply 1,600mm copper clad Earth Electrodes driven into ground at 1,500mm by 1,500mm spacing including brass termination clamps and 50mm <sup>2</sup> bare copper conductor interlinking to 2 No. earth grid adjacent earth spike to form an earth grid	No	2	
544	Extra on last to install	No	2	
<b><u>EARTH ELECTRODES</u></b>				
545	Supply additional 1,600mm copper clad earth electrode driven into the ground including the ferrel	No	1	
546	Extra on last to install	No	1	
<b><u>GENERATOR INSTALLATION</u></b>				
<b><u>The complete supply, transport to site, test and commission in accordance with the specification of a standby generation system. NOTE: ONLY GENUINE ENGINE AND ALTERNATORS WITH LOCAL FACTORY BACKUP, SERVICE AND SPARES WILL BE ACCEPTED. NO "GREY" PRODUCTS FROM THE EAST WILL BE CONSIDERED (Refer schedule 32308 602 0)</u></b>				
547	Supply standby generator as per drawing no. 32308_602	No	1	
548	Extra on last to install	No	1	
549	Connection of all generator control and protection, AMF and communication information wired to terminals within the Main LV Panel for changeover requirements		Item	
Carried Forward				R
Bill No. 15 Electrical Works				

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m.b 55



**Samora Machel New Police Station  
Portion 01 of STAND 8972 (Samora Machel)**

Brought Forward				R
550	The complete supply and installation of Generator earthing as specified, including testing and commissioning the entire earthing installation as per I.E.C. standards, including re- testing as may be required after making good, and typed test certificates.		Item	
551	Extra on last to install		Item	
552	Allowance to fill/re-fill diesel tanks after testing - Low sulphur diesel to manufacturers specification.	ltr	1 500	
	<u>Supply the following 600/1000 Volt Cu PVC SWA</u>			
	<u>PVC ECC cables:</u>			
553	Supply 4mm <sup>2</sup> 7 core Cable	m	45	
554	Supply 2,5mm <sup>2</sup> 7 core Cable	m	45	
	<u>Extra on last to install in cable sleeve, ladder, tray, basket</u>			
555	Supply 4mm <sup>2</sup> 7 core Cable	m	45	
556	Supply 2,5mm <sup>2</sup> 7 core Cable	m	45	
	<u>Termination inclusive of cable glands, lugs etc.</u>			
557	Supply 4mm <sup>2</sup> 7 core Cable	No	5	
558	Supply 2,5mm <sup>2</sup> 7 core Cable	No	5	
	<u>Servicing of Generator</u>			
559	Two (2) No. generator services to be conducted at 6 and 12 months from hand over for generator as per drawing.		Item	
	<u>WIRE-WAYS</u>			
	<u>CABLE LADDERS</u>			
	<u>The complete supply, transport to site, and storage of hot dipped galvanised heavy duty cable ladder and offsets as required below:</u>			
560	800mm wide	m	42	
Carried Forward				R
Bill No. 15 Electrical Works		259		

**Samora Machel New Police Station  
Portion 01 of STAND 8972 (Samora Machel)**

Brought Forward				R
561	800mm 90 degree bend	No	2	
562	800mm Tee piece	No	2	
563	800mm 4-way piece	No	2	
564	800mm riser piece	No	2	
565	300mm wide	m	88	
566	300mm 90 degree bend	No	6	
567	300mm Tee piece	No	2	
568	300mm 4-way piece	No	1	
569	300mm riser piece	No	1	
<u>Extra on last to install horizontally (trapeeze) or vertically (P1000 unistrut). Fixings at 1000mm. Installation is to include for all joiner splices, raw bolts and fixing cable ladder to unistrut with bolt fasteners complete with spring washer, fixing bolts etc.</u>				
570	800mm wide	m	42	
571	800mm 90 degree bend	No	2	
572	800mm Tee piece	No	2	
573	800mm 4-way piece	No	2	
574	800mm riser piece	No	2	
575	300mm wide	m	88	
576	300mm 90 degree bend	No	6	
577	300mm Tee piece	No	2	
578	300mm 4-way piece	No	1	
579	300mm riser piece	No	1	
<u>CABLE TRAYS</u>				
Carried Forward				R
Bill No. 15 Electrical Works				

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**Samora Machel New Police Station  
Portion 01 of STAND 8972 (Samora Machel)**

Brought Forward			R
<u>The complete supply, transport to site, and storage of hot dipped galvanised heavy duty cable tray and offsets as required below:</u>			
580	150mm wide	m	24
581	150mm 90 degree bend	No	2
582	150mm Tee piece	No	2
583	150mm 4-way piece	No	2
584	150mm riser piece	No	2
585	300mm wide	m	21
586	300mm 90 degree bend	No	1
587	300mm Tee piece	No	1
588	300mm 4-way piece	No	1
589	300mm riser piece	No	1
<u>Extra on last to install horizontally (trapeeze) or vertically (P1000 unistrut). Fixings at 1000mm. Installation is to include for all joiner splices, raw bolts and fixing cable tray to unistrut with bolt fasteners complete with spring washer, fixing bolts etc.</u>			
590	150mm wide	m	24
591	150mm 90 degree bend	No	2
592	150mm Tee piece	No	2
593	150mm 4-way piece	No	2
594	150mm riser piece	No	2
595	300mm wide	m	21
596	300mm 90 degree bend	No	1
597	300mm Tee piece	No	1
Carried Forward			R
Bill No. 15 Electrical Works			

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4.3 SS

Samora Machel New Police Station  
Portion 01 of STAND 8972 (Samora Machel)

Brought Forward		R	
598	300mm 4-way piece	No	1
599	300mm riser piece	No	1
<b><u>CABLE BASKETS</u></b>			
<u>The complete supply, transport to site, and storage of hot dipped galvanised medium duty cable basket and offsets as required below:</u>			
600	150mm wide	m	89
601	150mm 90 degree bend	No	1
602	150mm Tee piece	No	1
603	150mm 4-way piece	No	1
604	150mm riser piece	No	1
605	300mm wide	m	413
606	300mm 90 degree bend	No	3
607	300mm Tee piece	No	4
608	300mm 4-way piece	No	2
609	300mm riser piece	No	1
<u>Extra on last to install horizontally (trapeeze) or vertically (P1000 unistrut). Fixings at 1000mm. Installation is to include for all joiner splices, raw bolts and fixing cable basket to unistrut with bolt fasteners complete with spring washer, fixing bolts etc.</u>			
610	150mm wide	m	89
611	150mm 90 degree bend	No	1
612	150mm Tee piece	No	1
613	150mm 4-way piece	No	1
614	150mm riser piece	No	1
Carried Forward		R	
Bill No. 15 Electrical Works			

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21.8 SS

Samora Machel New Police Station  
Portion 01 of STAND 8972 (Samora Machel)

Brought Forward		R	
615	300mm wide	m	413
616	300mm 90 degree bend	No	3
617	300mm Tee piece	No	4
618	300mm 4-way piece	No	2
619	300mm riser piece	No	1
Carried to Summary		R	

Bill No. 15  
Electrical Works

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M.B. S.S.

**Samora Machel New Police Station  
Portion 01 of STAND 8972 (Samora Machel)**

**Item  
No**

**Quantity      Rate      Amount**

**BILL NO. 16**

**MECHANICAL INSTALLATION**

**(CPAP WORK GROUP NO. 170 UNLESS  
OTHERWISE STATED)**

**PREAMBLES**

The descriptions given in the various items below are not necessarily full and complete and reference must be made to the "General Preambles for Trades 2017" as published by the Association of South African Quantity Surveyors", and Supplementary Preambles for further description and amplification of work in this section

**GENERAL ITEMS**

**Any additional items that the Tenderer deems necessary for the successful and total completion of the portion of the work required for this Bill.**

**Specify:**

- 1 Allow for builders work, drilling and making good of holes through slabs or walls including sleeves.
- 2 Allow for painting of ducting and insulation of the Air conditioning and Ventilation installation as specified to SANS 10173. The surfaces shall be cleaned, primed, undercoated and finished in high quality gloss paint.
- 3 Allow for painting and labelling of equipment as specified.
- 4 Allow for Commissioning and testing the complete installation as specified and for re-testing as may be required after the making good of all defective work to the satisfaction of the Engineer.
- 5 Allow for final testing and Certificate of Compliance to be issued on completion of the project in addition to the detailed testing specified.

Item

Item

Item

Item

Item

**Carried Forward**

R

Bill No. 16  
Mechanical Works

**264**

*m.B SS*

**Samora Machel New Police Station  
Portion 01 of STAND 8972 (Samora Machel)**

<b>Brought Forward</b>			<b>R</b>	
6	Allow for three sets hard copy and one set soft copy of maintenance and operation manuals, including wiring diagrams, spare part lists as specified.	Item		
7	Guarantee and maintenance for the complete Mechanical Installation including fittings, materials and workmanship for a period of TWELVE MONTHS after date of completion and handover.	Item		
8	Allow for instructing the clients staff in the correct operation of the installation.	Item		
9	Allow for preparation of "as installed drawings" and printing (3 sets).	No	1	
10	Allow for preparation of Workshop drawings and printing (3 sets).	No	1	
11	Any items not specifically listed above but required to complete the installation as per the specification and drawings (list the items) a) b) c)	Item		
<b><u>AIR CONDITIONING &amp; VENTILATION INSTALLATION</u></b>				
<b><u>AIR CONDITIONING EQUIPMENT AND PIPING</u></b>				
<b><u>Supply and deliver the following Direct Expansion, Inverter split type air conditioning system ("YORK" or other equally approved), complete with condensing and evaporator units, all with electrical connection to isolator, refrigeration- and drain piping, electrical control wiring, brackets, supports, auxiliary extended drip tray at each indoor unit and all necessary accessories, as per the specification and manufacturer's recommendation.</u></b>				
12	M1 - Wall mounted type Evapourator Unit (Approved by engineer)  Cooling capacity - 3,5 kW Heating capacity - 3,7 kW	No	13	
<b>Carried Forward</b>			<b>R</b>	

Bill No. 16  
Mechanical Works

**265**



SS  
MB

**Samora Machel New Police Station  
Portion 01 of STAND 8972 (Samora Machel)**

Brought Forward			R
13	Matching Outdoor Condensing unit (Approved by engineer), complete with wall mounted bracket.  EER - 3,26 COP - 3,61	No	13
14	Diameter 6,35mm insulated refrigerant piping, installed inside trunking.	m	110
15	Diameter 9,52mm insulated refrigerant piping, installed inside trunking.	m	110
16	Diameter 32mm uPVC condensate drain piping, installed inside trunking.	m	90
17	Hard wired controller	No	13
18	100 x 40mm uPVC Trunking	m	90
19	M2 - Wall mounted type Evapourator Unit (Approved by engineer).  Cooling capacity - 7,1 kW Heating capacity - 7,5 kW	No	14
20	Matching Outdoor Condensing unit (Approved by engineer), complete with wall mounted bracket.  EER - 2,92 COP - 3,21	No	14
21	Diameter 6,35mm insulated refrigerant piping, installed inside trunking	m	105
22	Diameter 9,52mm insulated refrigerant piping, installed inside trunking	m	105
23	Diameter 32mm uPVC condensate drain piping, installed inside trunking	m	90
24	Hard wired controller	No	14
25	100 x 40mm uPVC Trunking	m	90
26	CA1 - Ceiling Cassette Unit (approved by engineer)  Cooling capacity - 7 kW Heating capacity - 7 kW	No	4
Carried Forward			R
Bill No. 16 Mechanical Works			

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MB



**Samora Machel New Police Station**  
**Portion 01 of STAND 8972 (Samora Machel)**

Brought Forward			R
27	Matching Outdoor Condensing unit, complete with wall mounted bracket.  EER - 2,71 COP - 3,16	No	4
28	Diameter 9,52mm insulated refrigerant piping, installed inside trunking	m	26
29	Diameter 15,88mm insulated refrigerant piping, installed inside trunking	m	26
30	Diameter 32mm uPVC condensate drain piping, installed inside trunking	m	25
31	Hard wired controller	No	4
32	100 x 40mm uPVC Trunking	m	25
<p><u>Supply and deliver the following Inverter Console type air conditioning system ("YORK" or other equally approved), complete with all with electrical connection to isolator, electrical control wiring, brackets, supports and all necessary accessories, as per the specification and manufacturer's recommendation.</u></p>			
33	CU1 - Console Unit (MP-30 or other equally approved unit with fresh air supply approved by engineer)  Cooling capacity - 3 kW Heating capacity - 3,2 kW EER - 3,1	No	26
34	CU2 - Console Unit (MP-40 or other equally approved unit with fresh air supply approved by engineer)  Cooling capacity - 4 kW Heating capacity - 4,3 kW EER - 3	No	12
<p><u>VENTILATION EQUIPMENT</u></p>			
Carried Forward			R
<p>Bill No. 16 Mechanical Works</p> <p style="text-align: center; font-size: 2em;">267</p>			

Bill No. 16  
Mechanical Works

**Carried Forward**

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SS

Brought Forward			R
<p><u>For the Supply (including delivery), installation (including testing, commissioning and handing over of the following ventilation fan complete with electrical connection to isolator or light circuit as specified, ducting, flexible connections, including hangers, supports, brackets, sound attenuators matching the fan capacities and all necessary accessories.</u></p>			
35	F1 - TD SILENT @ the following flow rate and pressure drops 260 l/s @ 250 Pa inline fan complete with speed controller and timer switch. Supply 220/50/1, 260W. AMS or other equally approved.	No	1
36	Matching Sound Attenuators	No	2
37	F2 & F4 - TD SILENT @ the following flow rate and pressure drops 30 l/s @ 30 Pa inline fan complete with speed controller and timer switch. Supply 220/50/1, 260W. AMS or other equally approved.	No	3
38	Matching Sound Attenuators	No	4
39	F3 - TD SILENT @ the following flow rate and pressure drops 75 l/s @ 100 Pa inline fan complete with speed controller and timer switch. Supply 220/50/1, 260W. AMS or other equally approved.	No	1
40	Matching Sound Attenuators	No	2
41	F5 - TD SILENT @ the following flow rate and pressure drops 180 l/s @ 150 Pa inline fan complete with speed controller and timer switch. Supply 220/50/1, 260W. AMS or other equally approved.	No	1
42	Matching Sound Attenuators	No	2
43	F6 - TD SILENT @ the following flow rate and pressure drops 175 l/s @ 150 Pa inline fan complete with speed controller and timer switch. Supply 220/50/1, 260W. AMS or other equally approved.	No	1
44	Matching Sound Attenuators	No	2
45	F7- TD SILENT @ the following flow rate and pressure drops 130 l/s @ 100 Pa inline fan complete with speed controller and timer switch. Supply 220/50/1, 260W. AMS or other equally approved.	No	7
Carried Forward			R

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Mechanical Works

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SS  
m.b

Brought Forward			R
46	Matching Sound Attenuators	No	14
47	P1 - Plate mounted fan @ the following flow rate and pressure drops 300 l/s @ 150 Pa wall fan complete with thermostat and security box. Supply 220/50/1, 260W. AMS or other equally approved.	No	2
48	WF1 - Wall/Window fan @ the following flow rate and pressure drops 30 l/s @ 30 Pa wall/window fan complete with thermostat and security box. Supply 220/50/1, 260W. AMS or other equally approved.	No	10

### DUCTWORK AND FITTINGS

Supply, deliver and install LOW PRESSURE galvanized un-insulated ductwork as per the specification including fittings, reducers, radius bends, stop end, branches, tees and transformations all hangers, straps, supports, clamps and necessary accessories.

#### FLEXIBLE DUCTING (foil faced 50mm mineral wool )

49	100mm Diameter	m	11
50	150mm Diameter	m	43
51	200mm Diameter	m	38

### RECTANGULAR DUCTING

Rectangular galvanised mild steel sheet metal ductwork installed as per specification complete with fittings including hangers, clamps, brackets, etc. (excluding insulation) Square meterage of ducting is inclusive of area over fittings. The following sheet metal thicknesses shall apply to the corresponding categories;

Category One: 0.6mm

Category Two: 0.6mm

Category Three: 0.8mm

Category Four: 1.0mm

Category Five: 1.2mm

Carried Forward

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Mechanical Works

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M.B. SS

Brought Forward			R
<b><u>CATEGORY ONE</u></b>			
52	Width or height not exceeding 750mm and the sum of the two adjacent sides not exceeding 1150mm	m2	100
<b><u>Extra over for low pressure galvanised fittings (reducers, radius bends, transformations, spigots, tees and square-to-rounds)</u></b>			
53	Category one fittings other than stop ends	No	20
<b><u>Stop ends</u></b>			
54	Category one stop end fittings	No	5
<b><u>CATEGORY TWO</u></b>			
55	Width or height not exceeding 750mm and the sum of the two adjacent sides exceeding 1150mm	m2	20
<b><u>Extra over for low pressure galvanised fittings (reducers, radius bends, transformations, spigots, tees and square-to-rounds)</u></b>			
56	Category two fittings other than stop ends	No	8
<b><u>Stop ends</u></b>			
57	Category two stop end fittings	No	2
<b><u>ROUND DUCTING</u></b>			
<b><u>Complete with fittings including hangers, clamps, brackets, nuts, bolts, etc.</u></b>			
Sheet metal Thickness for round ducting unless otherwise indicated up to 300mm diameter: 0.5mm, 301 to 800mm diameter: 0.6mm, 801 to 1000mm diameter: 0.8mm, 1001 to 1200mm diameter: 1.0mm. Jointing shall be beaded			
<b><u>STRAIGHT SECTIONS</u></b>			
58	100mm Diameter	m	15
59	150mm Diameter	m	15
60	200mm Diameter	m	10
Carried Forward			R

Bill No. 16  
Mechanical Works

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S  
M.B

**Samora Machel New Police Station  
Portion 01 of STAND 8972 (Samora Machel)**

Brought Forward			R
61	250mm Diameter	m	30
	<u>90 DEGREE BENDS</u>		
62	100mm Diameter	No	3
63	150mm Diameter	No	10
64	200mm Diameter	No	5
65	250mm Diameter	No	2
	<u>TRANSFORMATION PIECES</u>		
66	250mm Diameter - 100mm Diameter	No	2
67	200mm Diameter - 150mm Diameter	No	7
68	250mm Diameter - 200mm Diameter	No	4
	<u>STOP ENDS</u>		
69	200mm Diameter	No	2
	<u>AIR TERMINALS</u>		
	<u>For the Supply (including delivery), installation (including testing, commissioning and handing over of the following grilles, weather louvers, disc valves, diffusers, filters, dampers and associated items including all necessary accessories and fittings.</u>		
	<u>Louvres</u>		
70	WL1 - 350 x 350mm Weather Louver ("Trox AWG" or other equally approved) complete with wire mesh screen epoxy colour coated finish to Engineers detail	No	5
71	WL2 - 300 x 250mm Weather Louver ("Trox AWG" or other equally approved) complete with wire mesh screen epoxy colour coated finish to Engineers detail	No	1
72	WL3 - 300 x 300mm Weather Louver ("Trox AWG" or other equally approved) complete with wire mesh screen epoxy colour coated finish to Engineers detail	No	3
Carried Forward			R

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Mechanical Works

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WLS

<b>Brought Forward</b>				<b>R</b>
<u>Disc Valves</u>				
73	100mm Diameter duct mounted disc valve for supply air ("Trox" type Z-LVS or other equally approved) epoxy colour coated to matching ceiling detail. Various air flow rate. Please refer to drawing.	No	26	
74	100mm Diameter duct mounted disc valve for extract air ("Trox" type Z-LVS or other equally approved) epoxy colour coated to matching ceiling detail. Various air flow rate. Please refer to drawing.	No	10	
<u>Dampers</u>				
75	100mm Diameter Circular Volume Control Damper, (manual) ("Trox" type VFC or other equally approved).	No	2	
76	150mm Diameter Circular Volume Control Damper, (manual) ("Trox" type VFC or other equally approved).	No	33	
<u>Fire Dampers</u>				
77	250mm Diameter Fire Damper with Fusible link (2hr fire-rated, Normally open)	No	1	
<u>Washable Pleated Filters</u>				
78	PF1 - 595 x 295 x 50mm Washable primary pleated filters ("Trox" type WP-PS/ 595 x 295 x 50mm or other equally approved) complete with filter box	No	5	
<u>Grilles (Supply &amp; extract air)</u>				
79	400 x 300mm Extract air grille ("Trox" type VAT-AG or other equally approved), made from aluminium, complete with OBD, spigot connection to ducting, epoxy colour coated finish to architect's detail. Pressure drop at 25 Pa	No	4	
<b>Carried Forward</b>				<b>R</b>

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Mechanical Works

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M.B

**Samora Machel New Police Station  
Portion 01 of STAND 8972 (Samora Machel)**

Brought Forward			R
<u>Supply, deliver and install the following extract canopy complete with make-up and extract air connections, filters, drip trays, stainless steel impingement filters electrical connection to isolator or light circuit as specified, including hangers, supports, brackets and all necessary accessories.</u>			
80	2000 x 1500mm Stainless steel "Cyclovent" or equally approved model CV 100B kitchen extraction canopy complete with "Cycloclean" or equally approved filters, grease cups and on/off switch linked to extract and make up air fans, set up and fixed in position complete	No	1
81	On-Off control/ starters for fans		Item
82	Brushed stainless steel bulkhead to match canopy, to be installed between canopy and ceiling		Item
<u>Supply, deliver and install the following dehumidifiers complete with drip trays, supports, brackets and all necessary accessories.</u>			
83	Dehumidifiers ("Maeco" dry artete 25L or other equally approved)	No	9
84	Supply, deliver and install 250 x 100mm galvanized trunking, with removable covers, including brackets, supports and all necessary accessories, to install refrigeration piping in	m	40
85	Supply, deliver and install 200 x 100mm galvanized trunking, with removable covers, including brackets, supports and all necessary accessories, to install refrigeration piping in	m	30
86	Supply, deliver and install 100mm wide wire mesh cable basket ("Cabstrut" or other equally approved), including brackets, supports and all necessary accessories, to install refrigeration piping on	m	50
87	Supply, deliver and install 200mm wide wire mesh cable basket ("Cabstrut" or other equally approved), including brackets, supports and all necessary accessories, to install refrigeration piping on	m	40
88	R410A Refrigerant charge	kg	10
Carried Forward			R

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Mechanical Works

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W.B

**Samora Machel New Police Station**  
**Portion 01 of STAND 8972 (Samora Machel)**

Brought Forward			R
89	Supply and install 41 x 41mm Unistrut channel ("Cabstrut" or other equally approved) as brackets and supports for the air conditioning units, ducting and cable trays to the building roof and wall structure, complete with necessary fittings and accessories as per manufacturer's recommendation	m	80
90	Allow for all costs which may be required in order to place the necessary facilities on site for safe storage and orderly management purposes for the duration of the contract (Establishment of site)	No	1
91	Protection against damage, hoisting and rigging	No	1
<b><u>AUTOMATIC FIRE SUPPRESSION SYSTEM</u></b>			
<b><u>Supply, delivery &amp; installation to be in accordance with SANS 14520 and/or SANS 306 &amp; SANS 10400.</u></b>			
92	TC 3001 Fire Panel with gas control EN54	No	2
93	Smoke detectors and surface mount bases	No	4
94	Sirens with LED flashing beacons for discharge	No	2
95	Warning Fire Bells for Alarm warning	No	2
96	Gas relay Interface for activation of the suppressant cylinder	No	2
97	Power supply and batteries for Suppression control	No	2
98	25LT cylinder with bracket and Inergen	No	8
	Schedule 40 ASTM 106		
99	Grade B to manufacturers specification and Industry standards, supply 3000lb fittings for piping	m	40
100	PH 30 1mm 2 cr Fire resistant cable	m	200
101	Integrity test	No	1
<b><u>FIRE DETECTION SYSTEM</u></b>			
Carried Forward			R
Bill No. 16 Mechanical Works <div style="text-align: center; font-size: 2em; font-weight: bold;">274</div>			

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Mechanical Works

**Carried Forward**

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5 MB



Brought Forward			R
<u>Supply, delivery &amp; installation to be in accordance with SANS 10139 &amp; SANS 10400.</u>			
102	Fire retardant cable Class A wiring (ph 30)	m	200
103	25mm PVC conduit in accordance with SANS 10139	m	200
104	Base sounder and strobe combination	No	10
105	Manual call point	No	10
106	Fire Alarm Panel (Single loop)	No	1
<b><u>ELEVATOR INSTALLATION</u></b>			
Refer to the following clauses in the Technical Specification covering the complete supply installation and commissioning of the following systems			
107	Supply, Deliver to Site, Install and Commission the following elevator units as per specification:	No	1
108	Type of Lift: Passenger Lift. Lift Numbers: 1. No. of Cars: 1. Load: 1000Kgs / 13 Persons disable friendly. Speed: 1.00 m/s. No. of Floors: 3 stops. No. of Entrances: 1. Control: VVVF Simplex Single. Drive: Gearless, directly above hoist way. Motor : In shaft. Door Operator: New door drive. Levelling Accuracy: 3mm Hoist way Dimensions: 2800mm W x 3200mm D. Travel Height: 8m. Pit depth: 1700mm. Car Dimensions: 1600mm W x 1900mm D x 2200mm H. Machine output: 13 kW. Nominal supply current: ~ . Power supply, machinery: 3 x 400V, 50Hz.		
Carried Forward			R

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Mechanical Works

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m-b

Brought Forward

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- 109 Car finisher's per Lift. Front/Side/Rear Walls: Full brushed SST. Cabin ceiling and lighting: Hairline brushed SST. Floor: PVC/ local tiled floor. Cabin/Car Doors: Full hairline brushed SST, 2 hour fire rated. Landing Doors: Full hairline brushed SST, 2 hour fire rated. Forward Cover ( valid for 6 months from date of tender). Architraves. 3 Phase voltage regulator and surge protection. Battery Backup. Alarm bell, at main floor. Elevator announcer, not programmable. Call registered buzzer, both car and landing calls. Emergency battery drive, automatic. Emergency stop switch in shaft, two switches: Fire detection, whole building, doors open. Firemans drive. Acoustic device for arrival, on car, electronic, twice for down. Emergency interphone car - machine room - control room (maximum 30 meters wiring radius). Lock with emergency opening device. Shaft light, switch and fuse in controller, switch in the shaft pit. Pit ladder. Trimmer Steels. Ventilation.

**SUMP PUMP**

- 110 For the Supply, delivery, installation and commissioning of the 60040064 - V180F ("Hydro Solutions" or other equally approved) sump pump set including Electrical motor at 2 kW suitable for pump specified.

Water volume to be pumped: - 1,94 l/s  
Pump Static Head: - 7m  
Motor size - 2 kW

No

1

**KITCHEN EQUIPMENT**

Supply and install "Vulcan" or other equally approved stainless steel sinks, tables, shelves, racks, trolleys, etc.

- 111 1850 x 650 x 910mm x 85kg stainless steel (PS-L or PS-R) double combination pot sink with 150mm splashback at rear
- 112 2275 x 350mm Single tier wall mounted shelf in accordance with drawing no. POL 2012/F1
- 113 1840 x 650 x 910mm Table with 150mm splashback to rear, all 430 type stainless steel with heavy duty backing sheet with bitumastic sound deadening and fitted on stainless steel legs with adjustable foot pieces

No

1

No

5

No

1

Carried Forward

R

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Mechanical Works

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M-B

**Samora Machel New Police Station**  
**Portion 01 of STAND 8972 (Samora Machel)**

## Brought Forward

R

Supply and install kitchen equipment, etc. all in accordance with the specification

114	3 Phase industrial type stove, with solid plate without oven, type "Vulcan RE-2, T or Bakers Price" or other equally approved
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No

1

115	135L Oil Jacketed Boiling Pot (Electric)
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No

1

**Carried to Summary**

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**Bill No. 16**  
**Mechanical Works**

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SS  
MB

## GLAZING

**(CPAP WORK GROUP NO. 150 UNLESS OTHERWISE STATED)**

## PREAMBLES

The descriptions given in the various items below are not necessarily full and complete and reference must be made to the "General Preambles for Trades 2017" as published by the Association of South African Quantity Surveyors", and Supplementary Preambles for further description and amplification of work in this section

## MIRRORS

**6mm Silvered float glass copper backed mirrors with polished edges, holed for and fixed with chromium plated dome capped mirror screws with rubber buffers to plugs in brickwork or concrete**

- 1 450 x 600mm High "Ultra Mirror" or other equally approved reflective stainless steel mirror polished, in 304(18/10) grade stainless steel 1.2mm thick gauge with 4 holes on the corners, fixed with 4/8 number domed capped mirror screws with rubber buffers to plugs in brickwork or concrete.
- 2 497 x 709mm High "Ultra Mirror" or other equally approved reflective stainless steel mirror polished, in 304(18/10) grade stainless steel 1.2mm thick gauge with 4 holes on the corners, fixed with 4/8 number domed capped mirror screws with rubber buffers to plugs in brickwork or concrete.
- 3 600 x 400mm High "Ultra Mirror" or other equally approved reflective stainless steel mirror polished, in 304(18/10) grade stainless steel 1.2mm thick gauge with 4 holes on the corners, fixed with 4/8 number domed capped mirror screws with rubber buffers to plugs in brickwork or concrete.

**Carried Forward**

Bill No. 17  
Glazing

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**Samora Machel New Police Station  
Portion 01 of STAND 8972 (Samora Machel)**

Brought Forward			R	
4	763 x 497mm High "Ultra Mirror" or other equally approved reflective stainless steel mirror polished, in 304(18/10) grade stainless steel 1.2mm thick gauge with 4 holes on the corners, 2 holes on the centre, fixed with 4/8 number domed capped mirror screws with rubber buffers to plugs in brickwork or concrete.	No	1	
5	1175 x 720mm High "Ultra Mirror" or other equally approved reflective stainless steel mirror polished, in 304(18/10) grade stainless steel 1.2mm thick gauge with 4 holes on the corners, 4 holes on the centre, fixed with 4/8 number domed capped mirror screws with rubber buffers to plugs in brickwork or concrete.	No	1	
6	1445 x 720mm High "Ultra Mirror" or other equally approved reflective stainless steel mirror polished, in 304(18/10) grade stainless steel 1.2mm thick gauge with 4 holes on the corners, 4 holes on the centre, fixed with 4/8 number domed capped mirror screws with rubber buffers to plugs in brickwork or concrete.	No	3	
7	2100 x 722mm High "Ultra Mirror" or other equally approved reflective stainless steel mirror polished, in 304(18/10) grade stainless steel 1.2mm thick gauge with 4 holes on the corners, 6 holes on the centre, fixed with 4/8 number domed capped mirror screws with rubber buffers to plugs in brickwork or concrete.	No	2	
8	2808 x 722mm High "Ultra Mirror" or other equally approved reflective stainless steel mirror polished, in 304(18/10) grade stainless steel 1.2mm thick gauge with 4 holes on the corners, 10 holes on the centre, fixed with 4/8 number domed capped mirror screws with rubber buffers to plugs in brickwork or concrete.	No	2	
Carried to Summary			R	

Bill No. 17  
Glazing

**299**



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MB

## m2 484

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SS

**Samora Machel New Police Station  
Portion 01 of STAND 8972 (Samora Machel)**

	Brought Forward				
4	On narrow widths (LI)	m2	124		
5	On concrete stairs and soffits (LI)	m2	48		
<b><u>ON EXTERNAL FLOATED PLASTER SURFACES</u></b>					
<u>One coat plaster primer and two coats "Micatex" emulsion paint for exterior use</u>					
6	On beams (LI)	m2	234		
<b><u>ON FIBRE-CEMENT BOARD SURFACES</u></b>					
<u>One universal undercoat and two coats Eggshell enamel, colour to Principal Agent's approval</u>					
7	On ceilings (LI)	m2	138		
8	On fascia boards (LI)	m2	157		
<b><u>ON METAL SURFACES</u></b>					
<u>Prepare and apply one coat of zinc chromate primer one coat universal undercoat and two coats of universal SABS approved gloss enamel paint. Colour to Principal Agent's approval</u>					
9	On steel gates (LI)	m2	124		
10	On steel doors (LI)	m2	26		
11	On steel door frames (LI)	m2	385		
12	On steel window frames (LI)	m2	52		
13	On balustrades (LI)	m2	486		
14	On handrails (LI)	m	56		
<b><u>ON WOOD SURFACES</u></b>					
<u>Lightly sand down in the direction of the grain. Apply 1 coat sealer, 2 coats matt varnish to all exposed sides. Colour to Principal Agent's approval</u>					
15	On doors (LI)	m2	602		

Carried to Summary

Bill No. 18  
Paintwork

**281**



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1-8

Unit	Quantity	Rate	Amount
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m2	6 943
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No	1
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-193-

55

M.B



Brought Forward

R

**BULK EXCAVATION, FILLING, ETC.**

Bulk earthworks quantities are based on the final levels required. Rates are deemed to include for sequencing of work if required, temporary ramps, double handling etc, deemed necessary during the construction period.

Backfilling to platforms, embankments, etc. using in-situ material or imported fill from commercial sources, must be evenly spread, graded and mechanically compacted in layers not exceeding 200mm thick to a 95% Mod. AASHTO maximum density.

The contractor shall make his own arrangement for disposal of spoil materials off site and the cost of all royalty and haulage; loading and unloading are to be included in the relevant rate.

Rates for bulk excavations are deemed to include for risk of collapse/shoring to sides of excavated faces.

Rates for bulk excavations are deemed to include for any necessary precautions or varied method of excavation required for excavating along the lateral support structure, existing services, etc.

Temporary access ramps, forming temporary support banks, etc, as required by the Contractor and the sequencing and staging thereof have not been separately measured and are deemed to be included in the items described hereunder.

**Open face excavation in earth**

3	Strip average 150mm thick layer of topsoil, stockpile on site and maintain	m2	1 511
4	Strip average 150mm thick layer of topsoil and cart off site	m2	6 182
5	Open face excavation over sloping site to reduce levels	m3	5 900
6	Filling with selected material from the excavations including haulage from within the boundary of the site to form slopes, contours, platforms, etc. compacted to 95% Mod. AASHTO maximum density	m3	500

Carried Forward

R

Bill No. 19  
External Works

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M.B

**Samora Machel New Police Station  
Portion 01 of STAND 8972 (Samora Machel)**

<b>Brought Forward</b>					
7	Filling with G7 material supplied by the contractor to form slopes, contours, platforms, etc. compacted to 95% Mod. AASHTO maximum density	m3	1 500		
8	Imported 125mm diameter nominal quarry stone obtained from commercial sources supplied by the contractor, compacted to 97% Mod AASHTO density	m3	1 920		
9	Average 75mm topsoil from stockpiles on site, spread and levelled over site, and abutting kerbs, walls, etc.	m2	1 511		
10	Allow for all necessary tests by an independent testing authority of compaction and moisture content of compacted earth to ensure that the required compaction are being attained and for submitting results to the Engineer	No	392		
11	Keeping excavations free of all subterranean water by methods to be determined by the contractor			Item	
<b><u>Extra over bulk excavation in earth for excavation in:</u></b>					
12	Intermediate material	m3	885		
13	Hard material	m3	443		
<b><u>Extra over all excavations for carting away</u></b>					
14	Surplus material from excavations and/or stock piles on site, to a dumping site to be located by the contractor	m3	5 400		
<b><u>Sundries</u></b>					
15	Bidum U14 non woven geotextile on damp rock	m2	3 200		

**Carried Forward**

Bill No. 19  
External Works

**284**



R

R

SS

MB

Brought Forward

**PROVING OF EXISTING SERVICES**

No pegs or stakes shall be driven or any excavation made before the Contractor has established that there are no underground services, which may be damaged thereby.

Any damage shall be reported immediately to the Principal Agent, or to the personnel in charge at the nearest station.

Any previously uncharted underground services encountered by the Contractor during the course of his activities shall be reported immediately to the Principal Agent who shall ensure necessary inclusion in the "as built" drawings.

Any claims relating to standing time costs resulting from proving of services shall be for the Contractors account. The services are stated below but are limited to and is to be identified by the Engineer when encountered on site. The contractor is to make reasonable allowance for possible delays and standing time in his rates for tasks relating to works undertaken in the various trades with and including in the Preliminaries & General. The Contractor is to familiarize himself/herself with the possible services prior to pricing the bills of quantities.

The contractor is to take into account the following services but not limited to:

1. Electrical lines
2. Stormwater lines
3. Sewer lines
4. Domestic or potable water supply lines
5. Fire water supply lines

**Restrictive excavations for proving of services**

**Restrictive excavations in earth not exceeding 2m deep**

16 Trenches

m3 225

**Extra over restrictive excavations in earth for excavation in**

17 Intermediate rock

m3 34

Carried Forward

Bill No. 19  
External Works

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R

R

SS

M.B

**Samora Machel New Police Station  
Portion 01 of STAND 8972 (Samora Machel)**

Brought Forward		
<b><u>Risk of collapse of excavations</u></b>		
18	Sides of trench and hole excavation not exceeding 1,5m deep	m2 450
<b><u>Earth filling obtained from the excavations and/or prescribed stock piles on site, compacted to 93% Mod. AASHTO density</u></b>		
19	Backfilling to trenches	m3 225
<b><u>Re-routing</u></b>		
20	Relocating and re-routing of existing services	m 150
<b><u>REMOVAL OF EXISTING WORK</u></b>		
<b><u>Alterations (CPAP work group No. 102)</u></b>		
<b><u>Saw cut, breaking up and removing concrete surface beds including layer works, cart off site and level off area</u></b>		
21	150mm Thick concrete aprons	m2 804
22	250mm Thick concrete plinth	m2 4
<b><u>Breaking up and removing reinforced concrete, including cutting off and removing reinforcement</u></b>		
23	Stairs and landings	m3 13
<b><u>Carefully take up and removing paving bricks including layer works, cart of site and level off area</u></b>		
24	80mm Thick paving	m2 1 029
<b><u>Carefully breakup and remove damaged kerb including grubbing up concrete base and prepare surface to receive new kerb (New kerb elsewhere measured)</u></b>		
25	Precast concrete kerbs	m 468
<b><u>Take out and remove existing brickwork</u></b>		
26	230mm Brick walls	m2 269

Carried Forward

Bill No. 19  
External Works

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R

R

SS

W.B

**Samora Machel New Police Station  
Portion 01 of STAND 8972 (Samora Machel)**

<b>Brought Forward</b>			
27	Brick piers	m3	45
<b><u>Trench and hole excavations in earth for breaking up and removing</u></b>			
28	Brickwork	m3	38
29	Reinforced concrete strip footings	m3	30
<b><u>Taking out/off and removing sundry metalwork</u></b>			
30	1.8m high steel palisade fencing including steel poles, stay posts, grubbing up foundations, etc. and level off area.	m	20
31	1.8m high steel weldmesh fencing including steel poles, stay posts, grubbing up foundations, etc. and level off area.	m	310
32	Existing steel palisade double gate approximate size 2000 x 1800mm high including steel posts, grubbing up foundations, etc. and level off area.	No	1
33	Existing steel single gate approximate size 1000 x 1800mm high including steel posts, grubbing up foundations, etc. and level off area.	No	1
34	Existing steel double gate approximate size 6000 x 1800mm high including steel posts, grubbing up foundations, etc. and level off area.	No	1
<b><u>Sundries</u></b>			
35	Disconnect, dismantle and remove existing generator off site	No	1
36	Disconnect, drain out water, dismantle and remove 33KL elevated steel water tank including steel catch ladder, structural steel elevated structure (approximate size on plan 2600 x 2600mm), approximate height 15m high, grubbing up foundations, etc. and level off area.	No	1

**Carried Forward**

Bill No. 19  
External Works

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R

R

SS  
M.B

**Samora Machel New Police Station  
Portion 01 of STAND 8972 (Samora Machel)**

<b>Brought Forward</b>				<b>R</b>
37	Relocate existing Parkhome structure approximate size 8900 x 3300 x 2500mm high including three steps of steel stairs, disconnecting water, electrical, mechanical & sewer services, grubbing out foundations & level off area, hoisting, insurance, relocation to a site approximately 50km from current location including, de-hoisting and placing in position etc. (Reconnection measured elsewhere) as directed by the Principal Agent, etc.	No	3	
38	Relocate existing Parkhome structure approximate size 12000 x 6100 x 2500mm high including three steps of steel stairs, disconnecting water, electrical, mechanical & sewer services, grubbing out foundations & level off area, hoisting, insurance, relocation to a site approximately 50km from current location including, de-hoisting and placing in position etc. (Reconnection measured elsewhere) as directed by the Principal Agent, etc.	No	2	
39	Relocate existing Parkhome structure approximate size 15000 x 3300 x 2500mm high including three steps of steel stairs, disconnecting water, electrical, mechanical & sewer services, grubbing out foundations & level off area, hoisting, insurance, relocation to a site approximately 50km from current location including, de-hoisting and placing in position etc. (Reconnection measured elsewhere) as directed by the Principal Agent, etc.	No	3	
40	Relocate existing steel container structure approximate size 6100 x 2440 x 2400mm high including three steps of steel stairs, disconnecting water, electrical, mechanical & sewer services, grubbing out foundations & level off area, hoisting, insurance, relocation to a site approximately 50km from current location including, de-hoisting and placing in position etc. (Reconnection measured elsewhere) as directed by the Principal Agent, etc.	No	2	
41	Relocate existing steel container structure approximate size 12150 x 2440 x 2400mm high including three steps of steel stairs, disconnecting water, electrical, mechanical & sewer services, grubbing out foundations & level off area, hoisting, insurance, relocation to a site approximately 50km from current location including, de-hoisting and placing in position etc. (Reconnection measured elsewhere) as directed by the Principal Agent, etc.	No	3	
<b>Carried Forward</b>				<b>R</b>
Bill No. 19 External Works				

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M-M

Brought Forward

R

**STORMWATER DRAINAGE**

**(CPAP WORK GROUP NO. 146 UNLESS OTHERWISE STATED)**

Class 34 heavy duty uPVC pipes laid in class B bedding including excavation, risk of collapse, working space, hoisting in position, backfilling with selected excavated material, compaction in layers of 150mm, cart away surplus material, shoring to pipe trenches, etc.

42	110mm Pipes vertically or ramped to cleaning eyes etc. (no excavation) (LI)	m	63
43	110mm Pipes laid in and trenches not exceeding 1m deep (LI)	m	169
44	110mm Pipes laid in and including trenches exceeding 1m and not exceeding 2m deep (LI)	m	56
45	160mm Pipes laid in and trenches not exceeding 1m deep (LI)	m	17
46	160mm Pipes laid in and including trenches exceeding 1m and not exceeding 2m deep (LI)	m	26
47	200mm Pipes laid in and trenches not exceeding 1m deep (LI)	m	15
48	200mm Pipes laid in and including trenches exceeding 1m and not exceeding 2m deep (LI)	m	23
49	250mm Pipes laid in and trenches not exceeding 1m deep (LI)	m	10
50	250mm Pipes laid in and including trenches exceeding 1m and not exceeding 2m deep (LI)	m	14
	<b><u>Extra over Class 34 Heavy Duty uPVC pipes for fittings</u></b>		
51	110mm Bend (LI)	No	147
52	110mm Access junction (LI)	No	63
53	110mm Coupling (LI)	No	66

Carried Forward

R

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External Works

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SS MB

**Samora Machel New Police Station  
Portion 01 of STAND 8972 (Samora Machel)**

	Brought Forward			R
54	160mm Bend (LI)	No	4	
55	160 x 110mm Bend (LI)	No	4	
56	160 x 110mm Access junction (LI)	No	7	
57	200mm Bend (LI)	No	3	
58	200 x 110mm Bend (LI)	No	2	
59	200 x 160mm Bend (LI)	No	2	
60	200 x 110mm Access junction (LI)	No	4	
61	250mm Bend (LI)	No	1	
62	250 x 110mm Bend (LI)	No	2	
63	250 x 200mm Bend (LI)	No	2	
64	250 x 110mm Access junction (LI)	No	3	
	<u>Class 100D concrete pipes in class C bedding including excavation, risk of collapse, working space, hoisting in position, backfilling with selected excavated material, compaction in layers of 150mm, cart away surplus material, shoring to pipe trenches, etc.</u>			
65	300mm Pipes laid in and trenches not exceeding 1m deep (LI)	m	4	
66	300mm Pipes laid in and including trenches exceeding 1m and not exceeding 2m deep (LI)	m	55	
67	300mm Pipes laid in and including trenches exceeding 2m and not exceeding 3m deep (LI)	m	7	
68	375mm Pipes laid in and trenches not exceeding 1m deep (LI)	m	11	
69	375mm Pipes laid in and including trenches exceeding 1m and not exceeding 2m deep (LI)	m	167	
70	375mm Pipes laid in and including trenches exceeding 2m and not exceeding 3m deep (LI)	m	4	
	Carried Forward			R

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Brought Forward

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Sumps, catchpits, inspection chambers, etc  
(gratings and covers elsewhere)

- 71 Brick manhole 805 x 805mm internally and not exceeding 1000mm deep internally comprising suitable 1565 x 1565 x 150mm thick 25MPa/26mm unreinforced concrete base, 230mm brickwork of NFX clay bricks (14 MPa nominal compressive strength) in class II mortar, 1265 x 1265 x 100mm thick precast concrete cover slab and rebated opening to accommodate cover and frame (cover and frame elsewhere measured) complete with excavation, risk of collapse, working space, hoisting in position, backfilling with selected excavated material, cart away surplus material, shoring benching, haunching, etc. all in accordance to Civil Engineer drawings, annexured to these Bills of Quantities for the full details, drawing number: FEC-23023-GEN-TYP-001. (LI)

No

1

- 72 Brick manhole 805 x 805mm internally, exceeding 1000mm and not exceeding 1250mm deep internally comprising suitable 1565 x 1565 x 150mm thick 25MPa/26mm unreinforced concrete base, 230mm brickwork of NFX clay bricks (14 MPa nominal compressive strength) in class II mortar, 1265 x 1265 x 100mm thick precast concrete cover slab and rebated opening to accommodate cover and frame (cover and frame elsewhere measured) complete with excavation, risk of collapse, working space, hoisting in position, backfilling with selected excavated material, cart away surplus material, shoring benching, haunching, etc. all in accordance to Civil Engineer drawings, annexured to these Bills of Quantities for the full details, drawing number: FEC-23023-GEN-TYP-001. (LI)

No

4

- 73 Brick manhole 805 x 805mm internally, exceeding 1250mm and not exceeding 1500mm deep internally comprising suitable 1565 x 1565 x 150mm thick 25MPa/26mm unreinforced concrete base, 230mm brickwork of NFX clay bricks (14 MPa nominal compressive strength) in class II mortar, 1265 x 1265 x 100mm thick precast concrete cover slab and rebated opening to accommodate cover and frame (cover and frame elsewhere measured) complete with excavation, risk of collapse, working space, hoisting in position, backfilling with selected excavated material, cart away surplus material, shoring benching, haunching, etc. all in accordance to Civil Engineer drawings, annexured to these Bills of Quantities for the full details, drawing number: FEC-23023-GEN-TYP-001. (LI)

No

2

Carried Forward

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**Brought Forward**

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74 Brick manhole 805 x 805mm internally, exceeding 1500mm and not exceeding 1750mm deep internally comprising suitable 1565 x 1565 x 150mm thick 25MPa/26mm unreinforced concrete base, 230mm brickwork of NFX clay bricks (14 MPa nominal compressive strength) in class II mortar, 1265 x 1265 x 100mm thick precast concrete cover slab and rebated opening to accommodate cover and frame (cover and frame elsewhere measured) complete with excavation, risk of collapse, working space, hoisting in position, backfilling with selected excavated material, cart away surplus material, shoring benching, haunching, etc. all in accordance to Civil Engineer drawings, annexured to these Bills of Quantities for the full details, drawing number: FEC-23023-GEN-TYP-001. (LI)

No

1

75 Brick manhole 805 x 805mm internally, exceeding 1750mm and not exceeding 2000mm deep internally comprising suitable 1565 x 1565 x 150mm thick 25MPa/26mm unreinforced concrete base, 230mm brickwork of NFX clay bricks (14 MPa nominal compressive strength) in class II mortar, 1265 x 1265 x 100mm thick precast concrete cover slab and rebated opening to accommodate cover and frame (cover and frame elsewhere measured) complete with excavation, risk of collapse, working space, hoisting in position, backfilling with selected excavated material, cart away surplus material, shoring benching, haunching, etc. all in accordance to Civil Engineer drawings, annexured to these Bills of Quantities for the full details, drawing number: FEC-23023-GEN-TYP-001. (LI)

No

1

**Kerb inlets for stormwater manholes (gratings and covers elsewhere)**

76 Double kerb inlet stormwater drainage, overall size 2950 x 1340mm externally not exceeding 1000mm deep internally comprising of 150mm thick 25Mpa/19mm reinforced concrete base, 230mm brickwork of NFX clay bricks (14 MPa nominal compressive strength) in class II mortar, and 200mm thick precast concrete cover and rebated opening to accommodate cover and frame (cover and frame elsewhere measured) complete with excavation, risk of collapse, working space, hoisting in position, backfilling with selected excavated material, cart away surplus material, shoring benching, haunching, etc. all in accordance to Civil Engineer drawings, annexured to these Bills of Quantities for the full details, drawing number: FEC-23023-GEN-TYP-001. (LI)

No

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**Carried Forward**

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<b>Brought Forward</b>				<b>R</b>
77	Double kerb inlet stormwater drainage, overall size 2950 x 1340mm externally exceeding 1000mm and not exceeding 1250mm deep internally comprising of 150mm thick 25Mpa/19mm reinforced concrete base, 230mm brickwork of NFX clay bricks (14 MPa nominal compressive strength) in class II mortar, and 200mm thick precast concrete cover and rebated opening to accommodate cover and frame (cover and frame elsewhere measured) complete with excavation, risk of collapse, working space, hoisting in position, backfilling with selected excavated material, cart away surplus material, shoring benching, haunching, etc. all in accordance to Civil Engineer drawings, annexured to these Bills of Quantities for the full details, drawing number: FEC-23023-GEN-TYP-001. (LI)	No	4	
<b><u>Gratings, covers, etc</u></b>				
78	Heavy duty precast concrete 500mm diameter cover, all in accordance to Civil Engineer drawings, annexured to these Bills of Quantities for the full details, drawing number: FEC-23023-GEN-TYP-001. (LI)	No	9	
79	Heavy duty precast concrete hinged cover and frame to EN 124, Class B125 approximate size 450 x 900mm, all in accordance to Civil Engineer drawings, annexured to these Bills of Quantities for the full details, drawing number: FEC-23023-GEN-TYP-001. (LI)	No	14	
<b><u>Keeping excavations free of water</u></b>				
80	Keeping excavations free of all water other than subterranean water			Item
<b><u>Alterations to existing manholes etc.:</u></b>				
81	Break through brick walls situated on side of manhole for and connect up new 375mm concrete pipe (elsewhere measured) and make good all round including new channels, benching, etc.	No	1	
<b><u>Sundries</u></b>				
82	Extra over excavation in earth for pipe trenches, chambers, etc for excavation in soft rock (LI)	m3	89	
83	Extra over excavation in earth for pipe trenches, chambers, etc for excavation in hard rock	m3	44	

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<b>Brought Forward</b>				R
84	Extra over excavation for pipe trenches, chambers, etc for carting away surplus material to a dumping site to be located by the Contractor	m3	359	
85	Extra over backfilling to pipe trenches, chambers, etc for imported selected and approved granular material for bedding material SANS 1200 LB 3.3, maximum aggregate 6mm compacted to 93% MOD AASHTO density in 100mm layers (LI)	m3	166	
86	Extra over backfilling to pipe trenches, chambers, etc for imported selected and approved granular material for fill blanket material placed in accordance to SANS 1200 LB 3.2, maximum aggregate 10mm compacted to 93% MOD AASHTO density (LI)	m3	110	
87	Extra over backfilling to pipe trenches, chambers, etc for imported selected and approved granular material for backfill material placed and compacted in accordance to SANS 1200 BD 3.5, maximum aggregate 63mm compacted in to 93% MOD AASHTO density (LI)	m3	83	
<b><u>Testing</u></b>				
88	Allow for testing of the entire stormwater drainage system to Engineer's satisfaction.		Item	
<b><u>SOIL DRAINAGE</u></b>				
<b><u>(CPAP WORK GROUP NO. 146 UNLESS OTHERWISE STATED)</u></b>				
<b><u>Class 34 heavy duty uPVC pipes laid in class B bedding including excavation, risk of collapse, working space, hoisting in position, backfilling with selected excavated material, compaction in layers of 150mm, cart away surplus material, shoring to pipe trenches, etc.</u></b>				
89	110mm Pipes vertically or ramped to cleaning eyes etc. (no excavation) (LI)	m	52	
90	110mm Pipes laid in and trenches not exceeding 1m deep (LI)	m	210	
91	110mm Pipes laid in and including trenches exceeding 1m and not exceeding 2m deep (LI)	m	175	
<b>Carried Forward</b>				R
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<b>Brought Forward</b>			
92	110mm Pipes laid in and including trenches exceeding 2m and not exceeding 3m deep (LI)	m	61
93	160mm Pipes laid in and trenches not exceeding 1m deep (LI)	m	24
94	160mm Pipes laid in and including trenches exceeding 1m and not exceeding 2m deep (LI)	m	47
95	160mm Pipes laid in and including trenches exceeding 2m and not exceeding 3m deep (LI)	m	79
<b><u>Extra over Class 34 Heavy Duty uPVC pipes for fittings</u></b>			
96	110mm Bends (LI)	No	96
97	110mm Access junction (LI)	No	40
98	160 x 110mm Access junction (LI)	No	5
99	110mm 'ABC' cast iron rodding eyes set in 300 x 300 x 300mm thick 15MPa/19 unreinforced concrete surround finished smooth on exposed surfaces with rounded angles	No	9

**Precast concrete circular inspection chambers**  
**(covers elsewhere)**

Where approach grades into the manhole are 1:15 or steeper and associated with a change in direction in the manhole of 30° or more, the benching is to be brought up two pipe diameters above the pipe invert (Type B benching sewers)

Rendering for all manhole benching shall consist of one part H.A.C. to two parts sand thoroughly mixed and applied to 'uncured' concrete surfaces to a minimum thickness of 20mm

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<b>Brought Forward</b>				<b>R</b>	
100	Excavate for and construct 1050mm internal diameter circular pre-cast concrete manhole exceeding 750mm and not exceeding 1000mm deep with 1800mm diameter x 150mm thick unreinforced concrete grade 25/26 base and benching and 150mm thick pre-cast cover slab and rebated opening to accommodate cover and rebated opening to accommodate cover and frame (cover and frame elsewhere measured) complete with excavation, risk of collapse, working space, hoisting in position, backfilling with selected excavated material, cart away surplus material , shoring benching, haunching, etc. all in accordance to Civil Engineer drawings, annexured to these Bills of Quantities for the full details, drawing number: FEC-23022-GEN-TYP-002. (LI)	No	2		
101	Excavate for and construct 1050mm internal diameter circular pre-cast concrete manhole exceeding 1000mm and not exceeding 1250mm deep with 1800mm diameter x 150mm thick unreinforced concrete grade 25/26 base and benching and 150mm thick pre-cast cover slab and rebated opening to accommodate cover and rebated opening to accommodate cover and frame (cover and frame elsewhere measured) complete with excavation, risk of collapse, working space, hoisting in position, backfilling with selected excavated material, cart away surplus material , shoring benching, haunching, etc. all in accordance to Civil Engineer drawings, annexured to these Bills of Quantities for the full details, drawing number: FEC-23022-GEN-TYP-002. (LI)	No	3		
102	Excavate for and construct 1050mm internal diameter circular pre-cast concrete manhole exceeding 1250mm and not exceeding 1500mm deep with 1800mm diameter x 150mm thick unreinforced concrete grade 25/26 base and benching and 150mm thick pre-cast cover slab and rebated opening to accommodate cover and rebated opening to accommodate cover and frame (cover and frame elsewhere measured) complete with excavation, risk of collapse, working space, hoisting in position, backfilling with selected excavated material, cart away surplus material , shoring benching, haunching, etc. all in accordance to Civil Engineer drawings, annexured to these Bills of Quantities for the full details, drawing number: FEC-23022-GEN-TYP-002. (LI)	No	6		
<b>Carried Forward</b>				<b>R</b>	

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**Samora Machel New Police Station  
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<b>Brought Forward</b>				R
103	Excavate for and construct 1050mm internal diameter circular pre-cast concrete manhole exceeding 1500mm and not exceeding 1750mm deep with 1800mm diameter x 150mm thick unreinforced concrete grade 25/26 base and benching and 150mm thick pre-cast cover slab and rebated opening to accommodate cover and rebated opening to accommodate cover and frame (cover and frame elsewhere measured) complete with excavation, risk of collapse, working space, hoisting in position, backfilling with selected excavated material, cart away surplus material , shoring benching, haunching, etc. all in accordance to Civil Engineer drawings, annexured to these Bills of Quantities for the full details, drawing number: FEC-23022-GEN-TYP-002. (LI)	No	2	
104	Excavate for and construct 1050mm internal diameter circular pre-cast concrete manhole exceeding 1750mm and not exceeding 2000mm deep with 1800mm diameter x 150mm thick unreinforced concrete grade 25/26 base and benching and 150mm thick pre-cast cover slab and rebated opening to accommodate cover and rebated opening to accommodate cover and frame (cover and frame elsewhere measured) complete with excavation, risk of collapse, working space, hoisting in position, backfilling with selected excavated material, cart away surplus material , shoring benching, haunching, etc. all in accordance to Civil Engineer drawings, annexured to these Bills of Quantities for the full details, drawing number: FEC-23022-GEN-TYP-002. (LI)	No	2	
105	Excavate for and construct 1050mm internal diameter circular pre-cast concrete manhole exceeding 2000mm and not exceeding 2250mm deep with 1800mm diameter x 150mm thick unreinforced concrete grade 25/26 base and benching and 150mm thick pre-cast cover slab and rebated opening to accommodate cover and rebated opening to accommodate cover and frame (cover and frame elsewhere measured) complete with excavation, risk of collapse, working space, hoisting in position, backfilling with selected excavated material, cart away surplus material , shoring benching, haunching, etc. all in accordance to Civil Engineer drawings, annexured to these Bills of Quantities for the full details, drawing number: FEC-23022-GEN-TYP-002. (LI)	No	1	
<b>Carried Forward</b>				R

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**Samora Machel New Police Station  
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<b>Brought Forward</b>					
106	Excavate for and construct 1050mm internal diameter circular pre-cast concrete manhole exceeding 2250mm and not exceeding 2500mm deep with 1800mm diameter x 150mm thick unreinforced concrete grade 25/26 base and benching and 150mm thick pre-cast cover slab and rebated opening to accommodate cover and rebated opening to accommodate cover and frame (cover and frame elsewhere measured) complete with excavation, risk of collapse, working space, hoisting in position, backfilling with selected excavated material, cart away surplus material , shoring benching, haunching, etc. all in accordance to Civil Engineer drawings, annexured to these Bills of Quantities for the full details, drawing number: FEC-23022-GEN-TYP-002. (LI)	No	3		
107	Excavate for and construct 1050mm internal diameter circular pre-cast concrete manhole exceeding 2500mm and not exceeding 2750mm deep with 1800mm diameter x 150mm thick unreinforced concrete grade 25/26 base and benching and 150mm thick pre-cast cover slab and rebated opening to accommodate cover and rebated opening to accommodate cover and frame (cover and frame elsewhere measured) complete with excavation, risk of collapse, working space, hoisting in position, backfilling with selected excavated material, cart away surplus material , shoring benching, haunching, etc. all in accordance to Civil Engineer drawings, annexured to these Bills of Quantities for the full details, drawing number: FEC-23022-GEN-TYP-002. (LI)	No	1		
	<u>Covers, etc</u>				
108	550mm Diameter heavy duty cover and frame 'DM' Type double sealed (Ductile iron), all in accordance to Civil Engineer drawings, annexured to these Bills of Quantities for the full details, drawing number: FEC-23022-GEN-TYP-002. (LI)	No	20		
	<u>Keeping excavations free of water</u>				
109	Keeping excavations free of all water other than subterranean water		Item		

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Brought Forward				R
<b><u>Alterations to existing manholes etc.:</u></b>				
110	Break through precast concrete situated on side of manhole for and connect up new 110mm uPVC pipe (elsewhere measured) and make good all round including new channels, benching, etc.	No	1	
111	Break through precast concrete situated on side of manhole for and connect up new 160mm uPVC pipe (elsewhere measured) and make good all round including new channels, benching, etc.	No	2	
<b><u>Sundries</u></b>				
112	Excavate for and construct gulley comprising of 110mm uPVC gulley trap with 190mm diameter uPVC hopperhead with pvc grating, all set in mass concrete and not exceeding 500mm deep. The top of the gulley to be raised 75mm above surrounding ground level and internally dished down to hopper head with smoothened render and external of raised sides to be finished neatly. (LI)	No	17	
113	Extra over excavation in earth for pipe trenches, chambers, etc. for excavation in soft rock (LI)	m3	110	
114	Extra over excavation in earth for pipe trenches, chambers, etc. for excavation in hard rock	m3	55	
115	Extra over excavation for pipe trenches, chambers, etc for carting away surplus material to a dumping site to be located by the Contractor	m3	387	
116	Extra over backfilling to pipe trenches, chambers, etc for imported selected and approved granular material for bedding material SANS 1200 LB 3.3, maximum aggregate 6mm compacted to 93% MOD AASHTO density in 100mm layers (LI)	m3	179	
117	Extra over backfilling to pipe trenches, chambers, etc for imported selected and approved granular material for fill blanket material placed in accordance to SANS 1200 LB 3.2, maximum aggregate 10mm compacted in to 93% MOD AASHTO density (LI)	m3	119	
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<b>Brought Forward</b>				<b>R</b>
118	Extra over backfilling to pipe trenches, chambers, etc for imported selected and approved granular material for backfill material placed and compacted in accordance to SANS 1200 BD 3.5, maximum aggregate 63mm compacted in to 93% MOD AASHTO density (LI)	m3	89	
	<b>Testing</b>			
119	Allow for testing of the entire sewer drainage system to the satisfaction of the Engineer		Item	
	<b><u>WATER SUPPLIES</u></b>			
	<b><u>(CPAP WORK GROUP NO. 148 UNLESS OTHERWISE STATED)</u></b>			
	<b><u>Class 16 HDPE or other equally approved pipes</u></b>			
120	20mm Pipes laid in trenches (No excavations)	m	3	
121	20mm Pipes laid in trenches including excavation, risk of collapse, backfilling with selected excavated material, compaction in layers, etc. (LI)	m	21	
122	25mm Pipes laid in trenches (No excavations)	m	3	
123	25mm Pipes laid in trenches including excavation, risk of collapse, backfilling with selected excavated material, compaction in layers, etc. (LI)	m	16	
124	32mm Pipes laid in trenches (No excavations)	m	9	
125	32mm Pipes laid in trenches including excavation, risk of collapse, backfilling with selected excavated material, compaction in layers, etc. (LI)	m	68	
126	110mm Pipes laid in trenches (No excavations)	m	7	
127	110mm Pipes laid in trenches including excavation, risk of collapse, backfilling with selected excavated material, compaction in layers, etc. (LI)	m	371	
128	160mm Pipes laid in trenches (No excavations)	m	5	
	<b>Carried Forward</b>			<b>R</b>

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