AIR CONDITIONING & MECHANICAL VENTILATION INSTALLATION

SCHEDULE 4 - SCHEDULE OF RATES

Prior approval must be obtained from the Project Director before any alterations are made to this preamble. This preamble is common for all the M&E Services and any alterations to this preamble for one service shall also be applicable to all the other M&E Services.
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Preamble

The prices in S$ as entered in the Schedule of Rates for the various works as detailed hereinafter will be used for any variation which may constitute adjustment (addition or subtraction) to the Sub-Contract Sum.

The rates quoted shall be for the "Supply and Fixing" and shall cover all works to comply fully with the Sub-Contract (i.e. specifications, drawings, Conditions of Sub-Contract, etc.) and shall include all costs for incidental work, e.g. administration, project supervision, design, etc. and profits. The rates quoted shall deem to cover all associated items necessary for the completeness of the works inclusive of any wastages, etc.

(a) Prices for pipework shall include hangers, supports, union flanges, reducers, guides, anchors, elbows, tees, sleeves, etc.

(b) Prices for valves, strainers, couplings shall include matching flanges and all accessories.

(c) Prices for cables shall include also conduit, trunking or tray, where appropriate, cable boxes, glands, lugs, earth wire, jointings and connections, etc.

(d) Prices for ductwork shall include hangers, supports, bracing, flanges, bends, offsets, turning vanes, splitter dampers for branch take-off, transformation, flexible connections, sleeves, etc.

S4.1 **Galvanised Sheet Steel Ductwork:** Supplied and installed per square metre sheet metal area (measured as nett area on installed ductwork)

Dimension of Longest Side of Duct (mm)	Uninsulated	Externally Painted	Externally Insulated & Vapour sealed		Internally Insulated & Externally painted	
			25mm thick	50mm thick	25mm thick	50mm thick
Up to 300						
301 to 450						
451 to 750						
751 to 1000						
1001 to 1200						
1201 to 1500						
1501 to 2100						
2101 to 2400						
over 2400						

S4.2 **Flexible Ductwork**: Supplied and installed per meter length complete with a pair of stainless steel self-locking clips.

Diameter	Externally Insulated & Vapour Sealed
100	
150	
200	
250	

S4.3 **Kitchen Exhaust Ductwork**

Kitchen Exhaust Ductwork: supplied and installed per square metre sheet metal area (measured as nett area on installed ductwork) S$ ……

S4.4 **2 Hours Fire Rated Ductwork**

2 hours Fire Rated Ductwork: supplied and installed per square metre sheet metal area (measured as nett area on installed ductwork) S$ ……

S4.5 **4 Hours Fire Rated Ductwork**

4 Hours Fire Rated Ductwork: supplied and installed per square metre sheet metal area (measured as nett area on installed ductwork) S$ ……

S4.6 **Access Doors For Ducts**

Access Doors For Ducts: supplied and installed price per piece complete with gaskets, hinges, sash locks, etc. as specified.

Dimension of Access Door	Uninsulated	Insulated & Sheathed
600mm x 300mm		
600mm x 450mm		
600mm x 600mm		

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S4.7 **Fire Dampers:** supplied and installed price per piece complete with frame, fusible link, etc. (NB: Access doors not included)

Damper Size (mm)	Multi-blade			
	Fire Damper Only		Fire Damper cum Volume Control Damper	
	2 Hours	4 Hours	2 Hours	4 Hours
150 x 150				
200 x 200				
250 x 250				
300 x 300				
450 x 300				
450 x 450				
800 x 300				
800 x 500				
1000 x 750				
1000 x 1000				

S4.8 **Diffusers, Grilles and Registers**: Supplied and installed price per piece.

S4.8.1 Supply Air Square Diffusers c/w Damper : Face 610 x 610

(a) Standard Type

Neck Size (mm)	4-way throw	3-way throw	2-way throw
150 x 150			
250 x 250			
300 x 300			
350 x 350			
400 x 400			
450 x 450			

(b) VAV Type

Neck Size (mm)	4-way throw	3-way throw	2-way throw
150 x 150			
250 x 250			
300 x 300			
350 x 350			
400 x 400			
450 x 450			

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S4.8.2 Return air grilles/supply air grilles & exhaust air grilles

Size (mm)	Without Damper	Complete with Damper
150 x 150		
250 x 250		
300 x 300		
450 x 450		
600 x 600		
800 x 300		
800 x 500		
1000 x 300		
1000 x 500		
1500 x 500		

S4.8.3 Side Discharge Registers

Size (mm)	Without Damper	Complete with Damper
500 x 150		
800 x 150		
1000 x 150		
500 x 300		
800 x 300		
1000 x 300		
1200 x 300		
1500 x 300		
2000 x 300		
2000 x 500		

S4.9 Supply Air Linear Diffusers: Supplied and installed price per piece.

Size	Anodised Aluminium	Galvanised Steel Baked Enamel
1 slot x 1.2m		
2 slots x 1.2m		
3 slots x 1.2m		
4 slots x 1.2m		

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S4.10 **Pipework:** supplied and installed price per metre run (measured as total linear length inclusive of elbows, tees, etc)

S4.10.1 Chilled Water & Condenser Water Pipework

(a) Medium Gauge Pipes as specified

Pipe Dia (mm)	Chilled Water Pipework			Condenser Water Pipework
	Uninsulated	Insulated	Insulated & Sheathed	
25				
32				
40				
50				
65				
80				
100				
150				

(b) Heavy Gauge Pipes as specified

Pipe Dia (mm)	Chilled Water Pipework			Condenser Water Pipework
	Uninsulated	Insulated	Insulated & Sheathed	
200				
250				
300				
350				
400				

S4.10.2 Drains & Condensate Pipework

Pipe Dia (mm)	Uninsulated	Insulated	Insulated & Sheathed
25			
32			
40			
50			
65			
80			
100			
150			

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S4.11 Valves, strainers, variable pressure constant flow (V.P.C.F.) valves & anti-vibration couplings:- supplied and installed price per piece (insulation inclusive of vapour barrier & galvanised steel sheath per fitting to be quoted as separate item as indicated)

S4.11.1 Valves, strainers etc. for Working Pressure up to 16 bars

Pipe Dia (mm)	Gate	Globe	Check	Butterfly	Strainer	Anti-Vibration Coupling	V.P.C.F. Valves	Insulation, Vapour Barrier & Sheathed
15								
20								
25								
32								
40								
50								
65								
80								
100								
150								
200								
250								
300								
350								
400								
450								

Pressure Gauge c/w cock & snubbers ... ... S$_____ per piece

Thermometer c/w pipewell ... ... S$_____ per piece

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S4.11.2 Valves, strainers etc. for Working Pressure up to 20 bars

Pipe Dia (mm)	Gate	Globe	Check	Ball Float	Butterfly	Strainer	Anti-Vibration Coupling	V.P.C.F. Valves	Insulation, Vapour Barrier & Sheathed	Annubars
15										
20										
25										
32										
40										
50										
65										
80										
100										
150										
200										
250										
300										
350										
400										

Pressure Gauge c/w cock & snubbers ... ... S$_____ per piece

Thermometer c/w pipewell ... ... S$_____ per piece

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S4.12 Electrical Wiring

Electrical Wiring - PVC Cables

450/750 volt grade **PVC** cables inclusive of conduit trunking, accessories, earth wire, terminations etc. of the following size, **per metre run**:	
Description	Unit Rate (S$)
2 x 1.5 mm^2/1C	
3 x 1.5 mm^2/1C	
2 x 2.5 mm^2/1C	
3 x 2.5 mm^2/1C	
6 x 2.5 mm^2/1C	
2 x 4 mm^2/1C	
3 x 4 mm^2/1C	
6 x 4 mm^2/1C	
2 x 6 mm^2/1C	
3 x 6 mm^2/1C	
6 x 6 mm^2/1C	
2 x 10 mm^2/1C	
3 x 10 mm^2/1C	
6 x 10 mm^2/1C	
3 x 16 mm^2/1C	
6 x 16 mm^2/1C	
3 x 25 mm^2/1C	
6 x 25 mm^2/1C	
3 x 35 mm^2/1C	
6 x 35 mm^2/1C	

Electrical Wiring - PVC/PVC Cables

450/750 volt grade **PVC/PVC** cables on vertical/horizontal cable ladder inclusive of ladder, accessories, earth wire, terminations, etc. of the following size, **per metre run**:	
Description	Unit Rate (S$)
3 x 50 mm^2/1C	
6 x 50 mm^2/1C	
3 x 70 mm^2/1C	
6 x 70 mm^2/1C	
3 x 95 mm^2/1C	
6 x 95 mm^2/1C	
3 x 120 mm^2/1C	
6 x 120 mm^2/1C	

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3 x 150 mm^2/1C	
6 x 150 mm^2/1C	
3 x 185 mm^2/1C	
6 x 185 mm^2/1C	
3 x 240 mm^2/1C	
6 x 240 mm^2/1C	
3 x 400 mm^2/1C	
6 x 400 mm^2/1C	

Electrical Wiring - XLPE/PVC Cables

450/750 volt grade **XLPE/PVC** cables on vertical/horizontal cable ladder inclusive of ladder, accessories, earth wire, terminations, etc. of the following size, **per metre run**:	
Description	Unit Rate (S$)
3 x 50 mm^2/1C	
6 x 50 mm^2/1C	
3 x 70 mm^2/1C	
6 x 70 mm^2/1C	
3 x 95 mm^2/1C	
6 x 95 mm^2/1C	
3 x 120 mm^2/1C	
6 x 120 mm^2/1C	
3 x 150 mm^2/1C	
6 x 150 mm^2/1C	
3 x 185 mm^2/1C	
6 x 185 mm^2/1C	
3 x 240 mm^2/1C	
6 x 240 mm^2/1C	
3 x 400 mm^2/1C	
6 x 400 mm^2/1C	

Electrical Wiring - MI Cables

Heavy duty MI cables (exposed to touch) on vertical/horizontal cable tray/cable ladder as specified inclusive of supporting brackets, cable tray/cable ladder, clips/saddles, fixings, terminations, joints & accessories surge diverters etc. of the following sizes.	
Description	Unit Rate (S$)
1 x 1.5 mm^2/2C	
1 x 2.5 mm^2/2C	
1 x 4.0 mm^2/2C	
1 x 10 mm^2/2C	

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2 x 2.5 mm^2/3C	
2 x 4 mm^2/3C	
2 x 6 mm^2/3C	
2 x 25 mm^2/3C	
3 x 2.5 mm^2/1C	
6 x 2.5 mm^2/1C	
3 x 4 mm^2/1C	
6 x 4 mm^2/1C	
3 x 6 mm^2/1C	
6 x 6 mm^2/1C	
6 x 10 mm^2/1C	
6 x 16 mm^2/1C	
6 x 25 mm^2/1C	
6 x 35 mm^2/1C	
6 x 50 mm^2/1C	
6 x 70 mm^2/1C	
6 x 95 mm^2/1C	
6 x 120 mm^2/1C	
6 x 150 mm^2/1C	
6 x 185 mm^2/1C	
6 x 240 mm^2/1C	

Electrical Wiring - FR Cables

450/750 volt grade **FR** cables on vertical/horizontal cable tray/cable ladder or in GI conduit/trunking run on surface inclusive of supporting brackets, tray/ladder fixing cleats, cable lugs, terminations, jointings, and accessories, earth wire, etc. of the following size, **per metre run**:	
Description	Unit Rate (S$)
3 x 2.5 mm^2/1C	
6 x 2.5 mm^2/1C	
3 x 4 mm^2/1C	
6 x 4 mm^2/1C	
3 x 6 mm^2/1C	
6 x 6 mm^2/1C	
3 x 10 mm^2/1C	
6 x 10 mm^2/1C	
3 x 16 mm^2/1C	
6 x 16 mm^2/1C	
3 x 25 mm^2/1C	

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6 x 25 mm^2/1C	
3 x 35 mm^2/1C	
6 x 35 mm^2/1C	
3 x 50 mm^2/1C	
6 x 50 mm^2/1C	
3 x 70 mm^2/1C	
6 x 70 mm^2/1C	

S4.13 Electrical Motors: supplied and installed price per piece complete with mounting & pulleys

Rating	Unit Rate (S$)
1 H.P.	
1.5 H.P.	
2 H.P.	
3 H.P.	
5 H.P.	
7.5 H.P.	
10 H.P.	
12.5 H.P.	
15 H.P.	
20 H.P.	
25 H.P.	
30 H.P.	

Specifier to indicate the chiller `HP' if solid state starter are specified.
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S4.14 Motor Starters

Motor Starters complete with over-load, single-phasing and under-voltage protection, fuses, auxiliary contacts, 'Start/Stop' pushbuttons and Manual/Off/Auto selector switch.	
Description	Unit Rate (S$)
D.O.L Starter for 1 H.P. motor	
D.O.L Starter for 1.5 H.P. motor	
D.O.L Starter for 2 H.P. motor	
D.O.L Starter for 3 H.P. motor	
D.O.L Starter for 5 H.P. motor	
Star/Delta (Close Transition) starter for 5 H.P. motor	
Star/Delta (Close Transition) starter for 7.5 H.P. motor	
Star/Delta (Close Transition) starter for 10 H.P. motor	
Star/Delta (Close Transition) starter for 12.5 H.P. motor	
Star/Delta (Close Transition) starter for 15 H.P. motor	

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Star/Delta (Close Transition) starter for 20 H.P. motor	
Star/Delta (Close Transition) starter for 25 H.P. motor	
Star/Delta (Close Transition) starter for 30 H.P. motor	
Auto-Transformer (Close Transition) starters for 25 H.P motor	
Auto-Transformer (Close Transition) starters for 30 H.P motor	
Solid State Starters as specified for the chillers for HP	

Specifier to delete or add to this list the SCP Type Nos.

S4.15 Subsidiary Control Panels: supplied and installed per piece as per Specification complete with meters, motor starter, etc. as specified.

Type 'A' ..... S$ .....

Type 'B' ..... S$ .....

Type 'C' ..... S$ .....

Type 'D' ..... S$ .....

Type 'E' ..... S$ .....

Type 'F' ..... S$ .....

Type 'G' ..... S$ .....

Type 'H' ..... S$ .....

Type 'J' ..... S$ .....

Type 'K' ..... S$ .....

Type 'L' ..... S$ .....

Type 'M' ..... S$ .....

Type 'N' ..... S$ .....

Type 'P' ..... S$ .....

Type 'Q' ..... S$ .....

Type 'R' ..... S$ .....

Type 'S' ..... S$ .....

Type 'T' ..... S$ .....

S4.16 Noise & Vibration Control

(a) Sound Attenuators

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Supplied and installed price per m^3 (cubic meter).

Cylindrical Type	S$……/$m^3$
Cylindrical with Pod Type	S$……/$m^3$
Rectangular Type	S$……/$m^3$
Rectangular Angled Type	S$……/$m^3$

(b) Sound Absorptive Internal Lining

Supplied and installed price for in duct cost per m^2 (square meter of developed duct, excluding sheet metal outer duct).

25mm thick - 48 kg/cu.m.	S$……/$m^2$
25mm thick - 64 kg/cu.m.	S$……/$m^2$
50mm thick - 48 kg/cu.m	S$……/$m^2$
50mm thick - 64 kg/cu.m	S$……/$m^2$

(c) Acoustic Enclosure

Supplied and installed price per m^2
(square meter of acoustical enclosure) S$……/$m^2$

(d) Neoprene Waffle Pads

Supplied and installed price for per m^2 (square meter) S$……/$m^2$

(e) Vibration Isolators

Supplied and installed unit price (S$) for the following:

	Unhoused Steel Springs				Restrained Steel Springs			
Rated Deflection in mm	25	50	75	100	25	50	75	100
Capacity 0 - 50 kg								
Capacity 50 - 200 kg								
Capacity 200 - 500 kg								
Capacity 500 - 1000kg								

S4.17 Additional/Alteration Works During Maintenance Period for Tenants' Fitting Out

Tenderers shall quote below the percentage increase to the unit rates quoted in items 1 to 12 for additional/alteration works during Maintenance Period for tenants' fitting out; for items where percentage increases are not quoted, it shall be assumed that the unit rates in items 1 to 12 will apply.

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Item nos. as in this Schedule 'D'	Percentage Increase (%)

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