FREE STATE PROVINCIAL CAPEX PROGRAMME - EMPLOYMENT DATA

MINIMUM DATA REQUIRED FROM CONTRACTOR MONTHLY

Item No:	**File No:**	**Report date:**
Institution:		
Service:		

	ACTUAL PAYMENTS	ACTUAL PEOPLE EMPLOYED					ACTUAL TRAINING					
Month	**Wages (inc in Constr.)**	**Monthly Employment - Number of persons and average number work days**					**Number of persons and training days**					
		Men	**Youth**	**Women**	**Disabled**	**Work days**	**Manage**	**days**	**Tech skills**	**days**	**Life skills**	**days**
b/f												
April												
May												
June												
July												
August												
September												
October												
November												
December												
January												
February												
March												
TOTAL												

COMMENTS:

	Benchmark	Offered
Labour content		
Jobs created		
Training		

Contractor's Name:

Tel: **Fax:**

E-mail:

Responsible Person:

Maintenance, Refurbishment, Replacement and Upgrades of Heating, Ventilation, Air-Conditioning and Refrigeration Systems at Various Institutions in the Free State Department **Period : Date of signing of contract for 36 Months.**

CALCULATION OF PENALTIES

CALCULATION OF PENALTY PER DAY (EXCLUDING VAT)

CONTRACT PERIOD	RATE PER R100 OF ESTIMATE
1 month	27,5 cents
1,5 months	22 cents
2 months	16,5 cents
2,5 months	13,5 cents
3 months	11 cents
3,5 months	9,5 cents
4 months	8,5 cents
4,5 months	7,5 cents
5 months	6,25 cents
6 months	5,75 cents
7 months	4,75 cents
8 months	4 cents
9 months	3,75 cents
10 months	3,5 cents
11 months	3 cents
12 months	2,75 cents
14 months	2,5 cents
15 months	2,25 cents
16 months	2 cents
18 months	1,75 cents
20 months	1,5 cents
21 months	1,5 cents
24 months	1,25 cents
30 months	1 cent
36 months	1 cent
42 months	1 cent

PENALTY PER DAY ROUNDED OFF AS FOLLOWS:

R0	-	R500	nearest	R5
R501	-	R1 000	nearest	R10
R1 001	-	R5 000	nearest	R50
R5 001	-	and above	nearest	R100

EXAMPLE

Estimated contract value = R2 500 000 (excluding VAT)
Contract period = 12 months

$$R2\,500\,000 \times \frac{0{,}0275}{100}$$

= R687,50/day

Therefore rounded off to the nearest R10.00

= R690,00/day

PENALTIES ON CONTRACTS IN PHASES

Penalties must be calculated proportionally on the estimated contract value of each phase

C7.2 Priced rates for repairs, service and maintenance on Air Conditioning and Ventilation Installations				
ITEM NO:	**SCHEDULED PARTS**	**UNIT**	**PROVISIONAL QUANTITIES**	**PRICE [EXT VAT]**
	HONEYWELL CONTROLS			
1	Valve Actuator M7425A3005	S	1	R
2	Modutrol Motor M985A	S	1	R
3	Steam valve V5011R1042-1/2"	S	1	R
4	Steam valve V5011R1042-3/4"	S	1	R
5	Sail switch SA43A	S	1	R
6	Damper Motor ML6194E	S	1	R
7	Thermostat T92-A-1183	S	1	R
8	Micronic 100 Humidity Controller R7420F-1037	S	1	R
9	Micronic 100 Humidity display S7004C-1019	S	1	R
10	Micronic 100 Module Q642Q-1005	S	1	R
11	Micronic 100 Temperature display S7004B	S	1	R
12	Micronic 100 Temperature controller R7420F-1045	S	1	R
13	Step Controller 5984-A-F	S	1	R
14	Three-way mixing valve V5011R1065 PN 16 DN 25 KVS 25	S	1	R
15	Balance relay assembly 24337DB	S	1	R
16	Valve repack kit 14003294-001	S	1	R
17	Pneumatic Controller RP 920C 1054	S	1	R
18	Valve Actuator ML7421A1008	S	1	R
19	ML 6194C-1000 Damper Actuator	S	1	R
20	ML7425A3005 Actuator	S	1	R
21	M9185A1018 Modutrol motor	S	1	R
22	M9185E1019 Modutrol motor	S	1	R
23	M9174D1007 Modutrol motor	S	1	R
24	V5011S1042 Steam valve 15MM	S	1	R

C7.2 Priced rates for repairs, service and maintenance on Air Conditioning and Ventilation Installations				
ITEM NO:	**SCHEDULED PARTS**	**UNIT**	**PROVISIONAL QUANTITIES**	**PRICE [EXT VAT]**
25	V5011S1042 Steam Valve 20MM	S	1	R
26	Sail Switch S43A1037	S	1	R
27	T921A1183 Thermostat	S	1	R
28	MP953E-1376-1 Actuator	S	1	R
29	14003295001 Repack Kit	S	1	R
30	R43176754001 Valve kit	S	1	R
31	S984F1088 Step Controller	S	1	R
SUBTOTAL FOR HONEYWELL CONTROLS				R

C7.2 Priced rates for repairs, service and maintenance on Air Conditioning and Ventilation Installations				
ITEM NO:	**SCHEDULED PARTS**	**UNIT**	**PROVISIONAL QUANTITIES**	**PRICE [EXT VAT]**
	FILTERS TO DEPARTMENT SPECIFICATION			
32	600x500x300 Filter Microcell 95% dust spot 62 pleats with seal	S	1	R
33	600x600x300 Filter Microcell 95% dust spot 62 pleats with seal	S	1	R
34	700x500x300 Filter Microcell 95% dust spot 31 pleats with seal	S	1	R
35	500x500x300 Filter Microcell 95% dust spot 31 pleats with seal	S	1	R
	600x600x100 filter BFDF disposable 80% dust spot 11 pleats	S	1	R
37	600x600x50 Filter BFW washable 85% arrestance 26 pleats	S	1	R
38	500x500x50 Filter BFW washable 85% arrestance 26 pleats	S	1	R
39	10mm X 25mm filter gasket	Roll	1	R
40		S	1	R
41	600X300X300 Microcell Filters F8	S	1	R
42	600X500X300 Microcell Filters F8	S	1	R
43	762X600X300 Microcell Filters F8	S	1	R
44	940 X 600 Filter Pad SP M5 Scrim	S	1	R
45	600 X 600 Filter Pad SP M5 Scrim	S	1	R
46	600x600x600 8 Pocket 95% bag Filters	S	1	R
47	600X600X50 M5 AWM Secondary External W/S Filter	S	1	R

C7.2 Priced rates for repairs, service and maintenance on Air Conditioning and Ventilation Installations				
ITEM NO:	SCHEDULED PARTS	UNIT	PROVISIONAL QUANTITIES	PRICE [EXT VAT]
8	600X600X100 M5 AWM Secondary External W/S Filter	S	1	
49	600X300X100 M5 AWM Secondary External W/S Filter	S	1	
50	600X600X50 Washable Panel Filter External Wire Support	S	1	R
51	600X300X50 Washable Panel Filter External Wire Support	S	1	R
52	500X500X50 Washable Panel Filter External Wire Support	S	1	R
53	Neoprene Filter Gasket	S	1	
54	Split air con unit Filters	S	1	R
55	Cassette Filter F9 600X300X292	S	1	R
56	Cassette Filter F9 600X600X292	S	1	R
57	Cassette Filter F8 600X600X292	S	1	R
58	Theatre Particle Count	S	1	R
59	Installed Hepa Filter DOP test.	S	1	R
60	610 X 305 X 292 High Cap H13 Hepa Filters	S	1	R
61	610 X 610 X 292 High Cap H13 Hepa Filters	S	1	R
62	1524 X 762 X 80 H14 Hepa Filters Gel Seal	S	1	R
SUBTOTAL FOR FILTERS TO DEPARTMENT SPECIFICATION				R

C7.2 Priced rates for repairs, service and maintenance on Air Conditioning and Ventilation Installations				
ITEM NO:	SCHEDULED PARTS	UNIT	PROVISIONAL QUANTITIES	PRICE [EXT VAT]
	COMPRESSORS			
63	9,000 BTU Piston	S	1	R
64	12,000 BTU Piston	S	1	R
65	18,000 BTU Piston	S	1	R
66	24,000 BTU Piston	S	1	R
67	36,000 BTU Piston	S	1	R
68	48,000 BTU Piston	S	1	R
69	60,000 BTU Piston	S	1	R
70	Bristol H2NG184DPEF	S	1	R
71	Bristol H2NG294DPE	S	1	R
72	Copeland 2R16M3TWD570	S	1	R
73	Copeland 4RK2 2500 FSD	S	1	R
74	Copeland D6 FJJ 4000 BWM	S	1	R
75	Copeland D8 DJI 6000 BWM	S	1	R
76	Maneurop MT160 R22	S	1	R
77	Maneurop MT 80 R22	S	1	R
78	Maneurop MT 50 R22	S	1	R
79	CopelandCRK 3-8325-TFD	S	1	R
80	Carrier 06EF299-4-610	S	1	R
81	9000 BTU Rotary Compressor	S	1	R
82	12000 BTU Rotary Compressor	S	1	R
83	18000 BTU Rotary Compressor	S	1	R
84	24000 BTU Rotary Compressor	S	1	R
85	36000 BTU Rotary Compressor	S	1	R
86	44000 BTU Rotary Compressor	S	1	R
87	58000 BTU Rotary Compressor	S	1	R
88	Hitachi scroll compressor 401 RH	S	1	R

C7.2 Priced rates for repairs, service and maintenance on Air Conditioning and Ventilation Installations				
ITEM NO:	**SCHEDULED PARTS**	**UNIT**	**PROVISIONAL QUANTITIES**	**PRICE [EXT VAT]**
89	Hitachi compressor 753-FITB-T	S	1	R
90	Copeland Compressor 4 RK2 2500 FSD	S	1	R
91	Copeland Compressor D6 FJ-4000	S	1	R
92	Copeland Compressor D8 DHI 5000 BWM	S	1	R
93	Copeland Compressor D8 DJI 6000 BWM	S	1	R
94	Maneurop Compressor MT50HV4	S	1	R
95	Maneurop Compressor MT80HV4	S	1	R
96	Maneurop Compressor MT160HW	S	1	R
97	Carrier Compressor 06EF299-4-610A-EE	S	1	R
98	Carrier Compressor 06DA8242-BA3601	S	1	R
99	Copland CRK 3-8325-TFD/552	S	1	R
100	Tecumseh AG5573 E	S	1	R
101	Bristol H2NG294DPE	S	1	R
102	Bristol H2NG184DPEF	S	1	R
SUBTOTAL FOR COMPRESSORS				R

C7.2 Priced rates for repairs, service and maintenance on Air Conditioning and Ventilation Installations				
ITEM NO:	**SCHEDULED PARTS**	**UNIT**	**PROVISIONAL QUANTITIES**	**PRICE [EXT VAT]**
	PUMPS, FANS & MOTORS			
103	KSB 125-250ETB Bronze Impeller & Stainless Steel Shaft	S	1	R
104	KSB ETB150-315 Bronze Impeller & Stainless Steel Shaft	S	1	R
105	Ziehl EBM Fanmotor D132 15-4 3kw	S	1	R
106	Ziehl EBM Fanmotor D132 15-4 4kw	S	1	R
107	BMM TEFC D160M 380V 11kw	S	1	R
108	BMM D2905 380V 1.1 kw	S	1	R
109	BMM D1235 380V 5.5 kw	S	1	R
110	KSB 40-250ETA new 255 Impeller bronze impeller & stainless steel shaft	S	1	R
111	-Rapid Alweiler NB 80-250 22m head	S	1	R
112	Rapid Alweiler NB 65-400 40m head	S	1	R
113	GX 9 Extract Fan	S	1	R
114	GX 12 Extract Fan	S	1	R
115	GX 6 Extractor fan	S	1	R
116	GX 9 Extractor fan	S	1	R
117	GX 12 Extractor fan	S	1	R
118	Rapid Alweiler NT 250/315 Bronze impellor	S	1	R
119	KSB 40/250 ETA /255 Bronze Impellor	S	1	R
120	KSB 125-250 ETB Bronze Impellor	S	1	R
121	KSB 150-315 ETB Bronze Impellor	S	1	R
122	Ziehl fan motor D132 15 4,4 KW	S	1	R
	SUBTOTAL FOR PUMPS, FANS & MOTORS			R

C7.2 Priced rates for repairs, service and maintenance on Air Conditioning and Ventilation Installations				
ITEM NO:	**SCHEDULED PARTS**	**UNIT**	**PROVISIONAL QUANTITIES**	**PRICE [EXT VAT]**
	COUPLINGS			
123	Fenner Coupling Complete F90	S	1	R
124	Fenner Coupling Complete F50	S	1	R
125	Fenner Coupling Complete F60	S	1	R
	PAINT			
126	Green Stoep Enamel	5 litre	1	R
127	Black Stoep Enamel	5 litre	1	R
128	Silver Heat resistant Paint	5 litre	1	R
129	Red Oxide	5 litre	1	R
130	Qd Enamel	5 litre	1	R
131	Thinners	5 litre	1	R
132	PVA Paint	5 litre	1	R
133	Paint Roller	S	1	R
134	Paint Brush	S	1	R
SUBTOTAL FOR PUMPS, FANS & MOTORS, COUPLINGS, PAINT				R

C7.2 Priced rates for repairs, service and maintenance on Air Conditioning and Ventilation Installations				
ITEM NO:	SCHEDULED PARTS	UNIT	PROVISIONAL QUANTITIES	PRICE [EXT VAT]
	V BELTS			
135	13N1725	S	1	R
136	13X1100	S	1	R
137	13X1860	S	1	R
138	13X1150	S	1	R
139	1725x17	S	1	R
140	13 X 2900	S	1	R
141	13N 1800	S	1	R
142	13 X 8 X 1130	S	1	R
143	13 X 2120	S	1	R
144	10N 2280	S	1	R
145	13N 1700	S	1	R
146	13 X 8 X 1030	S	1	R
147	17 X 2890	S	1	R
148	10N 950	S	1	R
149	16N 2280	S	1	R
150	17 X 2080	S	1	R
151	17 X 4060	S	1	R
152	17 X 3950	S	1	R
153	17 X 3500	S	1	R
154	17 X 1820	S	1	R
155	10N 1420	S	1	R
156	10N 1900	S	1	R
157	13N 1600	S	1	R
158	13N 1140	S	1	R
159	13 X 1530	S	1	R
160	16 N 3170	S	1	R

C7.2 Priced rates for repairs, service and maintenance on Air Conditioning and Ventilation Installations				
ITEM NO:	SCHEDULED PARTS	UNIT	PROVISIONAL QUANTITIES	PRICE [EXT VAT]
161	13 X 1150	S	1	R
162	13 X 2020	S	1	R
163	16 N 2150	S	1	R
164	16N 2530	S	1	R
165	16N 3550	S	1	R
166	16 N 2280	S	1	R
167	17 X 2250	S	1	R
168	17 X 2460	S	1	R
169	17 X 2580	S	1	R
170	17 X 2890	S	1	R
171	17 X 3090	S	1	R
172	17 X 3500	S	1	R
173	17 X 3800	S	1	R
174	10N1320	S	1	R
175	10N2990	S	1	R
176	- 10N1760	S	1	R
177	- 10N1800	S	1	R
178	- 10N2037	S	1	R
179	- 10N950	S	1	R
180	- 10N720	S	1	R
181	- SPZ 630	S	1	R
182	- SPZ670	S	1	R
183	- SPZ680	S	1	R
184	- SPZ710	S	1	R
185	- SPZ750	S	1	R
186	SPZ760	S	1	R
187	SPZ800	S	1	R

C7.2 Priced rates for repairs, service and maintenance on Air Conditioning and Ventilation Installations				
ITEM NO:	SCHEDULED PARTS	UNIT	PROVISIONAL QUANTITIES	PRICE [EXT VAT]
188	SPZ850	S	1	R
189	SPZ900	S	1	R
190	SPZ950	S	1	R
191	SPZ1010	S	1	R
192	SPZ1080	S	1	R
193	SPZ1140	S	1	R
194	SPZ1180	S	1	R
195	SPZ1200	S	1	R
196	SPZ1250	S	1	R
197	SPZ1270	S	1	R
198	SPZ1420LP	S	1	R
199	SPZ1520	S	1	R
200	SPZ1700	S	1	R
201	SPA800	S	1	R
202	13 X 820	S	1	R
203	13 X 775LI	S	1	R
204	13N X 850	S	1	R
205	SPA900	S	1	R
206	SPA950	S	1	R
207	13N X 970 LI	S	1	R
208	SPA1000	S	1	R
209	SPA1120	S	1	R
210	13 X 143 LI	S	1	R
211	SPA1180	S	1	R
212	SPA1220	S	1	R
213	SPA1250	S	1	R
214	SPA1700	S	1	R

C7.2 Priced rates for repairs, service and maintenance on Air Conditioning and Ventilation Installations				
ITEM NO:	**SCHEDULED PARTS**	**UNIT**	**PROVISIONAL QUANTITIES**	**PRICE [EXT VAT]**
215	SPA1800	S	1	R
216	13 X 1900 LI	S	1	R
217	SPA1900	S	1	R
218	13 X 1930 LI	S	1	R
219	13 X 1940 LP	S	1	R
220	SPB1900	S	1	R
221	SPB2150	S	1	R
222	17 X 2286 LI	S	1	R
223	SPB2400	S	1	R
224	SPB3170	S	1	R
225	SPB4560	S	1	R
226	Steel Cutting Disc 115 X 2.4 X 22.2MM	S	1	R
227	Steel Grinding Disc 115 X 6 X 22.3MM	S	1	R
228	Steel Grinding Disc 230 X 6 X 22.2MM	S	1	R
229	Steel Cutting Disc 230MM	S	1	R
230	Steel Grinding Disc 400 X 4 X 25.4MM	S	1	R
			SUBTOTAL FOR V BELTS	**R**

C7.2 Priced rates for repairs, service and maintenance on Air Conditioning and Ventilation Installations				
ITEM NO:	**SCHEDULED PARTS**	**UNIT**	**PROVISIONAL QUANTITIES**	**PRICE [EXT VAT]**
	COPPER TUBING			
231	Copper tubing ¼	p/m	1	R
232	Copper tubing ½	p/m	1	R
233	Copper tubing 3/8	p/m	1	R
234	Flare Nut ½	S	1	R
235	Flare Union ½	S	1	R
236	Flux 250 gram	S	1	R
237	Rob Silver Solder Fluxed	S	1	R
238	Rob copper to copper	S	1	R
	PANASONIC PC BOARDS			
239	CWA 74606	S	1	R
240	CNR 06-839240	S	1	R
241	CNR 06-845600	S	1	R
242	CNR 06-847920	S	1	R
243	CWA 7432	S	1	R
244	CWA 73811	S	1	R
245	CWH 10661	S	1	R
246	Remote Control CWA 75C236	S	1	R
247	Remote Control CWA 75C226	S	1	R
SUBTOTAL FOR V BELTS, COPPER TUBING, PANASONIC PC BOARDS				**R**

C7.2 Priced rates for repairs, service and maintenance on Air Conditioning and Ventilation Installations				
ITEM NO:	SCHEDULED PARTS	UNIT	PROVISIONAL QUANTITIES	PRICE [EXT VAT]
	3 WAY REVERSE VALVES			
248	Reverse valve for 9000 BTU unit	S	1	R
249	Reverse valve for 12000 BTU unit	S	1	R
250	Reverse valve for 18000 BTU unit	S	1	R
251	Reverse valve for 24000 BTU unit	S	1	R
252	Reverse valve for 44000 BTU unit	S	1	R
	COMPRESSOR SPARES			
253	Carrier O6e Compressor Crankcase Heater	S	1	R
254	Maneurop Compressor Crankcase Heater	S	1	R
	HITACHI PC BOARDS			
255	RAS 3HQVK2	S	1	R
256	RAS 4HQVK2	S	1	R
257	RAS 182 CHUX	S	1	R
	SAMSUNG COMPRESSORS			
258	- For AQT 18A2RE	S	1	R
259	For AQT 24A2RE	S	1	R
260	For AQ12A2AME	S	1	R
261	For ACH3600E	S	1	R
262	For ACH4400E	S	1	R
SUBTOTAL FOR 3 WAY REVERSE VALVES, COMPRESSOR SPARES, HITACHI PC BOARDS AND SAMSUNG COMPRESSORS				R

C7.2 Priced rates for repairs, service and maintenance on Air Conditioning and Ventilation Installations				
ITEM NO:	**SCHEDULED PARTS**	**UNIT**	**PROVISIONAL QUANTITIES**	**PRICE [EXT VAT]**
	COOLING TOWERS			
263	Baltimore VXT 95 Cooling Tower Eliminator Set	S	1	R
264	Baltimore VXT 95 Cooling Tower Ball Valve Assembly	S	1	R
265	Baltimore VXT 95 Cooling Tower End Bearing	S	1	R
266	Baltimore VXT 95 Fan Motor	S	1	R
267	Baltimore VXT 95 Cooling Tower Split Bearing	S	1	R
	STEAM SPARES	S		
268	Steam Trap ½" FT	S	1	R
269	Steam Trap 3/4" FT	S	1	R
270	Steam Trap 1" FT	S	1	R
271	Steam Trap ½" IB	S	1	R
272	Steam Trap ¾" IB	S	1	R
273	Steam Trap 1" IB	S	1	R
274	Steam Sight Glass ½" Brass 50mm window	S	1	R
275	Steam Sight Glass ¾" Brass 50mm window	S	1	R
276	Steam Sight Glass 1" Brass 50mm window	S	1	R
277	Steam Safety Valve Stainless Steel Seat ½"	S	1	R
278	Steam Safety Valve Stainless Steel Seat ¾"	S	1	R
279	Steam Safety Valve Stainless Steel Seat 1"	S	1	R
280	0-600 KPA 100mm Dial Pressure Gauge	S	1	R
281	0-1000 KPA 100mm Dial Pressure Gauge	S	1	R
282	Steam Strainer ½"	S	1	R
283	Steam Strainer ¾"	S	1	R
284	Steam Strainer 1"	S	1	R
285	Navy Union Brass Cone Face ½"	S	1	R
286	Navy Union Brass Cone Face ¾"	S	1	R
287	Navy Union Brass Cone Face 1"	S	1	R

C7.2 Priced rates for repairs, service and maintenance on Air Conditioning and Ventilation Installations				
ITEM NO:	SCHEDULED PARTS	UNIT	PROVISIONAL QUANTITIES	PRICE [EXT VAT]
288	Navy Union Brass Cone Face 1 ½"	S	1	R
289	½" steam nipple	S	1	R
290	¾" steam nipple	S	1	R
291	1" steam nipple	S	1	R
292	1 ¼" steam nipple	S	1	R
293	1 ½" steam nipple	S	1	R
294	½" L/R Steam bend	S	1	R
295	¾" L/R Steam bend	S	1	R
296	1" L/R Steam Bend	S	1	R
297	1 ¼" L/R Steam bend	S	1	R
298	½" Steam Sight Glass Kit 50mm window	S	1	R
299	¾" Steam Sight Glass Kit 50mm window	S	1	R
300	1" Steam Sight Glass Kit 50mm window	S	1	R
301	½" FT Steam Trap Kit Complete	S	1	R
302	¾" FT Steam Trap Kit Complete	S	1	R
303	1" FT Steam Trap Kit Complete	S	1	R
304	P.T.F.E. Tape	S	1	R
305	½" Steam Globe Valve	S	1	R
306	¾" Steam Globe Valve	S	1	R
307	1" Steam Globe Valve	S	1	R
308	1 ¼" Steam Globe Valve	S	1	R
309	1 ½" Steam Globe Valve	S	1	R
310	¾" Gate Valve	S	1	R
311	1" Gate Valve	S	1	R
312	Copper flow Stick 1/8"	S	1	R
313	Silver solder Stick	Gram	1	R
314	Brazing Rod 1/8"	Kg	1	R

C7.2 Priced rates for repairs, service and maintenance on Air Conditioning and Ventilation Installations				
ITEM NO:	SCHEDULED PARTS	UNIT	PROVISIONAL QUANTITIES	PRICE [EXT VAT]
315	Welding Rod 2.5	Kg	1	R
316	Solenoid Valve & Coil Flare on ½"	S	1	R
317	Solenoid valve & Coil Weld on 7/8"	S	1	R
318	Solenoid Valve & Coil Weld on 1 1/8"	S	1	R
319	Solenoid Valve & Coil ¾" BSP	S	1	R
320	Sporlan RCW 48 Drier Core	S	1	R
321	Sight Glass Refrigerant ½"	S	1	R
322	Sight Glass Refrigerant 5/8"	S	1	R
323	Sight Glass Refrigerant 7/8"	S	1	R
324	Sight Glass Refrigerant 1 1/8"	S	1	R
325	Oil Pressure Switch Manual Reset	S	1	R
326	Low Pressure Switch	S	1	R
327	Dual Pressure Switch Manual On HP	s	1	R
328	High Pressure Switch	S	1	R
329	R22 Refrigerant (kg)	Kg	1	R
330	134A Refrigerant (kg)	Kg	1	R
331	R404A Refrigerant (kg)	Kg	1	R
332	Flushing Agent 014B (kg)	Kg	1	R
333	Refrigeration Oil MS32 (l)	Litre	1	R
334	Refrigeration Oil Emkarate Ester (l)	Litre	1	R
335	Expansion Valve THR100HW85AA	S	1	R
336	Expansion Valve TERE26HW1006A	S	1	R
337	Expansion Valve Carrier 32GB400814	S	1	R
338	10 AMP Fuse	S	1	R
339	220V Multi Function Timer 11 pin	S	1	R

C7.2 Priced rates for repairs, service and maintenance on Air Conditioning and Ventilation Installations				
ITEM NO:	**SCHEDULED PARTS**	**UNIT**	**PROVISIONAL QUANTITIES**	**PRICE [EXT VAT]**
340	220V Relay 11 Pin & Base	S	1	R
341	3 Pole 7.5KW contactor with 220V Coil	S	1	R
342	3 Pole 11KW Contactor with 220V Coil	S	1	R
343	3 Pole 15KW Contactor with 380V Coil	S	1	R
SUBTOTAL FOR COOLING TOWERS AND STEAM SPARES				R

C7.2 Priced rates for repairs, service and maintenance on Air Conditioning and Ventilation Installations				
ITEM NO:	SCHEDULED PARTS	UNIT	PROVISIONAL QUANTITIES	PRICE [EXT VAT]
	BEARINGS			
344	Spherical Roller Bearings 22209K-C3	S	1	R
345	Spherical Roller Bearings 22210K-C3	S	1	R
346	Spherical Roller Bearings 22208ESK	S	1	R
347	Spherical Roller Bearings 22213ESK	S	1	R
348	Adapter Sleeves HE 308	S	1	R
349	Adapter Sleeves HE 307	S	1	R
350	Adapter Sleeves H208	S	1	R
351	Adapter Sleeves H313	S	1	R
352	Pillow Block UPC210	S	1	R
353	Pillow Block UPC207-23	S	1	R
354	Pillow Block UPC209-27	S	1	R
355	Deep Groove Bearing 6201-2RJ	S	1	R
356	Deep Groove Bearing 6202-2RS	S	1	R
357	Deep Groove Bearing 6312-2RS	S	1	R
358	Deep Groove Bearing 6309-ZZ/C3	S	1	R
359	Deep Groove Bearing 6208-2RS	S	1	R
360	Deep Groove Bearing 6308-ZZ	S	1	R
361	Deep Groove Bearing 6205-ZZ	S	1	R
362	SKF22209K/C3	S	1	R
363	SKF 2210	S	1	R
364	SKF 2210-K/C3	S	1	R
365	SKF 2213-CK	S	1	R
366	SKF 2220	S	1	R
367	SKF 2211-CK/3	S	1	R
368	20mm X 1210 Taper Lock Bush	S	1	R
369	24mm X 1210 Taper lock Bush	S	1	R

C7.2 Priced rates for repairs, service and maintenance on Air Conditioning and Ventilation Installations				
ITEM NO:	**SCHEDULED PARTS**	**UNIT**	**PROVISIONAL QUANTITIES**	**PRICE [EXT VAT]**
370	28mm X 1218 Taper Lock Bush	S	1	R
371	30mm X 1610 Taper lock Bush	S	1	R
372	45mm X 2517 Taper Lock bush	S	1	R
373	48mm X 2517 Taper Lock bush	S	1	R
374	Plummer Block SKF 510-605	S	1	R
375	Plummer Block SKF PT 205	S	1	R
376	Plummer Block SN511	S	1	R
377	Plummer Block SKF SY 100	S	1	R
378	Adapter Sleeve HE 308	S	1	R
379	Adaptor Sleeve HE 307	S	1	R
380	Adaptor Sleeve 313	S	1	R
			SUBTOTAL FOR BEARINGS	**R**

C7.2 Priced rates for repairs, service and maintenance on Air Conditioning and Ventilation Installations				
ITEM NO:	**SCHEDULED PARTS**	**UNIT**	**PROVISIONAL QUANTITIES**	**PRICE [EXT VAT]**
	MISC			
381	Magnehelic Gauge 0-250Pa	S	1	R
382	Magnehelic Gauge 0-500Pa	S	1	R
383	Magnehelic Gauge 0-700Pa	S	1	R
384	Magnehelic Gauge 0-100Pa	S	1	R
385	Electrodes Mild Steel Each	S	1	R
386	R141B FLUSHING AGENT	Per kg	1	R
387	R404 Refrigerant	Per kg	1	R
388	R410a Refrigerant	Per kg	1	R
389	WF 68 Refrigeration Oil	Per litre	1	R
390	WF 32 Refrigeration Oil	Per litre	1	R
391	Refrigeration Oil Emkarate Ester	Per litre	1	R
392	ALVANIA EP-2 GREASE	Per kg	1	R
393	Pump Oil	Per litre	1	R
394	Paraffin	Per litre	1	R
395	Degreaser	Per litre	1	R
396	Coil Brite	Per litre	1	R
397	Duct tape	S	1	R
398	Insulation Tape	S	1	R
399	RCW 48 Drier Core Std capacity	S	1	R
400	RCW 48 Drier Core High capacity	S	1	R
			SUBTOTAL FOR MISC	**R**

C7.2 Priced rates for repairs, service and maintenance on Air Conditioning and Ventilation Installations				
ITEM NO:	SCHEDULED PARTS	UNIT	PROVISIONAL QUANTITIES	PRICE [EXT VAT]
	ELECTRICAL			
401	220V Multi Function Timer	S	1	R
402	220V 11 Pin Relay	S	1	R
403	5.5KW Contactor With Coil	S	1	R
404	7.5KW Contactor With Coil	S	1	R
405	11KW Contactor With Coil	S	1	R
406	15KW Contactor With Coil	S	1	R
407	Overload relay 6-10 amp	S	1	R
408	Overload relay 10-16 amp	S	1	R
409	Overload relay 16-24 amp	S	1	R
410	Overload relay 18-36 amp	S	1	R
411	Overload relay 63-75 amp	S	1	R
412	Circuit Breaker 3 pole – 10 A	S	1	R
413	Circuit Breaker 3 pole	S	1	R
414	Circuit Breaker 3 pole	S	1	R
415	Circuit Breaker 3 pole	S	1	R
416	Circuit Breaker 3 pole	S	1	R
417	Circuit Breaker 3 pole	S	1	R
418	Circuit Breaker 1 pole	S	1	R
419	Circuit Breaker 1 pole	S	1	R
420	Circuit Breaker 1 pole	S	1	R
421	Circuit Breaker 1 pole	S	1	R
422	50 VA TRANSFORMER 220/24	S	1	R
423	30 VA TRANSFORMER 220/24	S	1	R

C7.2 Priced rates for repairs, service and maintenance on Air Conditioning and Ventilation Installations				
ITEM NO:	SCHEDULED PARTS	UNIT	PROVISIONAL QUANTITIES	PRICE [EXT VAT]
			SUBTOTAL FOR ELECTRICAL	R
	STEAM SPARES			
424	Socket 15mm steam	S	1	R
425	Socket 20mm steam	S	1	R
426	Socket 25mm steam	S	1	R
427	Socket 32mm steam	S	1	R
428	Socket 40mm steam	S	1	R
429	Steam safety Valve 15mm	S	1	R
430	Steam safety Valve 20mm	S	1	R
431	Steam safety Valve 25mm	S	1	R
432	Steam safety Valve 32mm	S	1	R
433	Steam safety Valve 40mm	S	1	R
434	Elbow 15 mm steam	S	1	R
435	Elbow 20mm steam	S	1	R
436	Elbow25mm steam	S	1	R
437	Elbow 32 mm steam	S	1	R
438	Elbow 40mm steam	p/m	1	R
439	0-600 KPA 100MM Pressure Gauge	S	1	R
440	0-1000 KPA 100MM Pressure gauge	S	1	R
441	Brass gauge Cock	S	1	R
442	Angle Brass Pipe Thermometer	S	1	R
443	Straight Brass Pipe Thermometer	S	1	R
444	Pipe 15mm steam per meter	p/m	1	R
445	Pipe 20mm steam per meter	p/m	1	R
446	Pipe 25mm steam per meter	p/m	1	R
447	Pipe 32mm steam per meter	p/m	1	R
448	Pipe 20mm steam per meter	p/m	1	R

C7.2 Priced rates for repairs, service and maintenance on Air Conditioning and Ventilation Installations				
ITEM NO:	**SCHEDULED PARTS**	**UNIT**	**PROVISIONAL QUANTITIES**	**PRICE [EXT VAT]**
449	Pipe 25mm steam per meter	p/m	1	R

C7.2 Priced rates for repairs, service and maintenance on Air Conditioning and Ventilation Installations				
ITEM NO:	**SCHEDULED PARTS**	**UNIT**	**PROVISIONAL QUANTITIES**	**PRICE [EXT VAT]**
450	Pipe 32mm steam per meter	p/m	1	R
451	Copper Tube 15mm	S	1	R
452	Copper Tube 20mm	S	1	R
453	Copper Tube 25 mm	S	1	R
454	15mm Conex Elbow	S	1	R
455	20mm Conex Elbow	S	1	R
456	25mm Conex Elbow	S	1	R
457	Steam reducing Valve 25mm	S	1	R
458	Steam reducing Valve 32mm	S	1	R
459	Drier 25 gram all gasses	S	1	R
460	Thermostat Double	S	1	R
461	Thermostat Single	S	1	R
462	Pu Foam	S	1	R
463	Electronic Temperature Controller including sensor	S	1	R
464	SQ Tubing 15mm	p/m	1	R
465	SQ Tubing 32mm	p/m	1	R
466	Check valve 20mm	p/m	1	R
467	Check valve 25 mm	p/m	1	R
468	Green Packing	p/cm	1	R
			SUBTOTAL FOR STEAM SPARES	R

C7.2 Priced rates for repairs, service and maintenance on Air Conditioning and Ventilation Installations				
ITEM NO:	**SCHEDULED PARTS**	**UNIT**	**PROVISIONAL QUANTITIES**	**PRICE [EXT VAT]**
	STEAFA CONTROLS			
469	Controller NRK 16	S	1	R
470	Controller NRK 16/A	S	1	R
471	Sensor FRTI	S	1	R
472	Communicator NBRN	S	1	R
473	Valve Set M2H15F 15/A	S	1	R
474	Sensor FRHI/TI	S	1	R
475	3 Port valve 32mm M3P-32GA (or replacement)	S	1	R
476	Landis & Steafa SKD62 Valve actuator	S	1	R
477	Landis & Steafa SQS62 Valve actuator	S	1	R
478	Landis & Steafa VVF52.15-1 (GGG40-3) Steam Valve	S	1	R
479	Landis & Steafa SKD62 Valve Actuator PC Board	S	1	R
480	Damper Motor ASXD-6	S	1	R
	STEAFA / SIEMENS CONTROLS			
481	RLU 222 Controller	S	1	R
482	RLU 236 Controller	S	1	R
483	RLU Static Controller	S	1	R
484	RMU730B-5 Controller	S	1	R
485	RMU720B-4 Controller	S	1	R
486	RMU710B-3 Controller	S	1	R
487	Qap 22 Cable Temp Sensor	S	1	R
488	QAM 2120 Room Temp Sensor	S	1	R
489	QFA 2160 Room Temp/Hum Sensor	S	1	R
490	QFM 2120 Duct Temp/Hum Sensor	S	1	R
491	QAM 2120 Duct Temp Sensor	S	1	R
492	QBM 65 Static Pressure	S	1	R
493	Air Pressure Switch	S	1	R

C7.2 Priced rates for repairs, service and maintenance on Air Conditioning and Ventilation Installations				
ITEM NO:	**SCHEDULED PARTS**	**UNIT**	**PROVISIONAL QUANTITIES**	**PRICE [EXT VAT]**
494	GDB 161 Damper	S	1	R
495	SKD 60 Valve Actuator	S	1	R
496	SKD 62 Valve Actuator	S	1	R
497	SQS62 Valve Actuator	S	1	R
498	SQS65 Valve Actuator	S	1	R
499	VVF 53-15-25G Heating Valve	S	1	R
500	VXF 40-25 Cooling Valve	S	1	R
501	Over Heat Stat	S	1	R
502	RM4 Step Control	S	1	R
	SPEED CONTROLLERS			
503	- Zenner MSC R13	S	1	R
504	- Zenner MSC R17	S	1	R
505	- Ziehl Zetavent ZV18	S	1	R
	CAREL CONTROLS			
506	PC00EM I/O Board	S	1	R
507	PC05 I/O Board	S	1	R
SUBTOTAL FOR STEAFA / SIEMENS, SPEED AND CAREL CONTROLS				R

C7.2 Priced rates for repairs, service and maintenance on Air Conditioning and Ventilation Installations				
ITEM NO:	**SCHEDULED PARTS**	**UNIT**	**PROVISIONAL QUANTITIES**	**PRICE [EXT VAT]**
	CONTROLS			
508	Dwyer Magnehelic Gauge 0-250 PA	S	1	R
509	Dwyer Magnehelic Gauge 0-500 PA	S	1	R
510	Dwyer Magnehelic Gauge 0-700 PA	S	1	R
511	Johnson Controls DX9100-8154 24 VAC controller	S	1	R
512	Carrier Processor Board 32 GB 500 884	S	1	R
513	Carrier Sensor Package 32GB660002	S	1	R
514	Carrier Crankcase Heater HT 36FZ479	S	1	R
515	Johnson Controls A19ACC-9105 Low Tem Cut Out	S	1	R
516	Danfoss Speed Controllers 5.5 kW	S	1	R
517	Danfoss Speed Controllers 7.5 kW	S	1	R
518	Danfoss Speed Controllers 11 kW	S	1	R
519	Danfoss Speed Controllers 13kW	S	1	R
	ALERTON CONTROLS			
520	TX-APLC CONTROLLER	S	1	R
521	TX-653 CONTROLLER	S	1	R
522	THERMOSTART TSH ROOM	S	1	R
523	MICROSET MS 100	S	1	R
524	Controller TX-APLC	S	1	R
525	Controller TX-653	S	1	R
526	Microset MS-1000	S	1	R
527	Humidity Sensor HWD 5%	S	1	R
528	Thermostat TSH Room	S	1	R
529	Flow Switch ELF-1	S	1	R
SUBTOTAL FOR CONTROLS AND ALERTON CONTROLS				R

C7.2 Priced rates for repairs, service and maintenance on Air Conditioning and Ventilation Installations				
ITEM NO:	SCHEDULED PARTS	UNIT	PROVISIONAL QUANTITIES	PRICE [EXT VAT]
	SATCHTECH CONTROLS			
530	131-1-401 Air Dive. Pressure Switch	S	1	R
531	355-1-701 Immersion Temp Sensor DWG	S	1	R
532	336-1-701 Duct Temp. Sensor DDT 1701	S	1	R
533	336-1-803 Return Air Temp. Sensor DUD 1803	S	1	R
534	337-3-453 Room Temp. Sensor Drat 2453	S	1	R
535	473-2-201 AX 1201 Rotary Actuator 15Nm	S	1	R
536	477-1-201 LAX 1201 Actuator 24V STD Speed	S	1	R
537	478-3-202 AX 320 24V AC Reversing Actuator	S	1	R
538	565-3-210 Intelligent Advanced Controller IAC 420	S	1	R
539	EC-10K3A1/A Universal Cable Senor NTC Thermistor	S	1	R
540	EDT 1 Air Diff Pressure Trans 0/1 Mbar 24 Vacx IN 0-10 Vdc OUT IP 54	S	1	R
541	EHRT-2 Room Humid Temp Trans 0-100% RH 24 Vac IN 0-10 Vdc OUT	S	1	R
542	EWPT-100 Water Diff. Pressure 0/100 mbar 24 vac 0-10 vdc 1/8" BSP	S	1	R
543	VOP 2 Voltage Output relay	S	1	R
544	20-200 Pascal DIFF. Pressure switch	S	1	R
545	Immersion Temp. Sensor 10-120 125mm	S	1	R
546	336-1-701 Duct Temp. Sensor DDT1701	S	1	R
547	DDV 1201 Air Velocity Detector	S	1	R
548	337-3-453 Room Temp Sensor DRT 3453	S	1	R
549	LINEAR 24V Actuator-15NM	S	1	R
550	AVUX 4202 Reversing actuator24V STD.	S	1	R
551	Intelligent Advanced Actuator IAC 600	S	1	R
552	IAC 420 Controller	S	1	R
553	EC10K3A1/A Cable Sensor	S	1	R
554	EC-10K3A1/A Universal Cable Sensor	S	1	R
555	EDT 1 Air Diff. Pressure trans 0/1 MBAR 24VAC 0-10 IP45	S	1	R

C7.2 Priced rates for repairs, service and maintenance on Air Conditioning and Ventilation Installations				
ITEM NO:	**SCHEDULED PARTS**	**UNIT**	**PROVISIONAL QUANTITIES**	**PRICE [EXT VAT]**
556	660 0.05WC 0/125PA Transducer	S	1	R
557	VOP 2 Voltage output Relay	S	1	R
558	Carol Electronic Controller Model IR 33M	S	1	R
559	Carol Electronic Re-lay 16A IR 33	S	1	R
560	Carol Electronic Controller Model IR 33S	S	1	R
561	Carol Electronic Controller Model IR 33Y	S	1	R
562	Dixell Electronic Controller Model XR10CX	S	1	R
563	Dixell Electronic Controller Model XR20CX	S	1	R
564	Dixell Electronic Controller Model XR30CX	S	1	R
565	Dixell Electronic Controller Model XR40CX	S	1	R
566	BMS Cabling Multi Core	m	1	R
567	BMS Cabling Cat 5	m	1	R
568	Fibre Optic Cabling	m	1	R
SUBTOTAL FOR SATCHTECH CONTROLS				**R**

C7.2 Priced rates for repairs, service and maintenance on Air Conditioning and Ventilation Installations				
ITEM NO:	**SCHEDULED PARTS**	**UNIT**	**PROVISIONAL QUANTITIES**	**PRICE [EXT VAT]**
	MONTHLY SERVICES			
569	Service of Diffusers as per Schedule A, 4.3 item 1	S	1	R
570	Service of Filter Banks as per Schedule B, 4.3 item 2	S	1	R
571	Service of Chillers as per Schedule C, 4.3 item 3	S	1	R
	THREE MONTHLY SERVICES			
572	Service of Pumps as per Schedule D, 4.3 item 4	S	1	R
573	Service of Belt Driven Fans as per Schedule E, 4.3 item 5	S	1	R
574	Service of Air Handling Units as per Schedule F, 4.3 item 6	S	1	R
575	Service of Cooling Towers as per Schedule G, 4.3 item 7	S	1	R
576	Service of Split Units as per Schedule H, 4.4 item 1	S	1	R
	SIX MONTHLY SERVICES			
577	Service of Hepa Filters as per Schedule I, 4.5 item 1	S	1	R
578	Service of Chillers as per Schedule J, 4.5 item 2	S	1	R
579	Service of Distribution Boards as per Schedule K, 4.5 item 3	S	1	R
580	Service of Chilled and Condensing water lines as per Schedule L, 4.5 item 4	S	1	R
	YEARLY SERVICES			
581	Service of Cooling Towers as per Schedule M, 4.6 item 1	S	1	R
	THREE YEARLY SERVICES			
582	Service of Pressure Vessels as per Schedule N, 4.7 item 1	S	1	R
	NEW INSTALLATIONS			
583	9000 BTU Split Midwall Unit complete back-to-back installation including indoor and outdoor units, wiring, refrigerant and condensate piping, refrigerant, commissioning, etc.	S	1	R
584	12000 BTU Split Midwall Unit complete back-to-back installation including indoor and outdoor units, wiring, refrigerant and condensate piping, refrigerant, commissioning, etc.	S	1	R
585	18000 BTU Split Midwall Unit complete back-to-back installation including indoor and outdoor units, wiring, refrigerant and condensate piping, refrigerant, commissioning, etc.	S	1	R

C7.2 Priced rates for repairs, service and maintenance on Air Conditioning and Ventilation Installations				
ITEM NO:	**SCHEDULED PARTS**	**UNIT**	**PROVISIONAL QUANTITIES**	**PRICE [EXT VAT]**
586	24000 BTU Split Midwall Unit complete back-to-back installation including indoor and outdoor units, wiring, refrigerant and condensate piping, refrigerant, commissioning, etc.	S	1	R
587	12000 BTU Split Ceiling Cassette Unit with 10m between indoor and outdoor unit complete installation including wiring, refrigerant and condensate piping, refrigerant, commissioning, etc.	S	1	R
588	18000 BTU Split Ceiling Cassette Unit with 10m between indoor and outdoor unit complete installation including wiring, refrigerant and condensate piping, refrigerant, commissioning, etc.	S	1	R
589	24000 BTU Split Ceiling Cassette Unit with 10m between indoor and outdoor unit complete installation including wiring, refrigerant and condensate piping, refrigerant, commissioning, etc.	S	1	R
590	36000 BTU Split Ceiling Cassette Unit with 10m between indoor and outdoor unit complete installation including wiring, refrigerant and condensate piping, refrigerant, commissioning, etc.	S	1	R
591	48000 BTU Split Ceiling Cassette Unit with 10m between indoor and outdoor unit complete installation including wiring, refrigerant and condensate piping, refrigerant, commissioning, etc.	S	1	R
	LABOUR RATES			
592	Labour Technician per hour	S	1	R
593	Labour Technician per hour over time	S	1	R
594	Labour Technician per hour Sunday and Public Holidays	S	1	R
595	Labour Technician Assistant per hour	S	1	R
596	Labour Technician Assistant per hour over time	S	1	R
597	Labour Technician Assistant per hour Sunday and Public Holidays	S	1	R
SUBTOTAL FOR SERVICES AND LABOUR RATES				R

C7.2 Priced rates for repairs, service and maintenance on Air Conditioning and Ventilation Installations				
ITEM NO:	SCHEDULED PARTS	UNIT	PROVISIONAL QUANTITIES	PRICE [EXT VAT]
	PRICING SUMMARY			
	SUBTOTAL FOR HONEYWELL CONTROLS			R
	SUBTOTAL FOR FILTERS TO DEPARTMENT SPECIFICATION			R
	SUBTOTAL FOR COMPRESSORS			R
	SUBTOTAL FOR PUMPS, FANS & MOTORS			R
	SUBTOTAL FOR PUMPS, FANS & MOTORS, COUPLINGS, PAINT			R
	SUBTOTAL FOR V BELTS			R
	SUBTOTAL FOR V BELTS, COPPER TUBING, PANASONIC PC BOARDS			R
	SUBTOTAL FOR 3 WAY REVERSE VALVES, COMPRESSOR SPARES, HITACHI PC BOARDS AND SAMSUNG COMPRESSORS			R
	SUBTOTAL FOR COOLING TOWERS AND STEAM SPARES			R
	SUBTOTAL FOR BEARINGS			R
	SUBTOTAL FOR MISC			R
	SUBTOTAL FOR ELECTRICAL			R
	SUBTOTAL FOR STEAM SPARES			R
	SUBTOTAL FOR STEAFA / SIEMENS, SPEED AND CAREL CONTROLS			R
	SUBTOTAL FOR CONTROLS AND ALERTON CONTROLS			R
	SUBTOTAL FOR SATCHTECH CONTROLS			R
	SUBTOTAL FOR SERVICES AND LABOUR RATES			R
	TOTAL			**R**

All unit prices that are not included or missed shall be determined through quotation proces with agreed amounts standardised and revised as part of the baseline costs

All prices shall be priced to RSA currency excluding VAT

Al travelling rates will be calculated according to the AA rates for the specific month

TENDERER'S SIGNATURE: _____

PRINT NAME: _____

NAME OF FIRM: _____

ADDRESS: _____

_____

CODE _____

TELEPHONE NO: _____ CELL NO: _____

FAX NO: _____

E-MAIL ADDRESS: _____ DATE: _____

Part C8.1 Scope of Work for Air Conditioning and Ventilation

All work carried out by the Contractor or his staff, and all goods to be supplied shall comply with the requirements of the Occupational Health and Safety Act (Act 85 of 1993) and all regulations made thereunder, as amended and all SANS including SANS 10142-1, SANS 10147, SANS 1238, SANS 10173, SANS 10400 and all regulations made thereunder, wherever applicable. The Contractor shall report in writing to the Client Representative any contraventions of the Act and Code as far as the installation as installed, maintained and operated is concerned.

1 SCOPE OF CONTRACT

This contract calls for the price rates for the servicing, repairs, maintenance of the Air conditioning and ventilation Installations at Various Institutions in accordance with the requirements as laid down in the specifications. It, furthermore, entails the servicing, maintenance and repair of said installations, in accordance with the requirements of the

1,1 Free State Provincial Government.

It furthermore requires that all the machinery covered in this specification initially be repaired and brought to an acceptable working condition.

1,2 The systems/equipment covered by this tender/contract are the following:

- The Steam and Condensate Reticulation within the Plant rooms.
- Fan Coil Units.
- Heating and cooling coils.
- Chiller Plants.
- Cooling tower units.
- Extraction fan units.
- Air Conditioning control units.
- Window units.
- Split air conditioning units.
- Cassette units, consoles etc.
- Maintenance inside plant rooms (for air conditioning equipment).
- All air filters banks in the system.
- Diffusers right through the installations.
- Air compressors and air dryers where applicable (Air controls purpose).
- Chemical dosing systems used at cooling towers.
- Condensers and chilled water pumps.
- Chilled water and condenser water reticulation.
- Building Management System
- Yearly test (as an when required) for legionnaires disease on water cooled systems
- Three yearly external examination and random ultrasonic test by an approved
- Inspection authority on the pressure vessel section of chiller plants.
- Adherence to the Safety Regulations and membership on the Safety Committee at the Institutions.
- Monthly meetings with Management of the Institutions.
- Monthly reports to the Department of Infrastructure Development
- Supply of al lubricants and cleaning material needed.
- Supply of all hand tools and equipment needed for contract.

1,2 COMPETENT PERSON

a) The successful Tenderer shall be required to maintain the complete installation and equipment in a proper and safe operating condition, to clean, adjust and lubricate the equipment as required in terms of the Contract, repair or replace all electrical and mechanical parts as necessary due to wear and tear.

b) This shall include, but not be limited to the following:

i. Examine the system in accordance with any applicable regulation Promulgated under the Occupational Health and Safety Act 85 of 1993 and any amendment thereof.

ii. safe and proper operating condition at all times,

iii. Repair/replace all parts of the installation which may become necessary for the proper use and/or operation of the installation

iv. Examine, adjust and lubricate the complete installation, supply of all lubricants, replacement parts and the cleaning of material as required for proper maintenance of the equipment.

v. Any malfunction or defect occurring within a period of 14 days after any service or repair being executed will be for the account of the Contractor.

vi. Examine, periodically and when necessary, all devices and perform any statutory safety tests at or before the expiring of the required intervals.

vii. Complete the services, maintenance or repair action report, which shall be submitted with any invoice(s)

viii. Cooling water test in accordance with SABS 0147 paragraph 6.1.6.1

2. CONDITIONS IN AIR CONDITIONING SPACES

The contractor will ensure that all the various plants are operating satisfactorily to give the following conditions in the relevant areas.

AREAS	TEMPERATURE RANGE
General Theatres	20-22°
Theatres for infants	25-27°
Premature wards	26-27°
Intensive care unit	22-24°
Controls in general may vary not more than	2°
Relative humidity in wards	45 to 60%
Relative humidity in operating theatres	50 to 55%
Relative humidity in burns ward	Not less than 55% or as otherwise requested by the Medical Superintendent

The contractor must undertake maintenance and adjustments, etc., in such a manner as to cause the least inconvenience to hospital staff and patients. Permission to work in any hospital area must be obtained from the controlling medical officer in each section.

3 DESCRIPTION OF PLANTS TO WHICH THIS TENDER / CONTRACT APPLIES

The following main items of equipment shall be checked, serviced and repaired as necessary at the intervals as stipulated. There is a total of ±71 plants consisting of compressors, cooling towers, cooling and heating coil fans and fan motors, filters, ducting and control systems and ±163 split and window units and 27 Extraction fans.

All material and spares used during these services will be covered on rates as quoted for in this specification on the scheduled spares list where applicable or the % mark-up where applicable.

QUALITY SPECIFICATION
FOR AIR CONDITIONING INSTALLATIONS, MARCH 2006, OF THE DEPARTMENT. A COPY SHALL BE MADE AVAILABLE TO THE SUCCESFULL TENDERER ON REQUEST

Part C8.2 Technical Specification for Air Conditioning and Ventilation

TECHNICAL SPECIFICATIONS

4,1 SERVICE INTERVALS AND SERVICES

Item	Monthly	Three Monthly	Six Monthly	Two Yearly
Chillers	X		X	X
Centrifugal pumps	X			X
Secondary chilled water pumps	X			X
Belt driven fans	X		X	X
Electrical boards			X	X
Cooling and heating coils	X		X	
Direct expansion units	X		X	X
Window & split units		X		
Cooling towers	X			
Air Handling units	X			
BMS Sytem			X	

4,2 The successful contractor must visit all theatres and ICU's covered under this contract monthly and obtain the signature of the head of the section in a service book that must be kept for this purpose.

4,3 MONTHLY SERVICES

4.3.1 SCHEDULE A – DIFFUSERS:

- Check and clean diffusers and return air louvers in theatres, ICU's and recovery rooms.
- Check condition of Temperature sensors and Humidity sensors.

4.3.2 SCHEDULE B - FILTER BANKS:

- All washable filters must be cleaned monthly.
- Primary, secondary and tertiary filters must be replaced when the airflow resistance over the filter bank reaches the maximum resistance as prescribed by the manufacturer of the filters.

4.3.3 SCHEDULE C – CHILLERS:

- Check oil temperatures
- Check for any oil leaks and repair
- Check oil level and replenish if needed
- Check for any refrigerant leaks and repair
- Check refrigerant level and re-fill if required
- Check condensing pressure
- Test oil pressure cut-out
- Test refrigerant low temperature cut-out
- Test recycle thermostat
- Test control centre
- Test flow switches
- Test temperature control

4.3.4 SCHEDULE D - CONDENSOR WATER AND CHILLED WATER PUMPS

- Check for water leaks
- Check all guards and secure bolts
- Check fluctuations in pressure and amperage
- Check coupling and drivers
- Attend to all other aspects

For monthly and yearly services see maintenance on specific components

4.3.5 SCHEDULE E - BELT DRIVEN FANS

- Check whether belts are tight and in good condition
- Check tightness of bolts on guards, motors and bearings
- Attend to all other aspects

For monthly and yearly services see maintenance on specific components

4.3.6 SCHEDULE F – AIR HANDLING UNITS:

- Clean filters if required.
- Check belts for proper tension and pulleys for proper adjustment. Rectify as necessary.
- Check fan shaft for end play, vibration and bearing wear.
- Check coils for cleanliness, and clean accordingly.
- Check fan blades for looseness and dirty condition. Rectify as necessary.
- Clean and flush condensate pain and its drain lines properly.
- Test heating valves, cooling valves and humidity valves for correct operation.
- Clean in and outside of the units properly.
- All plant rooms shall be properly cleaned after completion of the service.

4.3.7 SCHEDULE G – COOLING TOWERS:

- Clean and remove all debris from unit without removing the fill packs.
- Clean and flush sump properly.
- Inspect spray nozzles, clean and report any damages.
- Check condition and tension of v-belts and adjust the tension accordingly.
- Lubricate fan shaft bearings.
- Lubricate motor base adjusting screw.
- Check motors for any loose electrical connections and tighten.
  Check speed drives (if applicable) for any loose electrical connections and tighten.
- Clean speed drives properly with air.
- Check operation off speed drives and correct where required. The contractor shall make sure that all sensors where applicable, are in correct position and function properly..

4,4 THREE MONTHLY

4.4.1 SCHEDULE H – SPLIT TYPE AIR CONDITIONING UNITS

- Check for undue noises or vibration and repair.
- Check remote control / selector switch operation.
- Check filter media and clean.
- Check and observe operation of reversing solenoid valve and replace where required.
- Check compressor termination and overload klaxon and repair if required.
- Check and lubricate fan motor bearings where applicable.
- Check all 'start' and / or 'run' capacitors and replace if required.
- Clean all condensers properly with coil cleaner
- ; for refrigerant leaks / restrictions and repair if necessary. Recharge units to the correct working pre
- Check for any loose electrical connections and tighten.
- Check all drain pipes and unblock if necessary.
- Check for any water leaks and repair.
- Clean all indoor and outdoor units properly.
- Replace batteries on remote controls as required
- Report all faults found during the service in writing to the Inspector handling the service.

4,5 SIX MONTHLY SERVICES:

4.5.1 SCHEDULE I - HEPA FILTERS:

Every six months penetration test using hot emery 3004 and the correct testing equipment i.e.,

- TDA-ZA Particle detection apparatus and TDA-56
- Hot aerosol generator must be carried out on all Hepa Filter installations and test certificates must b

NB: ONLY FILTERS APPROVED BY THE CHIEF MECHANICAL ENGINEER MAY BE USED

4.5.2 SCHEDULE J – CHILLERS:

- Check oil temperatures
- Check for any oil leaks and repair
- Check oil level and replenish if needed
- Check for any refrigerant leaks and repair
- Check refrigerant level and re-fill if required
- Check condensing pressure
- Test oil pressure cut-out
- Test refrigerant low temperature cut-out
- Test recycle thermostat
- Test control centre
- Test flow switches
- Test temperature control
- Change compressor oil (new oil)
- Change oil filter
- Change refrigerant filter
- Clean condenser tubes (Chemical wash)
- Renew filter dryers
- Conduct meg-ohm stator winding test of compressor motors
- Check motor and starter plugs and tighten as required.

4.5.3 SCHEDULE K - ELECTRICAL DISTRIBUTION BOARDS SUPPLY TO AIR CONDITIONING INSTALLATIONS THROUGHOUT THE HOSPITAL AND INSTITUTIONS

- Vacuum inside of boards thoroughly
- Ensure that all indicator lights are working
- Clean outside of panel
- Check all bus-bar connections and ensure they are tight
- Ensure that all connections to contacts are tight
- Attend to all other aspects

4.5.4 SCHEDULE L – CHILLED WATER AND CONDENSING WATER LINES

- Visually inspect all chilled water lines and lagging for any defects and report to Department
- Visually inspect all condensing water lines for any defects and report to Department
- Clean all strainers on chilled water and condensing water lines

4,6 YEARLY SERVICES:

4.6.1 SCHEDULE M - COOLING TOWERS

Remove side panels of cooling towers, remove fill packs and clean properly with chemicals and high pressure water. Re-install fill packs in position. Re-install side panels of cooling towers and make sure no water leaks are present.

- The contractor must allow for sealant on the panels.
- Clean and flush sump properly.
- Inspect spray nozzles, clean properly and report any damages.
- Replace v-belts on cooling towers and adjust the tension accordingly.
- Lubricate fan shaft bearings.
- Lubricate motor base adjusting screw.
- Check motors for any loose electrical connections and tighten.
  Check speed drives for any loose electrical connections and tighten.
- Clean speed drives properly with air.
  Check operation off speed drives and correct where required. The contractor shall make sure that
- all sensors where applicable, are in correct position and function properly.
- All units shall be in good working condition after completion of the services.
- The site shall be cleaned after completion of the service.

4,7 THREE YEARLY

4.7.1 SCHEDULE N – PRESSURE VESSELS

External examination and random ultrasonic test on the pressure vessel sections

- of chillers by an approved Inspection Authority
  The vessels shall be internally inspected by an approved inspection authority if they
- are opened for maintenance or repair purposes
  Full detailed report from the Inspection Authority shall be handed
- in to the Project Manager after completion

5,1 MAINTENANCE ON SPECIFIC COMPONENTS

Maintenance on components listed below shall be carried out as follows:

5.1.1 ROLLER BEARINGS

a) Check for any excessive bearing vibration, noise and temperature. The normal operating temperature of a ball/roller bearing is between 40°C to 60°C in an ambient temperature of approximately 20°C.

b) Should excessive vibration be present, check for external factor which may be the cause of the vibration such as the misalignment or out of balance rotating parts and condition of mountings. Defective bearings shall be replaced.

c) Should excessive noise be present the bearing shall be removed, washed out in clean spirit and checked for damage. Undamaged bearings shall be re-packed with grease and re-fitted. Damaged bearings shall be replaced.

d) Should bearings run at excessive temperatures, check for over greasing, incorrect assembly, misalignment, excessive belt pull, excessive end thrust and position of bearing on shaft. Excessive loads on the bearing shall be reduced.

e) Bearing housings fitted with grease nipples shall be greased.

f) Plummer block housings with no provision for lubrication shall be greased by removal of the housing cap. Alternatively the housing shall be drilled and tapped to take a grease nipple.

NOTE:

Unless bearing failure is expected, bearings shall not be removed for detail inspections during normal inspection services. Bearings in difficult accessible positions within enclosed assemblies such as gearboxes shall not be inspected individually unless the assembly is stripped for scheduled maintenance or repairs.

5.1.2 SLEEVE BEARINGS

a) Check for excessive bearing vibration, noise and play

Lubricate bearing. If oil wells are fitted check oil level and top up

5.1.3 ELECTRIC MOTORS

a) Carry out the required inspections on bearings.

b) Ensure that motor is not overheating. The maximum permitted temperature for class B insulation is 120°C and for class F insulation 140°C as measured by increase in stator winding resistance.

c) Compare measured full load current with nameplate value when supplied at rated volts and frequency

d) Check that terminal connections are clean and tight and that motor is soundly earthed. Ensure that the plastic terminal base is clean and undamaged.

e) Examine motor for corrosion and mechanical damage

f) Ensure free unobstructed ventilation. Examine cooler tubes if the motor is of the closed air circuit air (CACA) type.

g) Check that motor is free from dirt, oil, chemical or any contaminant that can be detrimental to the satisfactory operation.

h) Remove drain plugs and re-fit after draining any condensate.

i) For slip ring motors, in addition to the above:

i) Open slip ring inspection cover and check absence of sparking between brush and slip ring when the motor is operating on full load

ii) With the motor isolated from the supply, ensure that the slip rings are not worn, grooved or pitted in any way

iii) Examine the brushes for wear, grooving or pitting etc., and for freedom of movement in their holders

iv) Unless the motor is fitted with constant pressure type brushes, check brush pressures using a spring balance. The pressure should be in the order of 750kPa.

v) Ensure that the slip rings, brush holders and their enclosure is clean and free from any accumulation of carbon dust.

5.1.4 GEARBOXES (including geared motors)

a) Check for any excessive vibration, noise and Temperature.

b) Check for possible overloads or excessive shock loads on gearbox

c) Check oil level and ensure that housing is accurately filled with lubricant to the specified level

d) Grease oil seals on units equipped with grease nipples

e) Check for blockages in breather lines. Clean breather in a solvent.

f) Check grade of oil and oil condition. Oxidized, dirty or oil with a high sludge content shall be drained and replaced with the correct grade as specified by the manufacturer. Clean oil filter.

g) On forced feed systems ensure that oil pump is functioning. Check that oil passages are clear and permit free flow of lubricant. Inspect oil-line pressure regulators, nozzles and filters to be sure they are free of obstructions. Ensure that pump is not sucking air.

h) Check for oil leaks:

i) Replace worn oil seals. Check condition of shaft under seal and polish if necessary

ii) Adjust or replace stuffing box packing. Tighten packing gradually to break in. Check condition of shaft and polish if necessary

iii) Reduce excessive flow of force-feed lubricant to bearing by adjusting orifices and/or

iv) Tighten cap screws or bolts. If not entire effective, remove housing cover and caps, clean mating surfaces and apply new sealing compound and re-assemble.

i) Check for excessive play between drive and driven shafts

j) Clean gearbox externally

k) Check housing for signs of mechanical failure

NOTE

Should it be necessary to remove the housing cover in order to repair an oil leak, the complete gearbox shall thoroughly inspected as required for the scheduled maintenance.

5.1.5 PUMPS

The following pumps shall be included where applicable:

a) Condenser water pumps

b) Chilled water pumps

MAINTENANCE REQUIREMENTS

a) Check pumps for leaks

b) Check bearing temperatures

c) Check pump for excessive noise and vibration

d) Check and adjust glands as necessary to maintain slight leakage

e) Check oil level and top up if required

f) Check pump coupling pins and bushes for wear

g) Clean pump suction strainers

h) Check condition of flexible suction and delivery connections

i) Clean pump and pump base

6,1 ANNUAL SERVICE CHECK LIST

6.1.1 ROLLER BEARINGS

Wash out old grease with white spirit and examine bearing and bearing housing. Replace rough bearings. Re-grease sound bearings with the manufacturer's recommended lubricant.

NOTE

Re-lubrication of small bearings, particularly deep groove ball bearings, fitted with shields or seals are not required. These bearings shall however be thoroughly examined during the scheduled maintenance service.

6.1.2 SLEEVE BEARINGS

Replace oil in oil wells and/or sumps

6.1.3 ELECTRIC MOTORS (Fractional kW motors excluded)

a) Strip the motor down completely, removing rotor from stator

b) Blow out the stator, rotor, terminal box and fan cowl with an air jet to remove any internal dust etc. If contaminated with oil or grease, etc., wash with a recommended detergent.

c) Carry out the required maintenance on bearings as specified in paragraphs 1 and 2

d) Measure winding insulating resistance using a 500 volt megger. If the reading is low, or if there is evidence of damp present (corrosion, etc.,) then consideration should be given to fitting motor heaters or at least, to giving the winding a double impregnation and baking.

e) If oil seals are fitted, these shall be replaced, taking extreme care not to damage the lip of the seal when fitting.

f) Re-assemble and ensure free rotation of the shaft.

g) For slip ring motors, in addition to the above:

i) If the slip rings are grooved or pitted etc., Skim the rings in a lathe, true to the bearing seatings on the shaft. Finish with a polished surface;

ii) If the brushes are little worn and in a good condition, simply ensure freedom of movement in their holders and replace the brushes in exactly the same position from which they were removed

iii) If new brushes are necessary, these shall be fitted such that they move freely in their holders and are bedded in after the motor has been re-assembled

iv) Adjust the brush pressures to approximately 750kPa using a spring balance.

v) Log details of inspections, replacements and repairs as well as parts recommended for replacement

6.1.4 GEARBOXES (including geared motors)

a) Remove housing cover and caps

b) Carry out the required inspections on bearings as specified in paragraphs 1 and 2

c) Check for misalignment of gears. The contact pattern on teeth must be over approximately 75% of face, preferably in the center area.

d) Check condition of teeth

e) Check backlash and adjust to the manufacturers requirements

f) Check that all shafts spin freely when disconnected

g) Disconnect couplings and check alignment. Re-align as required.

h) Check lateral float on coupling. Adjust spacing between drive motor to eliminate end pressure on shaft or arrange for the replacement of the flexible coupling with a type allowing the required lateral float.

i) Re-assemble gearbox and re-connect couplings

j) Drain oil and replace with the correct grade oil as recommended by the gear manufacturer.

k) Log details of inspections, replacements and repairs as well as parts recommended for replacement.

6.1.5 PUMPS

a) Strip pump completely

b) Check condition of impeller(s) or diaphragm

c) Carry out the required inspections on bearings as listed in paragraphs 1 and 2

d) Examine gland and renew packing if required

e) Examine condition of mechanical seals

f) Check coupling alignment

g) Re-assemble pump and ensure that mating surfaces are cleaned properly and provided with a durable sealing compound

h) Replace lubricant with a grade as recommended by the pump manufacturer.

i) Log details of inspections, replacements and repairs as well as parts recommended for replacement.

7,1 COOLING AND HEATING COILS

Monthly schedule

- Check for leaks and general conditions
- Check door gaskets

Six monthly schedule

- Clean coil with appropriate solution and high pressure water
- Remove all rusts and treat

8 CONTRACTOR'S / INSPECTORS MONTHLY REPORT

A monthly inspection will be performed by a representative of the Department of Infrastructure Development at which the contractor must be present.

All log-books will be inspected.

Part C9.2 BILL OF QUANTITIES - Refrigeration Installations

C9.2 Priced rates for servicing, repairs, maintenance of the Refrigeration Installations				
ITEM NO	**DESCRIPTION**	**UNIT**	**ESTIMATE**	**PRICE PER UNIT**
	COMPRESSORS			
1	Manuerop MT 28 JE 5 PVE	S	1	R
2	Manuerop NTZ 215 A 4 LR 1 A	S	1	R
3	Tecumseh CAJ 9480 T	S	1	R
4	Tecumseh TFH 4531 Z	S	1	R
5	Manuerop MT 36 JG 4 EVE	S	1	R
6	Tecumseh TYA 9455 EKS	S	1	R
7	Lunite Hermetique TAJ 4519 T	S	1	R
8	Lunite Hermetique CAJ 9513 T	S	1	R
9	Lunite Hermitique FH 4524 F	S	1	R
10	Lunite Hermitique TFH 4524 T	S	1	R
11	Manuerop NT 144 HV	S	1	R
12	Lunite Hermetique CAJ 9510 THR	S	1	R
13	Lunite Hermetique TAG 4561 THR	S	1	R
14	Lunite Hermetique TAG 4568 THR	S	1	R
15	Manuerop MT 50 HK 4BVE	S	1	R
16	Manuerop MT 64 HM 4 CVE	S	1	R
17	Tecumseh CAJ 4517 E	S	1	R
18	DWM Copeland DKSJP-15X-EWL	S	1	R
			SUBTOTAL FOR COMPRESSORS	R

C9.2 Priced rates for servicing, repairs, maintenance of the Refrigeration Installations				
ITEM NO	DESCRIPTION	UNIT	ESTIMATE	PRICE PER UNIT
	DRIERS & SIGHT GLASSES			
19	Sight Glass SAE ¼"	S	1	R
20	Sight Glass SAE 3/8"	S	1	R
21	Sight Glass SAE ½"	S	1	R
22	Sight Glass SAE 5/8"	S	1	R
23	Sight Glass SAE ¾"	S	1	R
24	Driers Commercial ¼"	S	1	R
25	14 Driers Commercial 3/8"	S	1	R
26	15 Driers Commercial1/2"	S	1	R
27	Driers Commercial 5/8"	S	1	R
28	Driers Commercial ¾"	S	1	R
29	Drier Core RCW 48	S	1	R
30	Pencil Drier	S	1	R
31	Driers Burn-Out Kit ½"	S	1	R
32	Driers Burn-Out Kit 5/8"	S	1	R
33	Driers Burn-Out Kit ¾"	S	1	R
34	Driers Burn-Out Kit 7/8"	S	1	R
35	Driers Burn-Out Kit 1 1/8"	S	1	R
			SUBTOTAL FOR DRIERS & SIGHT GLASSES	R

C9.2 Priced rates for servicing, repairs, maintenance of the Refrigeration Installations				
ITEM NO	DESCRIPTION	UNIT	ESTIMATE	PRICE PER UNIT
	VIBRATION ABSORBERS			
36	3/8"	S	1	R
37	½"	S	1	R
38	5/8"	S	1	R
39	**16 ¾"**	S	1	**R**
40	7/8"	S	1	R
41	1 1/8"	S	1	R
	ARMOFLEX			
42	½"	S	1	R
43	3/8"	S	1	R
44	5/8"	S	1	R
SUBTOTAL FOR VIBRATION ABSORBERS AND ARMOFLEX				**R**

C9.2 Priced rates for servicing, repairs, maintenance of the Refrigeration Installations				
ITEM NO	DESCRIPTION	UNIT	ESTIMATE	PRICE PER UNIT
	FITTINGS			
45	Flare Nuts ¼"	S	1	R
46	Flare Nuts 3/8"	S	1	R
47	Flare Nuts ½"	S	1	R
48	Flare Nuts 5/8"	S	1	R
49	Double end Flare Union ¼"	S	1	R
50	Double end Flare Union 3/8"	S	1	R
51	Double end Flare Union ½"	S	1	R
52	Shreddar Valve ¼"	S	1	R
53	Solenoid Valve 7/8"	S	1	R
54	Solenoid Valve 5/8"	S	1	R
55	Solenoid Valve ¼"	S	1	R
56	Solenoid Valve 3/8"	S	1	R
57	Solenoid Valve ½"	S	1	R
58	Sliversolder Stick	Stick	1	R
59	Copperflow Stick	Stick	1	R
60	Copper Tubing Hard Drawn ¼" (5,5m length)	Length	1	R
61	Copper Tubing Hard Drawn 3/8" (5,5m length)	Length	1	R
62	Copper Tubing Hard Drawn ½" (5,5m length)	Length	1	R
63	Copper Tubing Hard Drawn 5/8" (5,5m length)	Length	1	R

C9.2 Priced rates for servicing, repairs, maintenance of the Refrigeration Installations				
ITEM NO	**DESCRIPTION**	**UNIT**	**ESTIMATE**	**PRICE PER UNIT**
64	Copper Tubing Hard Drawn 7/8" (5,5m length)	Length	1	R
65	Copper Tubing Hard Drawn 1 1/8" (5,5m length)	Length	1	R
66	Copper Tubing Soft Drawn ¼" (Roll)	Roll	1	R
67	Copper Tubing Soft Drawn 3/8" (Roll)	Roll	1	R
68	Copper Tubing Soft Drawn ½" (Roll)	Roll	1	R
69	Copper Tubing Soft Drawn 5/8" (Roll)	Roll	1	R
			SUBTOTAL FOR FITTINGS	**R**

C9.2 Priced rates for servicing, repairs, maintenance of the Refrigeration Installations				
ITEM NO	DESCRIPTION	UNIT	ESTIMATE	PRICE PER UNIT
	FAN MOTORS			
70	10W	S	1	R
71	16W	S	1	R
72	25W	S	1	R
73	250mm Fan Assembly	S	1	R
74	300mm Fan Assembly	S	1	R
75	350mm Fan Assembly	S	1	R
76	500mm Fan Assembly	S	1	R
	SWITCHES			
77	LP switch	S	1	R
78	HP switch	S	1	R
79	Dual Pressure Switch Manual on HP	S	1	R
80	Oil Pressure Switch	S	1	R
81	Contactor 3 pole 220V coil 7.5 KW	S	1	R
82	Dial Thermometer 100mm face	S	1	R
83	Heater tape 6"	Roll	1	R
84	Heater tape 12"	Roll	1	R
	EXPANSION VALVES			
85	134A Internally Equalized ½ ton	S	1	R
86	134A Internally Equalized ¾ ton	S	1	R
87	134A Internally Equalized 1 ton	S	1	R
88	134A Internally Equalized 2 ton	S	1	R
89	134A Externally Equalized 3 ton	S	1	R
90	R22 Externally Equalized 2 ton	S	1	R
91	R22 Externally Equalized 1 ton	S	1	R
92	Orifice no 1	S	1	R

C9.2 Priced rates for servicing, repairs, maintenance of the Refrigeration Installations				
ITEM NO	DESCRIPTION	UNIT	ESTIMATE	PRICE PER UNIT
93	Orifice no 2	S	1	R
94	Orifice no 3	S	1	R
95	Orifice no 4	S	1	R
SUB-TOTAL FOR FAN MOTORS, SWITCHES ANDEXPANSION VALVES				R

C9.2 Priced rates for servicing, repairs, maintenance of the Refrigeration Installations				
ITEM NO	DESCRIPTION	UNIT	ESTIMATE	PRICE PER UNIT
	LATCH & STRIKES			
96	R40 Latch & Strike	S	1	R
97	R40 Hinge	S	1	R
98	K 56 Latch & Strike	S	1	R
	REFRIGERANTS			
99	R410A Refrigerant	P/kg	1	R
100	R134A Refrigerant	P/kg	1	R
101	R404A Refrigerant	P/kg	1	R
102	R22 Refrigerant	P/kg	1	R
103	R407 Refrigerant	P/kg	1	R
104	Flushing Agent 141A	P/kg	1	R
105	MS 32 Refrigeration Oil	Per litre	1	R
106	Emkarate Ester Oil	Per litre	1	R
	CONTROLLERS			
107	Carol Electronic Controller Model IR 33M	S	1	R
108	Carol Electronic Re-lay 16A IR 33	S	1	R
109	Carol Electronic Controller Model IR 33S	S	1	R
110	Carol Electronic Controller Model IR 33Y	S	1	R
111	Dixell Electronic Controller Model XR10CX	S	1	R
112	Dixell Electronic Controller Model XR20CX	S	1	R
113	Dixell Electronic Controller Model XR30CX	S	1	R
114	Dixell Electronic Controller Model XR40CX	S	1	R
SUB-TOTAL FOR LATCH & STRIKES,REFRIGERANTS,CONTROLLERS				R

C9.2 Priced rates for servicing, repairs, maintenance of the Refrigeration Installations				
ITEM NO	**DESCRIPTION**	**UNIT**	**ESTIMATE**	**PRICE PER UNIT**
	LABOUR RATES			
115	Service Schedule A item 4,3,1	S	1	R
116	Service Schedule B item 4,3,2	S	1	R
117	Service Schedule C item 4,4,1	S	1	R
118	Service Schedule D item 4,4,2	S	1	R
119	Service Schedule E item 4,4,3	S	1	R
120	Service Schedule F item 4,4,4	S	1	R
121	Labour Technician per hour	S	1	R
122	Labour Technician per hour overtime	S	1	R
123	Labour Technician per hour Sunday and Public Holidays	S	1	R
124	Labour Technician Assistant per hour	S	1	R
125	Labour Technician Assistant per hour over timer	S	1	R
126	Labour Technician Assistant per hour Sunday and Public Holidays	S	1	R
			SUB-TOTAL FOR LABOUR RATES	**R**

C9.2 Priced rates for servicing, repairs, maintenance of the Refrigeration Installations				
ITEM NO	DESCRIPTION	UNIT	ESTIMATE	PRICE PER UNIT
	Pricing Summary			
SUBTOTAL FOR COMPRESSORS				R
SUB-TOTAL FOR LATCH & STRIKES,REFRIGERANTS,CONTROLLERS				R
SUB-TOTAL FOR FAN MOTORS, SWITCHES ANDEXPANSION VALVES				R
SUBTOTAL FOR FITTINGS				R
SUB-TOTAL FOR FAN MOTORS, SWITCHES ANDEXPANSION VALVES				R
SUB-TOTAL FOR LATCH & STRIKES,REFRIGERANTS,CONTROLLERS				R
SUB-TOTAL FOR LABOUR RATES				R
			TOTAL	

All unit prices that are not included or missed shall be determined through quotation proces with agreed amounts standardised and revised as part of the baseline costs

All prices shall be priced to RSA currency excluding VAT

553. Al travelling rates will be calculated according to the AA rates for the specific month

TENDERER'S SIGNATURE: _____

PRINT NAME: _____

NAME OF FIRM: _____

ADDRESS: _____

_____

CODE _____

TELEPHONE NO: _____ CELL NO: _____

FAX NO: _____

E-MAIL ADDRESS: _____ DATE: _____

Part C10.1 Scope of Work for Refrigeration and nitrogen freezing tunnel plants PART 3

1 SCOPE OF CONTRACT

This contract calls for the price rates for the servicing, repairs, maintenance of the Refrigeration and nitrogen frezing tunnel plants Installation at Various Institutions in accordance with the requirements as laid down in the specifications.It, furthermore, entails the servicing, maintenance and repair of said installations, in accordance with the requirements of the Free State Provincial
1,1 Government.

It furthermore requires that all the machinery covered in this specification initially be repaired and brought to an acceptable working condition.

2 OPERATION OF EQUIPMENT

The successful Tenderer/Contractor shall operate the Refrigeration Installations to ensure a continuous service at the proper conditions for the Hospital and any other users dependant on the installations
2,1 covered by this Tender/Contractor.

The successful Tenderer/Contractor shall operate the Refrigeration Installations to ensure that each installation in operation achieves maximal efficiency and equipment utilization as well as minimum disruption of services to be rendered by the institutions. Any relevant manuals, codes of practice,
2,2 standards, supplementary instructions etc., shall be followed in this regard.

3 MAINTENANCE OF EQUIPMENT

The successful Tenderer shall be required to maintain the complete installation and equipment in a proper and safe operating condition, to clean, adjust and lubricate the equipment as required in terms of
3,01 the Contract, repair or replace all electrical and mechanical parts as necessary due to wear and tear.

This shall include, but not be limited to the following:-

Examine the system in accordance with any applicable regulation promulgated under the Occupational
3.01.1 Health and Safety Act 85 of 1993 and any amendments thereof

Properly maintain, adjust and keep the installation and equipment in a safe and proper operating
3.01.2 condition at all times

Repair/replace all parts of the installation which may become necessary for the proper use and/or
3.01.3 operation of the installation

Examine, adjust and lubricate the complete installation, supply of all lubricants, replacement parts and
3.01.4 cleaning materials as required for proper maintenance of the equipment

Any malfunction or defect occurring within a period of three (3) months after any service or repair being
3.01.5 executed will be for the account of the contractor.

Examine, periodically and when necessary, all devices and perform any statutory safety tests at or before
3.01.6 the expiring of the required intervals

3.01.7 Complete the services, maintenance or repair action report, which shall be submitted with any invoice(s)

3,02 INSTALLATIONS AND EQUIPMENT TO BE SERVICE

- Mortuary Cabinets
- Cold & Freezer rooms
- Nitrogen Freezing Tunnels
- Shelves, body trays and baskets as found in cold rooms and mortuaries
- Maintenance inside installation plant rooms (for Refrigeration Equipment)

3,03 Requirements that must be met

- Adherence to Safety Regulations and membership on the Safety Committee at the institutions
- Monthly meeting with Management of the Institutions
- Monthly reports to Chief Directorate: Maintenance
- Supply of all lubricants and cleaning materials needed
- Supply of all hand tools and equipment needed for contract

Competent person

The person appointment as such under the Machinery and Occupational Safety Act no 6 of 1983 (Refer to "Annexure C)"

NOTE: ALL WORK IN THIS CONTRACT SHALL BE DONE ACCORDING TO THE STANDARD QUALITY SPECIFICATION FOR REFRIGERATION SERVICES, MARCH 2006, OF THE DEPARTMENT. A COPY SHALL BE MADE AVAILABLE TO THE SUCCESFULL TENDERER ON REQUEST

Part C8.2 Technical Specification for Refrigeration and nitrogen freezing tunnel plants

TECHNICAL SPECIFICATIONS

4,1 SERVICE INTERVALS AND SERVICES

Item	Quarterly	Annually
Mortuary Cabinets	X	X
Cold & Freezer Rooms	X	X
Nitrogen Freezing Tunnels		X

4,2 The successful contractor must visit all theatres and ICU's covered under this contract monthly and obtain the signature of the head of the section in a service book that must be kept for this purpose.

4,3 QUARTERLY SERVICES

4.3.1 SCHEDULE A – MORTUARY CABINETS: MINOR SERVICE

- Check for undue noise or vibration
- Check for loose components
- Check for oil/refrigerant leaks
- Check refrigerant level
- Check that the refrigerant is dry
- Check condensor fan and fan motor bearings as applicable
- Check all operating controls for correct operation
- Clean condensor coil with proprietary coil cleaner
- Clean plant and plantroom/area
- Check evaporator, evaporator fan and motor fro correct operation
- Check door seals, door catch mechanism for correct operation
- Check door hinges for wear and deterioration
- Check trary rollers and supports, cabinet cladding
- Check and note cabinet temperature. Adjust if necessary
- Check and clean condensate drain

4.3.2 SCHEDULE B – COLD & FREEZER ROOMS: MINOR SERVICE

- Check for undue noise or vibration
- Check for loose components
- Check for oil/refrigerant leaks
- Check refrigerant level
- Check that the refrigerant is dry
- Check condensor fan and fan motor bearings as applicable
- Check all operating controls for correct operation
- Clean condensor coil with proprietary coil cleaner
- Clean plant and plantroom/area
- Check evaporator, evaporator fan and motor fro correct operation
- Check door seals, door catch mechanism for correct operation
- Check door hinges for wear and deterioration
- Check trary rollers and supports, cabinet cladding
- Check and note cabinet temperature. Adjust if necessary
- Check and clean condensate drain

4,4 ANNUAL SERVICES:

4.4.1 SCHEDULE C – MORTUARY CABINETS: MAJOR SERVICE

- Check for undue noise or vibration
- Check for loose components
- Check for oil/refrigerant leaks
- Check refrigerant level
- Check that the refrigerant is dry
- Check condensor fan and fan motor bearings as applicable
- Check all operating controls for correct operation
- Check and note compressor suction/discharge pressures
- Check and note compressor motor amperages
- Clean condensor coil with proprietary coil cleaner
- Bring LP down and check that LP cut-out trips at correct pressure. Re-set if necessary. Note Setting
- Do meg-ohm test for compressor motor windings and note readings
- Bring Hp up and check that HP cut-out trips at correct pressure. Re-set if necessary. Note Setting
- Clean plant and plantroom/area
- Check evaporator, evaporator fan and motor fro correct operation
- Clean evaporator coil with proprietary coil cleaner
- Check DX valve for correct operation
- Check door seals, door catch mechanism for correct operation
- Check door hinges for wear and deterioration
- Check tray rollers and supports, cabinet cladding
- Tighten all electrical terminals
- Treat rust and corrosion, touch up with paint
- Check calibration of dial thermometer. Recalibrate if necessary
- Check and note cabinet temperature. Adjust if necessary
- Check and clean condensate drain

4.4,2 SCHEDULE D – COLD & FREEZER ROOMS: MAJOR SERVICE

- Check for undue noise or vibration
- Check for loose components
- Test for oil/refrigerant leaks
- Check compressor oil level (where applicable). Top up as required
- Check for correct refrigerant level
- Check that the refrigerant is dry
- Replace belt drive, realign pulley and adjust belt tension
- Check condensor fan and fan motor bearings as applicable
- Check all operating controls for correct operation
- Check and note compressor suction/discharge pressures. Test compressor efficiency
- Check and note compressor motor amperages
- Check that belt guard is in place and secure
- Clean condensor coil with proprietary coil cleaner
- Bring LP down and check that LP cut-out trips at correct pressure. Re-set if necessary. Note Setting
- Bring Hp up and check that HP cut-out trips at correct pressure. Re-set if necessary. Note Setting
- Remove motor end cover and clear out air ways
- Clean out switchboard. Check operation of all switchear
- Clean plant and plantroom/area
- Check evaporator, evaporator fan and motor for correct operation
- Clean evaporator coil with proprietary coil cleaner
- Check DX valve for correct operation
- Check door seals, door catch mechanism, panic bolt for correct operation. Adjust as necessary
- Check Cold/freezer room lights
- Check defrost elements, door and drain heaters, timers for correct operation.
- Check door hinges for wear and deterioration
- Check tray rollers and supports, cabinet cladding
- Tighten all electrical terminals
- Check DX valve superheat setting
- Check cold/freezer room walls, floors, ceiling for deterioration, ice build up
- Scrape, treat and paint rust
- Check calibration of dial thermometer. Recalibrate if necessary
- Check and note cold/freezer temperature. Adjust if necessary
- Check and clean condensate drain
- Check shelving, meat rails

4.4,3 SCHEDULE E – NITROGEN FREEZING TUNNELS

- As per OEM requirements (manufacturer specific O&M Manual)

4,5 THREE YEARLY

4.5.1 SCHEDULE F – PRESSURE VESSELS

- External examination and random ultrasonic test on the pressure vessel sections of chillers by an approved Inspection Authority
- The vessels shall be internally inspected by an approved inspection authority if they are opened for maintenance or repair purposes
- Full detailed report from the Inspection Authority shall be handed in to the Project Manager after completion

5,1 MAINTENANCE ON SPECIFIC COMPONENTS

Maintenance on components listed below shall be carried out as follows:

5.1.1 ROLLER BEARINGS

a) Check for any excessive bearing vibration, noise and temperature. The normal operating temperature of a ball/roller bearing is between 40°C to 60°C in an ambient temperature of approximately 20°C.

b) Should excessive vibration be present, check for external factor which may be the cause of the vibration such as the misalignment or out of balance rotating parts and condition of mountings. Defective bearings shall be replaced.

c) Should excessive noise be present the bearing shall be removed, washed out in clean spirit and checked for damage. Undamaged bearings shall be re-packed with grease and re-fitted. Damaged bearings shall be replaced.

d) Should bearings run at excessive temperatures, check for over greasing, incorrect assembly, misalignment, excessive belt pull, excessive end thrust and position of bearing on shaft. Excessive loads on the bearing shall be reduced.

e) Bearing housings fitted with grease nipples shall be greased.

f) Plummer block housings with no provision for lubrication shall be greased by removal of the housing cap. Alternatively the housing shall be drilled and tapped to take a grease nipple.

NOTE:

Unless bearing failure is expected, bearings shall not be removed for detail inspections during normal inspection services. Bearings in difficult accessible positions within enclosed assemblies such as gearboxes shall not be inspected individually unless the assembly is stripped for scheduled maintenance or repairs.

5.1.2 SLEEVE BEARINGS

a) Check for excessive bearing vibration, noise and play

Lubricate bearing. If oil wells are fitted check oil level and top up .

5.1.3 ELECTRIC MOTORS

a) Carry out the required inspections on bearings.

b) Ensure that motor is not overheating. The maximum permitted temperature for class B insulation is 120°C and for class F insulation 140°C as measured by increase in stator winding resistance.

c) Compare measured full load current with nameplate value when supplied at rated volts and frequency

d) Check that terminal connections are clean and tight and that motor is soundly earthed. Ensure that the plastic terminal base is clean and undamaged.

e) Examine motor for corrosion and mechanical damage

f) Ensure free unobstructed ventilation. Examine cooler tubes if the motor is of the closed air circuit air (CACA) type.

g) Check that motor is free from dirt, oil, chemical or any contaminant that can be detrimental to the satisfactory operation.

h) Remove drain plugs and re-fit after draining any condensate.

i) For slip ring motors, in addition to the above:

i) open slip ring inspection cover and check absence of sparking between brush and slip ring when the motor is operating on full load

ii) with the motor isolated from the supply, ensure that the slip rings are not worn, grooved or pitted in any way

iii) examine the brushes for wear, grooving or pitting etc., and for freedom of movement in their holders

iv) unless the motor is fitted with constant pressure type brushes, check brush pressures using a spring balance. The pressure should be in the order of 750kPa.

v) Ensure that the slip rings, brush holders and their enclosure is clean and free from any accumulation of carbon dust

5.1.4 GEARBOXES (including geared motors)

a) Check for any excessive vibration, noise and Temperature.

b) Check for possible overloads or excessive shock loads on gearbox

c) Check oil level and ensure that housing is accurately filled with lubricant to the specified level

d) Grease oil seals on units equipped with grease nipples

e) Check for blockages in breather lines. Clean breather in a solvent.

f) Check grade of oil and oil condition. Oxidized, dirty or oil with a high sludge content shall be drained and replaced with the correct grade as specified by the manufacturer. Clean oil filter.

g) On forced feed systems ensure that oil pump is functioning. Check that oil passages are clear and permit free flow of lubricant. Inspect oil-line pressure regulators, nozzles and filters to be sure they are free of obstructions. Ensure that pump is not sucking air.

h) Check for oil leaks:

i) Replace worn oil seals. Check condition of shaft under seal and polish if necessary

ii) Adjust or replace stuffing box packing. Tighten packing gradually to break in. Check condition of shaft and polish if necessary

iii) Reduce excessive flow of force-feed lubricant to bearing by adjusting orifices and/or

iv) Tighten cap screws or bolts. If not entire effective, remove housing cover and caps, clean mating surfaces and apply new sealing compound and re-assemble.

i) Check for excessive play between drive and driven shafts

j) Clean gearbox externally

k) Check housing for signs of mechanical failure

NOTE

Should it be necessary to remove the housing cover in order to repair an oil leak, the complete gearbox shall thoroughly inspected as required for the scheduled maintenance.

5.1.5 PUMPS

The following pumps shall be included where applicable:

a) Condenser water pumps

b) Chilled water pumps

MAINTENANCE REQUIREMENTS

a) Check pumps for leaks

b) Check bearing temperatures

c) Check pump for excessive noise and vibration

d) Check and adjust glands as necessary to maintain slight leakage

e) Check oil level and top up if required

f) Check pump coupling pins and bushes for wear

g) Clean pump suction strainers

h) Check condition of flexible suction and delivery connections

i) Clean pump and pump base

6,1 ANNUAL SERVICE CHECK LIST

6.1.1 ROLLER BEARINGS

Wash out old grease with white spirit and examine bearing and bearing housing. Replace rough bearings. Re-grease sound bearings with the manufacturer's recommended lubricant.

NOTE

Re-lubrication of small bearings, particularly deep groove ball bearings, fitted with shields or seals are not required. These bearings shall however be thoroughly examined during the scheduled maintenance service.

6.1.2 SLEEVE BEARINGS

Replace oil in oil wells and/or sumps

6.1.3 ELECTRIC MOTORS (Fractional kW motors excluded)

a) Strip the motor down completely, removing rotor from stator

b) Blow out the stator, rotor, terminal box and fan cowl with an air jet to remove any internal dust etc. If contaminated with oil or grease, etc., wash with a recommended detergent.

c) Carry out the required maintenance on bearings as specified in paragraphs 1 and 2

d) Measure winding insulating resistance using a 500 volt megger. If the reading is low, or if there is evidence of damp present (corrosion, etc.,) then consideration should be given to fitting motor heaters or at least, to giving the winding a double impregnation and baking.

e) If oil seals are fitted, these shall be replaced, taking extreme care not to damage the lip of the seal when fitting.

f) Re-assemble and ensure free rotation of the shaft.

g) For slip ring motors, in addition to the above:

i) If the slip rings are grooved or pitted etc., Skim the rings in a lathe, true to the bearing seatings on the shaft. Finish with a polished surface;

ii) If the brushes are little worn and in a good condition, simply ensure freedom of movement in their holders and replace the brushes in exactly the same position from which they were removed

iii) If new brushes are necessary, these shall be fitted such that they move freely in their holders and are bedded in after the motor has been re-assembled

iv) Adjust the brush pressures to approximately 750kPa using a spring balance.

v) Log details of inspections, replacements and repairs as well as parts recommended for replacement

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6.1.4 GEARBOXES (including geared motors)

a) Remove housing cover and caps

b) Carry out the required inspections on bearings as specified in paragraphs 1 and 2

c) Check for misalignment of gears. The contact pattern on teeth must be over approximately 75% of face, preferably in the center area.

d) Check condition of teeth

e) Check backlash and adjust to the manufacturers requirements

f) Check that all shafts spin freely when disconnected

g) Disconnect couplings and check alignment. Re-align as required.

h) Check lateral float on coupling. Adjust spacing between drive motor to eliminate end pressure on shaft or arrange for the replacement of the flexible coupling with a type allowing the required lateral float.

i) Re-assemble gearbox and re-connect couplings

j) Drain oil and replace with the correct grade oil as recommended by the gear manufacturer.

k) Log details of inspections, replacements and repairs as well as parts recommended for replacement.

6.1.5 PUMPS

a) Strip pump completely

b) Check condition of impeller(s) or diaphragm
c) Carry out the required inspections on bearings as listed in paragraphs 1 and 2

d) Examine gland and renew packing if required

e) Examine condition of mechanical seals

f) Check coupling alignment

g) Re-assemble pump and ensure that mating surfaces are cleaned properly and provided with a durable sealing compound

h) Replace lubricant with a grade as recommended by the pump manufacturer.

i) Log details of inspections, replacements and repairs as well as parts recommended for replacement.

7,1 COOLING AND HEATING COILS

Monthly schedule

- Check for leaks and general conditions
- Check door gaskets

Six monthly schedule

- Clean coil with appropriate solution and high pressure water
- Remove all rusts and treat

8 CONTRACTOR'S / INSPECTORS MONTHLY REPORT

A monthly inspection will be performed by a representative of the Department of Infrastructure Development at which the contractor must be present.

All log-books will be inspected.

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