

HVAC

INTERNATIONAL CIP LOUNGE_JAI T2_HVAC

Part II	HVAC									
	SECTION-"A" AIR-CONDITIONING SYSTEM									
1.0	EQUIPMENT									
					UOM	BOQ QTY	BOQ RATE	BOQ AMOUNT	RA-2 QTY	RA-2 AMOUNT
1.1	VENTILATION FANS									
1.1.1	INLINE FANS WITHOUT FILTER									
	Supply, installation, testing and commissioning of duct mounted IN-LINE FANS for exhaust air as shown in drawings. Each fan shall be complete with motor, mounting flanges, accessories like bird screen, fixed louvers and GI sheet canopy for weather protection as required. Quoted price shall be inclusive of electronic speed regulator and wiring between fan & speed regulator for single phase fans. Incase of 3 phase fans quoted price shall be inclusive of DOL starter panel with cabling between starter panel									
	Quoted prices shall be inclusive of all necessary supports by MS structural steel if required, hangers, clamp supports from walls, floors and ceiling with painting with one coat of primer and two coats of paint to supports of MS work.									
	Fan Selection arrangement shall be as follows:									
	Fan No.	Capacity (Cfm)	S.P (mmWG)	Area to be exhausted						
a.	IF-1(Circular)	300	16-17	Store	No	R/o	9,604.00			
	Contactor to check/calculate static pressure drop as per shop drawing.									
	TOTAL ITEM NO. 1 (EQUIPMENT)						Rs.	0.00		
2	AIR DISTRIBUTION									
2.1	Supply, installation and testing of SITE Fabricated GI sheet metal ducts as per IS-655 Standard in accordance with the approved shop drawings as required by the specifications. Quoted price shall be inclusive of all necessary supports by MS structural steel if required, hangers, clamp supports from walls, floors and ceiling including cutting holes and chases in brick, R.C.C. work, making good the same to original condition complete in all respects with painting with one coat of primer and two coats of paint to supports of MS work. Quoted price shall be inclusive of scaffolding work as required.									
	24 gauge galvanised sheet steel (0.63 mm)					225	1,440.60	3,24,135.00		
	12 gauge galvanised sheet steel (0.8 mm)					5	1,728.72	8,643.60		

1214
104
225
checked IPK
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52

Checked in RA-02

600	500	450	450	1800	1200	1200	1	216						
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2.1.4	18 gauge galvanised sheet steel (1.25 mm)	Sqm.	R/o	2,881.20			
2.1.5	Dismantling of existing supply air ducts which are supplied the existing AHU supply withing new development of CIP Lounge.	Sqm.	600	144.06	86,436.00	280.76 231.45	33,342.69
2.1.6	Dismantling of glass panel towards façade to run the exhaust & fresh air ducts.	Sqm.	50	192.08	9,604.00		
2.2	Supply, Installation, Testing and Balancing of flexible ducting comprising of inner as well as outer skin constructed out of aluminium & fibre glass insulation 25mm thick of minimum 24 kg/cu.m density insulation sandwiched in between. Duct should confirm to fire rating standards BS-476 part 5, 6 & 7. Flexible Ducts of following sizes as per approved shop drawings. specifications :						
2.2.1	350 mm dia.						
2.2.2	300 mm dia.	Mtr.	RO	1,920.80			
2.2.3	200 mm dia.	Mtr.	RO	1,824.76			800
2.2.4	150 mm dia.	Mtr.	RO	1,680.70			780
2.2.5	100 mm dia.	Mtr.	RO	1,440.60			740
		Mtr.	RO	1,344.60			700
							650
2.3	Supply, installation and testing of GI construction Opposed blade Volume control dampers within ducts to be provided with suitable ducts lever and quadrants for manual control of volume of air flow and for proper balancing of the air distribution system.	Sqm.	1.5	9,604.00	14,406.00	0	
2.4	Supply, installation, testing and balancing of powder coated Extruded Aluminium Supply Air Grilles with multiblade type key operated grille louver dampers in accordance with the approved shop drawings and specifications.	Sqm.	3.5	9,604.00	33,614.00	3.5 4.6	44,178.40
2.5	Supply, installation, testing and balancing of powder coated extruded Aluminium Exhaust/Return Air Grilles without multiblade type grille louver dampers	Sqm.	3	8163.4	24,490.20	2.5 1.96	16,000.26
2.6	Supply, installation, testing and balancing of Powder coated extruded aluminium construction square / round shape Supply Air Diffusers with removable core & anti smudge ring & key operated volume control dampers as per approved drawings and specifications.	Sqm.	RO		12965.4		
2.7	Supply, installation, testing and balancing of Powder coated extruded aluminium construction square / round shape Return Air Diffusers as per approved drawings and specifications.	Sqm.	RO		14406		
					0		
	Supply, installation, testing and balancing of Powder coated/Anodised extruded aluminium construction. Louvers with bird screen for exhaust air as per specifications and approved drawings.	Sqm.	0.5	9604	4,802.00	1.8	9,604.00

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600	500	450	350	1800	1200			X	X
450	450	450	450	2000	1200			0.0	0

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2.9	THERMAL INSULATION					0		
2.9.1	THERMAL INSULATION FOR DUCTWORK					0		
	Supply and Application of external thermal insulation of supply /return air ducting using closed cell elastomeric nitrile rubber insulation with class 'O' fire retardant properties as per the specifications and drawings. Quoted price shall be inclusive of adhesive, tapes as per specification. Insulation shall be provided with aluminium foil, factory laminated.					0		
	Insulation thickness/application will be as per approved shop drawing notes.					0		
a.	25 mm thick	Sqm	RO	2401				
b.	19 mm thick	Sqm	RO	2016.84				
c.	16 mm thick	Sqm	RO	1728.72				
d.	13 mm thick	Sqm	225	1200.56	2,70,126.00			
e.	9 mm thick	Sqm	RO	1152.48				
2.9.2	ACOUSTIC LINING OF DUCTS					0		
	Supply and Application of internal acoustic lining of supply air ducting using open cell nitrile rubber insulation with density within 140-180 Kg/m3 as per the approved shop drawings and specifications. Insulation material shall be bonded with the ducts using metal screw and washers to facilitate grip to the GI sheet.					0		
a.	10mm thick lining	SqM	20	1200.5	24,010.00			
b.	25mm thick lining	SqM	R/o	1920.8				
2.10	Air Transfer Grilles					0		
	Supply, Installation and testing of extruded aluminium powder coated air transfer grilles to be provided at the door of toilets/pantry.		SqM	0.2	14406	2,881.20		
	TOTAL ITEM NO. 2 (AIR DISTRIBUTION)						8,13,712.40	7,67,385.99
	TOTAL "SECTION-A"					Rs.	8,13,712.40	7,67,385.99

239.49
 + 258.5
 1315
 371.29
 25/2/24

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SECTION-B: KITCHEN VENTILATION SYSTEM (COOKING KITCHEN)

1.0	EQUIPMENT							
1.1.1	Supply, Installation, Testing and Commissioning of Dry Type Scrubber each comprising of extract air intake section, electrostatic precipitation technology, dry type air cleaner to remove oil, smoke and fumes from exhaust air, as per the Specifications.							

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Electrostatic section shall be made of 16/18 gauge galvanised sheet, high baked epoxy powder coated, washable type aluminum mesh filters, stainless steel spiked ionizers to create high voltage DC field, aluminum collector plates which should be alternatively charged positive and negative with large collecting area with 14" deep cell, to work as magnet for charged smoke and oil particles. Average efficiency of 90-95% in single pass as per ASHRAE test method. Electrostatic Precipitator should be able to charge particles from 0.01 micron to 10 microns through solid state power supply. Collector cell should be of permanent type and incorporate slide out facility for easy removal for cleaning. Power supplies shall be 100% solid state UL Listed, Module of capacity above 3000 CFM shall be equipped with Pulse width modulating (PWM) The system should be fitted with interlock switch for safety. The system should allow connection to a fan section to achieve 500 FPM velocity across the air cleaner. Vendor to include cost of MCB & single phase wiring for AC supply to the Scrubber.

Operating Voltage : 220V, 50 Hz
 Ionizing Voltage : 12.5 to 13 KVDC
 Collector Cell Voltage : 6 to 6.5 KVDC

The Scrubber Machines (EAC) shall be of following duty parameters :

M/c No	Capacity (CFM)
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AS-1	3000
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No	1	216090	2,16,090.00	1	216090
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1.1.2

Supply, installation, testing and commissioning of single width single inlet class I centrifugal fans for ventilation system. Each fan shall be complete with totally enclosed fan cooled motor, belt drive, pulley mounted on motor (IE2) with efficiency $\geq 60\%$ & fan shaft, belt guard, motor mount and vibration isolators. The motor shall be suitable for $415 \pm 10\%$ volts 3 phase 50 cycles, AC supply. The motor selected shall be energy efficient having efficiency at full load ranging between 82.5% to 92% in accordance with motor rating as per specification. Fan capacities shall be as follows:

M/c No	Capacity (CFM)	S.P (mm)	Motor (HP)	Area
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AS-1	3000	75	1.5	Kitchen
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No	1	105644	1,05,644.00	1	105644
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2.4	Supply, installation, testing and balancing of Powder coated extruded aluminium construction square / round shape Return Air Diffusers as per approved drawings and specifications.	Sqm.	RO	14406		
				0		
2.5	Supply, installation, testing and balancing of Powder coated/Anodised extruded aluminium construction. Louvers with bird screen for exhaust air as per specifications and approved drawings.	Sqm.	1	11524.8	11,524.80	<i>IL on</i>
				0		
2.6	Supply, installation, Testing of 125mm deep antivibration flexible joints at the outlet of air handling units/ductable split units//Inline fans. Flexible connections shall be constructed using imported fire retardant fabric with extruded aluminium frame/flange on both sides of approved make.	RM	1	4802	4,802.00	
				0		
2.7	THERMAL INSULATION			0		
				0		
2.7.1	THERMAL INSULATION OF DUCTS-(FOR AIR SCRUBBER DUCT)			0		
	(Using Factory Laminated fibre glass insulation)			0		
				0		
	Supply and Application of external thermal insulation of ducting using aluminium foil faced fibre glass insulation of density not less than 24Kg/CuM and aluminium foil thickness of 22 microns as per the specifications and drawings.			0		
a.	25mm thick	SqM	RO	960.4		
b.	50mm thick	SqM	RO	1440.6		
				0		
2.7.2	THERMAL INSULATION OF DUCTS-(FOR AIR SCRUBBER DUCT) - EXPOSED			0		
	(Using Factory Laminated fibre glass insulation)			0		
				0		
	Supply and Application of external thermal insulation of ducting using aluminium			0		
				0		
a.	25mm thick	SqM	RO	1200.5		
b.	50mm thick	SqM	RO	1920.8		
				0		
2.7.3	THERMAL INSULATION FOR EXPOSED DUCTS-AIR WASHER DUCT			0		
				0		
	Supply and Application of external thermal insulation of supply air ducting using closed cell elastomeric nitrile rubber insulation with class 'O' fire retardant properties as per the specifications and drawings. Quoted price shall be inclusive of adhesive, tapes as per specification. insulation shall be provided with necessary glass cloth & UV protection paint for ducts exposed to atmosphere as per specifications.			0		
				0		

...switch for stopping the fan.

For on/off/remote and local operation, 3 pole single throw switch shall be provided in each panel to facilitate override of the automatic operation.							
All starters shall be provided with suitable potential free contact for connections to the Building Automation System.							
All Cable trays shall be MS Powder coated and Conduits shall be MS.							
The number of control panels shall be as follows.							
3.1.2	KVF PANEL (Location: Terrace IP 65) For Scrubber, 1.5KW						
	Suitable rating MPCB along with 1.5 HP DOL starter						
	1 No. 25 Amp single Phase switch socket & control Cable for interlocking between scrubber & fan shall be included.		No	1	72030	72030	72030
					0		
3.1.3	Suitable Rating TP MPCB for 0.75 kW DOL Starter		No	1	14406	14406	14406
3.2	CABLING				0		
					0		
					0		
3.2.1	Supply, laying, affecting connections and Testing of the following sizes of 1.1 KV armoured PVC insulated aluminium/ copper conductor cables. Cables shall be inclusive of all clamps, saddles, screws, cable identification tags, cable terminal joints including terminal lugs, insulating tapes, affecting terminal connections to the equipment as per the specifications and as required. Quoted price shall be inclusive of perforated duly painted 2mm thick MS trays to be installed inside and GI trays to be installed outside exposed and 8SWG copper earth wire for all equipment except chillers for which 32mmx6mm GI strip shall be used. All cables shall be LSHF type.				0		
					0		
a.	3 C x 6 Sqmm cable (Copper)		RM	10	720.3	7,203.00	10 7203
b.	3 C x 4 Sqmm cable (Copper)		RM	50	672.28	33,614.00	50 33614
c.	3 C x 2.5 Sqmm cable (Copper)		RM	10	576.24	5,762.40	
d.	3 C x 2.5 Sqmm cable (Copper Control cabling)		RM	10	576.24	5,762.40	
e.	3 C x 1.5 Sqmm cable (Copper Control cabling)		RM	50	576.24	28,812.00	
Total						1,67,590	
TOTAL "SECTION-B"					Rs.	8,06,256	6,40,474

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JAIPUR AIRPORT LOUNGE HVAC M.B

S.NO	L-1	W-1	L-2	W-2	PARAMETER	H-1	H-2	AVERAGE	PIECES	24 G	22 G	20 G	18 G
SUPPLY AIR DUCT													
1	450	300	450	300	1500	2700	EX	2700	3	12.15	X	X	X
2	450	200	450	200	1300	2500	FA	2600	3	10.14	X	X	X
3	750	250	750	250	2000	1400		1400	8	22.4	X	X	X
4	300	250	300	250	1100	1350		1350	1	1.485	X	X	X
5	300	250	300	250	1100	2700		2700	1	2.97	X	X	X
6	750	250	750	250	2000	1400		1400	8	22.4	X	X	X
7	600	400	600	400	2000	750		750	1	1.5	X	X	X
8	600	400	600	400	2000	1100	IX	1100	1	2.2	X	X	X
9	850	250	850	250	2200	1400		1400	2	6.16	X	X	X
10	850	250	850	250	2200	600	IX	600	1	1.32	X	X	X
11	750	250	750	250	2000	1400		1400	2	5.6	X	X	X
12	750	250	750	250	2000	1650		1650	1	3.3	X	X	X
13	650	250	650	250	1800	2300		2300	2	8.28	X	X	X
14	450	200	450	200	1300	2700		2700	1	7.02	X	X	X
15	450	200	450	200	1300	1450		1450	1	1.885	X	X	X
16	500	600	500	600	2200	1300		1300	1	2.86	X	X	X
17	500	600	500	600	2200	1300		1300	1	2.86	X	X	X
18	850	250	850	250	2200	1950		1950	1	4.29	X	X	X
19	850	250	850	250	2200	1350	X	1350	1	2.97	X	X	X
20	850	250	850	250	2200	1600		1600	2	7.04	X	X	X
21	850	250	850	250	2200	2600		2600	1	5.72	X	X	X
22	650	230	650	250	1800	1600	X	1600	1	2.88	X	X	X
23	650	250	650	250	1800	1600		1600	2	5.76	X	X	X
24	650	250	650	250	1800	2700		2700	1	4.86	X	X	X
25	650	250	650	250	1800	850		850	1	1.53	X	X	X
26	850	250	850	250	2200	2700		2700	2	7.55	X	X	X
27	700	250	700	250	1900	1300		1300	1	2.73	X	X	X
28	700	250	700	250	1900	2700		2700	2	10.26	X	X	X
29	400	250	400	250	1300	1350		1350	1	2.565	X	X	X
30	400	250	400	250	1300	1250		1250	1	1.625	X	X	X
31	300	250	300	250	1100	1100		1100	1	1.21	X	X	X
32	400	250	400	250	1300	750		750	1	0.975	X	X	X
FRESH AIR DUCT													
1	450	300	450	300	1500	1950	1875	1950	1	2.925	X	X	X
2	450	300	450	300	1500	1300		1300	1	1.95	X	X	X
3	450	300	450	300	1500	1900	1825	1900	3	8.55	X	X	X
4	450	300	450	300	1500	1500		1500	2	4.5	X	X	X
5	450	300	450	300	1500	1600		1600	2	4.8	X	X	X
6	450	300	450	300	1500	2800	2650	2800	2	8.4	X	X	X
7	450	300	450	300	1500	1300		1300	2	3.9	X	X	X
8	450	200	450	200	1300	2800	2650	2800	2	7.28	X	X	X
9	450	200	450	200	1300	1300		1300	2	3.38	X	X	X
EXHAUST AIR DUCT													
1	450	300	450	300	1500	2800	2725	2800	2	8.4	X	X	X
2	450	450	450	450	1800	1300		1300	1	2.34	X	X	X
3	450	300	450	300	1500	1500	1350	1500	3	6.75	X	X	X
4	450	300	450	300	1500	1750	1700	1750	1	2.625	X	X	X
5	450	300	450	300	1500	1250		1250	3	5.625	X	X	X
6	450	300	450	300	1500	1400		1400	1	2.1	X	X	X
7	450	300	450	300	1500	1800	1675	1800	3	8.1	X	X	X
8	450	200	450	200	1300	2800		2800	2	7.28	X	X	X
9	450	200	450	200	1300	1400		1400	2	3.64	X	X	X
10	600	600	600	600	2400	600		600	3	4.32	X	X	X
EXHAUST LINE													
1	600	450	500	350	1800	1200		1200	1	2.16	X	X	X
2	600	500	450	450	2000	700		700	1	1.4	X	X	X
3	450	450	450	450	1800	500		500	1	0.9	X	X	X
4	450	450	450	450	1800	1000		1000	1	1.8	X	X	X
FRESH AIR LINE													
6	500	500	500	500	2000	500		500	1	1	X	X	X

Inside Bu
 10 mtr.
 3.5 mtr
 Glass side-air
 Toilet end esty
 25/2
 10/7
 10/7
 28/2

8	650	650	650	650	2600				1	1	X	X	X		
9	500	500	500	500	2000	1200	Corrected	1200	1	2.4	X	X	X		
10	500	300	450	300	1550	1200		1200	1	1.86	X	X	X		
11	450	450	450	450	1500	2500		2500	600	3.75	X	X	X		
BRANCHES	200x200	200	200	200	1000				1400						
12	500	150	500	150	1300	1500		1500	1	1.95	X	X	X		
A3	550	550	550	550	2200		Blank lot		1	1	X	X	X		
13	200	200	200	200	800	800		1000	900	1	0.72	X	X	X	
A4	200	200	200	200	800	1500			4500	1400	3	3.6	X	X	X
14	200	200	200	200	800	300			300	collar	2	0.51	X	X	X
15	250	200	200	200	850	300			1500	1400	1	1.2	X	X	X
A5	200	200	200	200	800	1500			900		2	1.53	X	X	X
16	300	150	250	150	850	800	1000		2600	250	1	2.08	X	X	X
A6	250	150	250	150	800	2600			300		2	1.05	X	X	X
17	750	150	700	150	1750	300			2600	2000	2	8.84	X	X	X
A7	700	150	700	150	1700	2600		700	700		1	0.63	X	X	X
18	300	150	300	150	900	2700			2700	2400	2	4.86	X	X	X
A8	300	150	300	150	900	2700			1200		3	4.68	X	X	X
19	250	200	250	200	850	200			200		1	0.17	X	X	X
A9	200	200	200	200	800	2500			2500	2300	2	4	X	X	X
20	700	150	700	150	1700	2600			500	600	2	0.8	X	X	X
A10	700	150	700	150	1700	2600			2500	2250	2	4	X	X	X
21	300	150	300	150	900	2700									
A11	300	150	300	150	900	2700									
22	500	150	500	150	1300	1200									
A12	500	150	500	150	1300	1200									
23	200	200	250	200	850	200									
A13	200	200	250	200	850	200									
24	200	200	200	200	800	2500									
A14	200	200	200	200	800	2500									
25	200	200	200	200	800	2500									
A15	200	200	200	200	800	2500									
26	200	200	200	200	800	2500									
A16	200	200	200	200	800	2500									
27	200	200	200	200	800	2500									
A17	200	200	200	200	800	2500									
28	200	200	200	200	800	2500									
A18	200	200	200	200	800	2500									
SUPPLY AIR DUCTING															
30	900	100	900	100	2000	1400	1200	1300	4	X	10.40	X	X	X	
31	700	100	700	100	1600	1200	1000	1100	900	2	3.52	X	X	X	
32	700	100	700	100	1600	2000		2000	1700	1	3.2	X	X	X	
33	700	100	700	100	1600	1000		1000	900	1	1.6	X	X	X	
34	500	100	500	100	1200	1500		1500	1400	2	3.6	X	X	X	
35	600	600	600	600	2400					1	1	X	X	X	
36	700	100	700	100	1600	800	600	700	S1	1	1.12	X	X	X	
37	700	100	700	100	1600	650	800	725	S2	1	1.16	X	X	X	
38	700	100	700	100	1600	1700	1500	1700	S6	2	5.44	X	X	X	
39	700	100	700	100	1600	1500	1500	1500	S7	2	4.8	X	X	X	
40	700	100	700	100	1600	1000	900	1000	S8	2	3.2	X	X	X	
FRESH AIR DUCT															
42	500	100	500	100	1200	600		600	D4	1	0.72	X	X	X	
43	500	100	500	100	1200	600	400	500	D5	1	0.6	X	X	X	
44	500	100	500	100	1200	2000		2000	A1	1	2.4	X	X	X	
45	500	100	500	100	1200	800		800	A2	1	0.96	X	X	X	
46	450	450	450	450	1800	1200	1200	1200	S	8	17.28	X	X	X	
47	500	600	500	600	2400	600		600	S	2	4.32	X	X	X	
48	500	600	500	600	2400	600		600	S	2	4.32	X	X	X	

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DP

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DP

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DP

DP

Uninstallation																
1	1300	700	1300	700	4000	1500		1500	14	X	84.00	X	X	X		
2	600	600	600	600	2400	1300		1300	4	X	12.48	X	X	X		
3	550	550	550	550	2200	1300		1300	2	X	5.72	X	X	X		
4	500	500	500	500	2000	2500		2500	4	X	20	X	X	X		
5	450	450	450	450	1800	2600		2600	2	X	9.36	X	X	X		
6	1200	550	1200	550	3500	1600		1600	3	X	16.80	X	X	X		
7	1100	500	1100	500	3200	1400		1400	5	X	22.40	X	X	X		
8	1300	700	1300	700	4000	1500		1500	10	X	60.00	X	X	X		
											47.56					
											183.2					

DP 10/15

Terrace
~~100 x 450 x 1100 - 1 No B ✓~~
~~650 x 450 x 1200 - 2 No B ✓~~
 300 x 450 x 2500 → 1 No B ✓
 450 x 450 x 1900 → 1 No B ✓
 600 x 450 x 550 → 1 No B ✓
 Taper 600 x 450 500 2 PR ✓
 350 x 350 500 - 1 PR ✓
 350 x 250 x 1000 - 2 PR ✓
 TOTAL SUPPLY AIR DUCTING PLUS FLANGES
 Blank cap. - 650 x 650 x 800 2 PR ✓

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But screen 2 PR ✓
 600 x 600 → 1
 200 x 200 → 1

Note: Scrubber door opening not properly, 90 deg reqd. DP

KITCHEN EXHAUSTION SYSTEM (COOKING AREA)		
AIR DISTRIBUTION		
2		
2.1.1	24 gauge galvanised sheet steel (0.63 mm)	82.89
2.1.2	22 gauge galvanised sheet steel (0.8 mm)	79.44
		162.33

① Grills:

- S1 ② ✓ 500 x 100 → 2 Nos.
- S2 ③ ✓ 700 x 100 → 9 Nos.
- S3 ④ ✓ 600 x 600 → 6 Nos.
- S4 ⑤ ✓ 400 x 150 → 1 Nos.
- S5 ⑥ ✓ 700 x 100 → 7 Nos.
- S6 ⑦ ✓ 600 x 600 → 6 Nos. Defuser



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