CMRL - Construction of Metro Headquarters Building and other Metro Rail Amenities at Anna Salai, Nandanam, Tender" - Reg.
List of Queries and reply part -2 dt 29-07-2015

S.NO	TENDERER'S QUERY	CMRL / CRN REPLY
1	As per summary sheet of the BOQ the Bidder has to quote separtely for Tamilnadu VAT. Please confirm whether, the Bidders has to include labour cess and Service Tax in their bid or it is exempted.	Please refer Conditions of Contract clause no 9.1iv about tax structure to be considered in the quoted rates. As per this clasue the subject project is exempted from services tax and cess as per CMRL mega Notification no: 25 of 2012.
2	Kindly confirm whether the Drawings issued earlier before Amendments are also to be submitted along with the Bid	Please refer Qualification Criteria clause 7.5 wherein All Tender drawings duly signed and affixed with seal of the Tenderer shall be returned in a separate Cover.
3	The quantity and unit against the item no.32 of the Boq in sub head Interior not found mentioned in the Boq. Please clarify.	Please consider 150 Sqm against item no 32 of Civil works
4	The quantity and unit against the item no.62 of the Boq in sub head civil works not found mentioned in the Boq. Please clarify.	Please consider 1170.62 sqm of area against item no 62 of civil works. Please note that the waterproofing to be carried at bottom of sunken portion and four side walls as well as shown in the drawing and measurement will be considered only plan area of the sunken portion.
5	As per page 10 (tender form) the bidder has to submit performance bond equivalent to 5% of contract whereas as per the Clause No.20 at page 29 under performance Guarantee the bidder has to furnish 10% contract value in the shape of BG. Please clarify the above.	Please consider 5% of the contract Value for the due performance of the contract under the terms of conditions contract as per Tender form point no 5. Kindly amend clause no 20.1 as 5% in place of 10%.
6	The Head Quarter Building should be Green Building. Kindly clarify who will pay the Charges against certification of the Building as Green Building.	All assiatance in the form of submission of various documents as required by LEED is the responsibility of the Contractor and the submission, liasion will be carried out by the Employer's representative and the payment to the Authority concerned will be by the Employer.
7	The steel reinforcement as per item No.1 of BOQ at Page -31 is excluded from the item whereas as per page 6 of the Boq at S.No.4 (Under preamble Pile Work) it is Supplying, fabricating, tying, transporting and lowering in position the reinforcement steel of Grade specified or Mild steel including tying with binding wire made out of 18 gauge G.I. annealed wire as specified in the Bill of Quantities elsewhere. Necessary welding for lap the reinforcement shall comply with IS requirement. Kindly clarify.	Please ignore the clause no 4 of preamble to Bill of quantities. As per BOQ item no .1, Steel will be measured under separate item no 14.a.
8	The length of each pile may kindly be furnished as the same is not clear from the BOQ as well as from drawings.	Approximately 30m depth of pile for each diameter.
9	The quantity and unit against the item No.62 of the Boq not found mentioned in the BOQ. Please clarify.	Please consider 1170.62 sqm of area against item no 62 of civil works. Please note that the waterproofing to be carried at bottom of sunken portion and four side walls as well as shown in the drawing and measurement will be considered only plan area of the sunken portion.
10	As per Clause No.9.6.ii. At page 21 of the NIT "Minimum qualification Criteria for Sub-Contractors to be appointed by the Main Contractor for 8 (eight packages) is to be furnished by the Bidders along with the bid which is not as per CVC guidelines". Sub-contractor cannot share their financial and technical credentials to Main contractor and therefore ay proposed sub-contractor name during tender stage shall restrict the competitiveness of open tender. Request that the Name of Sub-Contractors' along with their credentials may not be stressed upon and same will be submitted after award of work.	As this project is composite and unique nature of services, no change in tender conditions. Tenderer is advised to nominate the sub contractors as per Clause no 9.6 & 9.7.
11	As per Clause 9/8.viii "The Contractor shall not grant any Subcontractor any extension of the period within the sub-contract work or (where the Subcontract works are to be completed in sections), Please note that the Contractual guidelines obligation lies with Main Contractor and their Sub-Contractor and therefore Chennai Metro Rail Limited authority should not correct this contractual obligation in extension of time period.	As this project is composite and unique nature of services, no change in tender conditions as per CMRL.
12	In the Schedule-I Summary sheet at S.No.K of Sub head painting in mentioned but as per Bill of Quantities there is not painting sub head. Please clarify the same.	Painting Item is shifted under Interior scope of works hence the line item as mentioned under Schedule 1 K of Civil works is stands cancelled.
13	In the Bill of Quantities at number of places the nomenclature of the item alongwith unit is mentioned but quantities are not mentioned. As per CVC guidelines the Rate only items are not to mentioned in the BOQs. Please clarify the above or bidders have to fill the rates only.	Tenderer is hereby advised that rates for the items wherever quantity is not given in the Bill of Quantities need not to be quoted.
14	In the Bill of Quantities under IT Equipment with accessories for ACCESS & CCTV the quantities are not mentioned please clarify whether the rates only are to be filled by the bidder.	Quantities for IT equipment with accessories for Access & CCTV have already furnished in the Revised Bill of Quantities excpet srl no13 under IP based CCTV Camera and its quantity is 1 (one) set. Please refer Technical specifications along with relevant item of work prior to quote each item.
15	The documents revised have been updated by you on 10.07.2015 and the date of submission of tender is fixed 11.08.2015. We have to contact the specialized agencies for their offers which is a time taking. Request that the date of submission of the tender be extended and be scheduled by the end of August, 2015.	As the tender documents was issued with effect from 08-05-2015 and Time line for completion of project is vital hence **no** extension of time for submission of tender documents is granted. The submission for filled tender document stands 11-08-2015 as per GCC.
16	Mobilisation Advance	As per Item no 9.2.iv, 10% of tendered amount at 13% simple interest shall be paid as Mobilisation advance by the Employer against submission of BG by the Tenderer and the same will be recovered in five equal installments. The percentage of interest as mentioned under Form of tender - Appendix -8 - GCC srl no 17 (a) shall be 13% only.

CONSTRUCTION OF METRO HEADQUARTERS BUILDING AND OTHER METRO RAIL AMENITIES AT NANDANAM,CHENNAI

ANNEXURE - 6 , HVAC - I/O SUMMARY

PLC - 1

GF AHU - 1 (Atrium, Corridor, Hub, Mail Room)

Sl.No	Signal Description	Soft Points	QTY	IO POINTS				Severity		Remarks
			1	AO	AI	DO	DI	High	Low	
1	Pre-Filter dust status						1			BMS to Provide Air DP Switch
2	Bag filter dust status						1			BMS to Provide Air DP Switch
3	PIBCV control valve - control for cooling coil			1						BMS to Provide modulating type Valve and actuator
4	PIBCV PID control valve - feedback for cooling coil				1					BMS to Provide modulating type Valve and actuator
5	SA duct temp sensor				2					BMS to Provide combined Duct type Temp sensor
6	RA duct type temp sensor				2					BMS to Provide combined Duct type Temp sensor
7	AHU Fan On /Off Command					1				Potential Free Contact from BMS to Electrical Starter panel
8	AHU Fan On /Off Status						1			BMS to Provide Air DP Switch
9	AHU Panel Incomer ACB On/Off Status						2			potential free contact from AHU Panel to BMS
10	AHU Panel Incomer ACB Trip Status						1			potential free contact from AHU Panel to BMS
11	VFD - Trip status						1			potential Free Contact from BMS
12	AHU Fan VFD - Speed Control			1						0-10VDC from BMS to VFD
13	AHU Fan VFD - Status feed back				1					0-10VDC from BMS to VFD
14	AHU Fan Auto/Manual						1			Potential Free Contact to BMS from Electrical Starter panel
15	AHU Fan Bypass (VFD)						1			
16	Inlet & Out let Immersion type Temp Sensor				2					
17	CO2 Sensor				1					
18	Fa damper position status						1			
19	Cfm Sensor				1					
20	VAV'S Cfm			1						
21	VFD - Softpoint status		10							
	Sub Total		**10**	**3**	**10**	**1**	**10**			
	Spare 20%			1	2	0	2			
	Total I/O Points		**10**	**4**	**12**	**1**	**12**			

GF AHU - 2 (Passage)

Sl.No	Signal Description	Soft Points	QTY	IO POINTS				Severity		Remarks
			1	AO	AI	DO	DI	High	Low	
1	Pre-Filter dust status						1			BMS to Provide Air DP Switch
2	Bag filter dust status						1			BMS to Provide Air DP Switch
3	PIBCV control valve - control for cooling coil			1						BMS to Provide modulating type Valve and actuator
4	PIBCV PID control valve - feedback for cooling coil				1					BMS to Provide modulating type Valve and actuator
5	SA duct temp sensor				2					BMS to Provide combined Duct type Temp sensor
6	RA duct type temp sensor				2					BMS to Provide combined Duct type Temp sensor
7	AHU Fan On /Off Command					1				Potential Free Contact from BMS to Electrical Starter panel
8	AHU Fan On /Off Status						1			BMS to Provide Air DP Switch
9	AHU Panel Incomer ACB On/Off Status						2			potential free contact from AHU Panel to BMS
10	AHU Panel Incomer ACB Trip Status						1			potential free contact from AHU Panel to BMS
11	VFD - Trip status						1			potential Free Contact from BMS
12	AHU Fan VFD - Speed Control			1						0-10VDC from BMS to VFD
13	AHU Fan VFD - Status feed back				1					0-10VDC from BMS to VFD
14	AHU Fan Auto/Manual						1			Potential Free Contact to BMS from Electrical Starter panel
15	AHU Fan Bypass (VFD)						1			
16	Inlet & Out let Immersion type Temp Sensor				2					
17	CO2 Sensor				1					
18	Fa damper position status						1			
19	Cfm Sensor				1					
20	VAV'S Cfm			1						
21	VFD - Softpoint status		10							
	Sub Total		**10**	**3**	**10**	**1**	**10**			
	Spare 20%			1	2	0	2			
	Total I/O Points		**10**	**4**	**12**	**1**	**12**			

GF AHU - 3 (GYM)									
Sl.No	Signal Description	Soft Points	QTY	IO POINTS				Severity		Remarks
			1	AO	AI	DO	DI	High	Low	
1	Pre-Filter dust status						1			BMS to Provide Air DP Switch
2	Bag filter dust status						1			BMS to Provide Air DP Switch
3	PIBCV control valve - control for cooling coil			1						BMS to Provide modulating type Valve and actuator
4	PIBCV PID control valve - feedback for cooling coil				1					BMS to Provide modulating type Valve and actuator
5	SA duct temp sensor				2					BMS to Provide combined Duct type Temp sensor
6	RA duct type temp sensor				2					BMS to Provide combined Duct type Temp sensor
7	AHU Fan On /Off Command					1				Potential Free Contact from BMS to Electrical Starter panel
8	AHU Fan On /Off Status						1			BMS to Provide Air DP Switch
9	AHU Panel Incomer ACB On/Off Status						2			potential free contact from AHU Panel to BMS
10	AHU Panel Incomer ACB Trip Status						1			potential free contact from AHU Panel to BMS
11	VFD - Trip status						1			potential Free Contact from BMS
12	AHU Fan VFD - Speed Control			1						0-10VDC from BMS to VFD
13	AHU Fan VFD - Status feed back				1					0-10VDC from BMS to VFD
14	AHU Fan Auto/Manual						1			Potential Free Contact to BMS from Electrical Starter panel
15	AHU Fan Bypass (VFD)						1			
16	Inlet & Out let Immersion type Temp Sensor				2					
17	CO2 Sensor				1					
18	Fa damper position status						1			
19	Cfm Sensor				1					
20	VAV'S Cfm			1						
21	VFD - Softpoint status		10							
	Sub Total		**10**	**3**	**10**	**1**	**10**			
	Spare 20%			1	2	0	2			
	Total I/O Points		**10**	**4**	**12**	**1**	**12**			

GF CSU - 1 & 2 (Cafeteria)									
Sl.No	Signal Description	Soft Points	QTY	IO POINTS					Remarks
			2	AO	AI	DO	DI		
1	CSU Fan ON/OFF Command					2			Potential Free Contact from BMS to Electrical Starter panel
2	CSU Fan Auto/Manual Status						2		Potential Free Contact to BMS from Electrical Starter panel
3	CSU Fan ON/OFF Status						2		BMS Vendor to Provide Air DP Switch
4	CSU Filter Status						2		BMS Vendor to Provide Air DP Switch
5	SA duct temp sensor				2				BMS to Provide combined Duct type Temp sensor
6	Return air temperature monitoring				2				BMS Vendor to Provide Duct type temperature sensor
7	PIBCV Valve control			1			2		BMS Vendor to Provide modulating type Valve and actuator
	Sub Total		**0**	**1**	**4**	**2**	**8**		
	Spare 20%			0	1	0	2		
	Total I/O Points		**0**	**1**	**5**	**2**	**10**		

GF CASSETTE - 3, 4, 5 & 6 (Doctor room,Medical room,Gents &Ladies rest room)									
Sl.No	Signal Description	Soft Points	QTY	IO POINTS					Remarks
			4	AO	AI	DO	DI		
1	CASSETTE UNIT Fan ON/OFF Command					4			Potential Free Contact from BMS to Electrical Starter panel
2	CASSETTE UNIT Fan Auto/Manual Status						4		Potential Free Contact to BMS from Electrical Starter panel
3	CASSETTE UNIT Fan ON/OFF Status						4		BMS Vendor to Provide Air DP Switch
4	PIBCV Valve control			4					BMS Vendor to Provide modulating type Valve and actuator
	Sub Total		**0**	**4**	**0**	**4**	**8**		
	Spare 20%			1	0	1	2		
	Total I/O Points		**0**	**5**	**0**	**5**	**10**		

GF CASSETTE - 7 (Green room)									
Sl.No	Signal Description	Soft Points	QTY	IO POINTS					Remarks
			1	AO	AI	DO	DI		
1	CASSETTE UNIT Fan ON/OFF Command					1			Potential Free Contact from BMS to Electrical Starter panel

2	CASSETTE UNIT Fan Auto/Manual Status						1			Potential Free Contact to BMS from Electrical Starter panel
3	CASSETTE UNIT Fan ON/OFF Status						1			BMS Vendor to Provide Air DP Switch
4	PIBCV Valve control			1						BMS Vendor to Provide modulating type Valve and actuator
	Sub Total		**0**	**1**	**0**	**1**	**2**			
	Spare 20%			0	0	0	0			
	Total I/O Points		**0**	**1**	**0**	**1**	**2**			

GF AHU - 4 (STUDIO)										
Sl.No	**Signal Description**	**Soft Points**	**QTY**	**IO POINTS**				**Severity**		**Remarks**
			1	**AO**	**AI**	**DO**	**DI**	**High**	**Low**	
1	Pre-Filter dust status						1			BMS to Provide Air DP Switch
2	Bag filter dust status						1			BMS to Provide Air DP Switch
3	PIBCV control valve - control for cooling coil			1						BMS to Provide modulating type Valve and actuator
4	PIBCV PID control valve - feedback for cooling coil				1					BMS to Provide modulating type Valve and actuator
5	SA duct temp sensor				1					BMS to Provide combined Duct type Temp sensor
6	RA duct type temp sensor				1					BMS to Provide combined Duct type Temp sensor
7	AHU Fan On /Off Command					1				Potential Free Contact from BMS to Electrical Starter panel
8	AHU Fan On /Off Status						1			BMS to Provide Air DP Switch
9	AHU Panel Incomer ACB On/Off Status						2			potential free contact from AHU Panel to BMS
10	AHU Panel Incomer ACB Trip Status						1			potential free contact from AHU Panel to BMS
11	VFD - Trip status						1			potential Free Contact from BMS
12	AHU Fan VFD - Speed Control			1						0-10VDC from BMS to VFD
13	AHU Fan VFD - Status feed back				1					0-10VDC from BMS to VFD
14	AHU Fan Auto/Manual						1			Potential Free Contact to BMS from Electrical Starter panel
15	AHU Fan Bypass (VFD)						1			
16	Inlet & Out let Immersion type Temp Sensor				1					
17	CO2 Sensor				1					
18	Fa damper position status						1			
19	Cfm Sensor				1					
20	VAV'S Cfm			1						
21	VFD - Softpoint status		10							
	Sub Total		**10**	**3**	**7**	**1**	**10**			
	Spare 20%		0	1	1	0	2			
	Total I/O Points		**10**	**4**	**8**	**1**	**12**			

GF CASSETTE - 8 (HUB room)										
Sl.No	**Signal Description**	**Soft Points**	**QTY**	**IO POINTS**						**Remarks**
			1	**AO**	**AI**	**DO**	**DI**			
1	CASSETTE UNIT Fan ON/OFF Command					1				Potential Free Contact from BMS to Electrical Starter panel
2	CASSETTE UNIT Fan Auto/Manual Status						1			Potential Free Contact to BMS from Electrical Starter panel
3	CASSETTE UNIT Fan ON/OFF Status						1			BMS Vendor to Provide Air DP Switch
4	PIBCV Valve control			1						BMS Vendor to Provide modulating type Valve and actuator
	Sub Total		**0**	**1**	**0**	**1**	**2**			
	Spare 20%			0	0	0	0			
	Total I/O Points		**0**	**1**	**0**	**1**	**2**			

Total I/O Points Floor Wise - Grnd flr	40	23	49	14	72	

FF AHU - 1 (Left Wing)

Sl.No	Signal Description	Soft Points	QTY	IO POINTS						Remarks
			1	AO	AI	DO	DI			
1	Pre-Filter dust status						1			BMS to Provide Air DP Switch
2	Bag filter dust status						1			BMS to Provide Air DP Switch
3	PIBCV control valve - control for cooling coil			1						BMS to Provide modulating type Valve and actuator
4	PIBCV PID control valve - feedback for cooling coil				1					BMS to Provide modulating type Valve and actuator
5	SA duct temp sensor				2					BMS to Provide combined Duct type Temp sensor
6	RA duct type temp sensor				2					BMS to Provide combined Duct type Temp sensor
7	AHU Fan On /Off Command					1				Potential Free Contact from BMS to Electrical Starter panel
8	AHU Fan On /Off Status						1			BMS to Provide Air DP Switch
9										
10										
11	VFD - Trip status						1			potential Free Contact from BMS
12	AHU Fan VFD - Speed Control			1						0-10VDC from BMS to VFD
13	AHU Fan VFD - Status feed back				1					0-10VDC from BMS to VFD
14	AHU Fan Auto/Manual						1			Potential Free Contact to BMS from Electrical Starter panel
15	AHU Fan Bypass (VFD)						1			
16	Inlet & Out let Immersion type Temp Sensor				2					
17	CO2 Sensor				1					
18	Fa damper position status						1			
19	Cfm Sensor				1					
20	VAV'S Cfm			1						
21	VFD - Softpoint status		10							
	Sub Total		**10**	**3**	**10**	**1**	**7**			
	Spare 20%			1	2	0	1			
	Total I/O Points		**10**	**4**	**12**	**1**	**8**			

FF AHU - 2 (Right Wing)

Sl.No	Signal Description	Soft Points	QTY	IO POINTS						Remarks
			1	AO	AI	DO	DI			
1	Pre-Filter dust status						1			BMS to Provide Air DP Switch
2	Bag filter dust status						1			BMS to Provide Air DP Switch
3	PIBCV control valve - control for cooling coil			1						BMS to Provide modulating type Valve and actuator
4	PIBCV PID control valve - feedback for cooling coil				1					BMS to Provide modulating type Valve and actuator
5	SA duct temp sensor				2					BMS to Provide combined Duct type Temp sensor
6	RA duct type temp sensor				2					BMS to Provide combined Duct type Temp sensor
7	AHU Fan On /Off Command					1				Potential Free Contact from BMS to Electrical Starter panel
8	AHU Fan On /Off Status						1			BMS to Provide Air DP Switch
9	AHU Panel Incomer ACB On/Off Status						2			potential free contact from AHU Panel to BMS
10	AHU Panel Incomer ACB Trip Status						1			potential free contact from AHU Panel to BMS
11	VFD - Trip status						1			potential Free Contact from BMS
12	AHU Fan VFD - Speed Control			1						0-10VDC from BMS to VFD
13	AHU Fan VFD - Status feed back				1					0-10VDC from BMS to VFD
14	AHU Fan Auto/Manual						1			Potential Free Contact to BMS from Electrical Starter panel
15	AHU Fan Bypass (VFD)						1			
16	Inlet & Out let Immersion type Temp Sensor				2					
17	CO2 Sensor				1					
18	Fa damper position status						1			
19	Cfm Sensor				1					
20	VAV'S Cfm			1						
21	VFD - Softpoint status		10							
	Sub Total		**10**	**3**	**10**	**1**	**10**			
	Spare 20%			1	2	0	2			
	Total I/O Points		**10**	**4**	**12**	**1**	**12**			

FF - HRW - 1

Sl.No	Signal Description	Soft Points	QTY	IO POINTS						Remarks
			1	AO	AI	DO	DI			

1	HRW TFA Supply Air Fans ON/OFF Command						1			IBMS vendor shall be wire the Potential free contact from chiller panel to IBMS.
2	HRW TFA Supply Air Fans ON/OFF Status					1				
3	HRW TFA Supply Auto/Manual staus					1				
4	HRW TFA Supply Trip staus					1				
5	VFD Speed control command for Supply air fan				1					
6	VFD Speed control feedback status for Supply air fan			1						
7	HRW TFA Exhaust Air Fans ON/OFF Command						1			
8	HRW TFA Exhaust Air Fans ON/OFF Status					1				
9	HRW TFA Exhaust Auto/Manual status					1				
10	HRW TFA Supply Trip staus					1				
11	VFD Speed control command for Exhaust Air Fans				1					
12	VFD Speed control feedback status for Exhaust Air Fans			1						
13	HRW Wheel ON/OFF Command						1			
14	HRW Wheel ON/OFF Status					1				
15	HRW Wheel Auto/Manual status					1				
16	HRW Wheel Trip Status					1				
17	Supply Air Temperature leaving Wheel			1						IBMS vendor to provide the Field devises. Cabling provided between Field devices to PLC Panel
18	Return Air Temperature Entering Wheel			1						
19	Differential Pressure Switch across filter					1				
20	Outdoor Temperatue sensor (1no. Sufficient for 2 nos HRW)			1						
21	Outdoor CO2 sensor (1no. Sufficient for 2 nos HRW)			1						
22	Duct static pressure sensor in Supply air fan			1						
23	Fire Status and Damper Status					3				
24	HRW - VFD Trip Status						1			
	Sub Total		**0**	**7**	**2**	**13**	**4**			
	Spare 20%			1	0	3	1			
	Total I/O Points		**0**	**8**	**2**	**16**	**5**			

FF - HRW - 2(Auditorium & Stage)

Sl.No	Signal Description	Soft Points	QTY	IO POINTS						Remarks
			1	AO	AI	DO	DI			
1	HRW TFA Supply Air Fans ON/OFF Command						1			IBMS vendor shall be wire the Potential free contact from chiller panel to IBMS.
2	HRW TFA Supply Air Fans ON/OFF Status					1				
3	HRW TFA Supply Auto/Manual staus					1				
4	HRW TFA Supply Trip staus					1				
5	VFD Speed control command for Supply air fan				1					
6	VFD Speed control feedback status for Supply air fan			1						
7	HRW TFA Exhaust Air Fans ON/OFF Command						1			
8	HRW TFA Exhaust Air Fans ON/OFF Status					1				
9	HRW TFA Exhaust Auto/Manual status					1				
10	HRW TFA Supply Trip staus					1				
11	VFD Speed control command for Exhaust Air Fans				1					
12	VFD Speed control feedback status for Exhaust Air Fans			1						
13	HRW Wheel ON/OFF Command						1			
14	HRW Wheel ON/OFF Status					1				
15	HRW Wheel Auto/Manual status					1				
16	HRW Wheel Trip Status					1				
17	Supply Air Temperature leaving Wheel			1						IBMS vendor to provide the Field devises. Cabling provided between Field devices to PLC Panel
18	Return Air Temperature Entering Wheel			1						
19	Differential Pressure Switch across filter					1				
20	Outdoor Temperatue sensor (1no. Sufficient for 2 nos HRW)			1						
21	Outdoor CO2 sensor (1no. Sufficient for 2 nos HRW)			1						
22	Duct static pressure sensor in Supply air fan			1						
23	Fire Status and Damper Status					3				
24	HRW - VFD Trip Status						1			
	Sub Total		**0**	**7**	**2**	**13**	**4**			
	Spare 20%			1	0	3	1			
	Total I/O Points		0	**8**	**2**	**16**	**5**			

FF PAC - 1 & 2 (Server Room)

Sl.No	Signal Description	Soft Points	QTY	IO POINTS						Remarks
			2	AO	AI	DO	DI			
1	Pre-Filter dust status						2			BMS to Provide Air DP Switch

2	Bag filter dust status						2			BMS to Provide Air DP Switch
3	PIBCV control valve - control for cooling coil			2						BMS to Provide modulating type Valve and actuator
4	PIBCV PID control valve - feedback for cooling coil				2					BMS to Provide modulating type Valve and actuator
5	SA duct temp sensor				4					BMS to Provide combined Duct type Temp sensor
6	RA duct type temp sensor				4					BMS to Provide combined Duct type Temp sensor
7	AHU Fan On /Off Command					2				Potential Free Contact from BMS to Electrical Starter panel
8	AHU Fan On /Off Status						2			BMS to Provide Air DP Switch
9	VFD - Trip status						2			potential Free Contact from BMS
10	AHU Fan VFD - Speed Control			2						0-10VDC from BMS to VFD
11	AHU Fan VFD - Status feed back				2					0-10VDC from BMS to VFD
12	AHU Fan Auto/Manual						2			Potential Free Contact to BMS from Electrical Starter panel
13	AHU Fan Bypass (VFD)						2			
14	Inlet & Out let Immersion type Temp Sensor				4					
15	CO2 Sensor				2					
16	Fa damper position status						2			
17	Cfm Sensor				2					
18	VAV'S Cfm			2						
	Sub Total		**0**	**6**	**20**	**2**	**14**			
	Spare 20%			1	4	0	3			
	Total I/O Points		**0**	**7**	**24**	**2**	**17**			

FF Dx Split - 1 (UPS Room)

Sl.No	Signal Description	Soft Points	QTY	IO POINTS						Remarks
			1	AO	AI	DO	DI			
1	Fan ON/OFF Command					1				Potential Free Contact from BMS to Electrical Starter panel
2	Fan Auto/Manual Status						1			Potential Free Contact to BMS from Electrical Starter panel
3	Fan ON/OFF Status						1			BMS Vendor to Provide Air DP Switch
4	Filter Status						1			BMS Vendor to Provide Air DP Switch
5	SA duct temp sensor				1					BMS to Provide combined Duct type Temp sensor
6	Return air temperature monitoring				1					BMS Vendor to Provide Duct type temperature sensor
7	PIBCV Valve control			1			1			BMS Vendor to Provide modulating type Valve and actuator
8	FF Dx Split - 1 Softpoints		20							
	Sub Total		**20**	**1**	**2**	**1**	**4**			
	Spare 20%			0	0	0	1			
	Total I/O Points		**20**	**1**	**2**	**1**	**5**			

Total I/O Points Floor Wise - First flr	**30**	**32**	**55**	**37**	**52**	

Total I/O Points for PLC - 1	**30**	**55**	**104**	**52**	**124**	

RPU / PLC - 2

SF AHU 1 & 2 - (Com. Equipment Room - 1)

Sl.No	Signal Description	Soft Points	QTY	IO POINTS						Remarks
			2	AO	AI	DO	DI			
1	Pre-Filter dust status						2			BMS to Provide Air DP Switch
2	Bag filter dust status						2			BMS to Provide Air DP Switch
3	PIBCV control valve - control for cooling coil			2						BMS to Provide modulating type Valve and actuator
4	PIBCV PID control valve - feedback for cooling coil				2					BMS to Provide modulating type Valve and actuator
5	SA duct temp sensor				4					BMS to Provide combined Duct type Temp sensor
6	RA duct type temp sensor				4					BMS to Provide combined Duct type Temp sensor
7	AHU Fan On /Off Command					2				Potential Free Contact from BMS to Electrical Starter panel
8	AHU Fan On /Off Status						2			BMS to Provide Air DP Switch
9	AHU Panel Incomer ACB On/Off Status						2			potential free contact from AHU Panel to BMS
10	AHU Panel Incomer ACB Trip Status						1			potential free contact from AHU Panel to BMS
11	VFD - Trip status						2			potential Free Contact from BMS
12	AHU Fan VFD - Speed Control			2						0-10VDC from BMS to VFD
13	AHU Fan VFD - Status feed back				2					0-10VDC from BMS to VFD
14	AHU Fan Auto/Manual						2			Potential Free Contact to BMS from Electrical Starter panel
15	AHU Fan Bypass (VFD)						2			
16	Inlet & Out let Immersion type Temp Sensor				4					
17	CO2 Sensor				2					
18	Fa damper position status						2			
19	Cfm Sensor				2					
20	VAV'S Cfm			2						
21	VFD - Softpoint status		10							
	Sub Total		**10**	**6**	**20**	**2**	**17**			
	Spare 20%			1	4	0	3			
	Total I/O Points		**10**	**7**	**24**	**2**	**20**			

SF AHU - 3 (Top Wing)

Sl.No	Signal Description	Soft Points	QTY	IO POINTS						Remarks
			1	AO	AI	DO	DI			
1	Pre-Filter dust status						1			BMS to Provide Air DP Switch
2	Bag filter dust status						1			BMS to Provide Air DP Switch
3	PIBCV control valve - control for cooling coil			1						BMS to Provide modulating type Valve and actuator
4	PIBCV PID control valve - feedback for cooling coil				1					BMS to Provide modulating type Valve and actuator
5	SA duct temp sensor				2					BMS to Provide combined Duct type Temp sensor
6	RA duct type temp sensor				2					BMS to Provide combined Duct type Temp sensor
7	AHU Fan On /Off Command					1				Potential Free Contact from BMS to Electrical Starter panel
8	AHU Fan On /Off Status						1			BMS to Provide Air DP Switch
9	AHU Panel Incomer ACB On/Off Status						2			potential free contact from AHU Panel to BMS
10	AHU Panel Incomer ACB Trip Status						1			potential free contact from AHU Panel to BMS
11	VFD - Trip status						1			potential Free Contact from BMS
12	AHU Fan VFD - Speed Control			1						0-10VDC from BMS to VFD
13	AHU Fan VFD - Status feed back				1					0-10VDC from BMS to VFD
14	AHU Fan Auto/Manual						1			Potential Free Contact to BMS from Electrical Starter panel
15	AHU Fan Bypass (VFD)						1			
16	Inlet & Out let Immersion type Temp Sensor				2					
17	CO2 Sensor				1					
18	Fa damper position status						1			
19	Cfm Sensor				1					
20	VAV'S Cfm			1						
21	VFD - Softpoint status		10							
	Sub Total		**10**	**3**	**10**	**1**	**10**			
	Spare 20%			1	2	0	2			
	Total I/O Points		**10**	**4**	**12**	**1**	**12**			

SF AHU - 4 (Left Wing)

Sl.No	Signal Description	Soft Points	QTY	IO POINTS						Remarks
			1	AO	AI	DO	DI			
1	Pre-Filter dust status						1			BMS to Provide Air DP Switch
2	Bag filter dust status						1			BMS to Provide Air DP Switch
3	PIBCV control valve - control for cooling coil			1						BMS to Provide modulating type Valve and actuator
4	PIBCV PID control valve - feedback for cooling coil				1					BMS to Provide modulating type Valve and actuator
5	SA duct temp sensor				2					BMS to Provide combined Duct type Temp sensor
6	RA duct type temp sensor				2					BMS to Provide combined Duct type Temp sensor
7	AHU Fan On /Off Command					1				Potential Free Contact from BMS to Electrical Starter panel
8	AHU Fan On /Off Status						1			BMS to Provide Air DP Switch
9	AHU Panel Incomer ACB On/Off Status						2			potential free contact from AHU Panel to BMS
10	AHU Panel Incomer ACB Trip Status						1			potential free contact from AHU Panel to BMS
11	VFD - Trip status						1			potential Free Contact from BMS
12	AHU Fan VFD - Speed Control			1						0-10VDC from BMS to VFD
13	AHU Fan VFD - Status feed back				1					0-10VDC from BMS to VFD
14	AHU Fan Auto/Manual						1			Potential Free Contact to BMS from Electrical Starter panel
15	AHU Fan Bypass (VFD)						1			
16	Inlet & Out let Immersion type Temp Sensor				2					
17	CO2 Sensor				1					
18	Fa damper position status						1			
19	Cfm Sensor				1					
20	VAV'S Cfm			1						
21	VFD - Softpoint status		10							
	Sub Total		**10**	**3**	**10**	**1**	**10**			
	Spare 20%			1	2	0	2			
	Total I/O Points		**10**	**4**	**12**	**1**	**12**			

SF AHU - 5 (Right Wing)

Sl.No	Signal Description	Soft Points	QTY	IO POINTS						Remarks
			1	AO	AI	DO	DI			
1	Pre-Filter dust status						1			BMS to Provide Air DP Switch
2	Bag filter dust status						1			BMS to Provide Air DP Switch
3	PIBCV control valve - control for cooling coil			1						BMS to Provide modulating type Valve and actuator
4	PIBCV PID control valve - feedback for cooling coil				1					BMS to Provide modulating type Valve and actuator
5	SA duct temp sensor				2					BMS to Provide combined Duct type Temp sensor

6	RA duct type temp sensor				2					BMS to Provide combined Duct type Temp sensor
7	AHU Fan On /Off Command					1				Potential Free Contact from BMS to Electrical Starter panel
8	AHU Fan On /Off Status						1			BMS to Provide Air DP Switch
9	AHU Panel Incomer ACB On/Off Status						2			potential free contact from AHU Panel to BMS
10	AHU Panel Incomer ACB Trip Status						1			potential free contact from AHU Panel to BMS
11	VFD - Trip status						1			potential Free Contact from BMS
12	AHU Fan VFD - Speed Control			1						0-10VDC from BMS to VFD
13	AHU Fan VFD - Status feed back				1					0-10VDC from BMS to VFD
14	AHU Fan Auto/Manual						1			Potential Free Contact to BMS from Electrical Starter panel
15	AHU Fan Bypass (VFD)						1			
16	Inlet & Out let Immersion type Temp Sensor				2					
17	CO2 Sensor				1					
18	Fa damper position status						1			
19	Cfm Sensor				1					
20	VAV'S Cfm			1						
21	VFD - Softpoint status		10							
	Sub Total		**10**	**3**	**10**	**1**	**10**			
	Spare 20%			1	2	0	2			
	Total I/O Points		**10**	**4**	**12**	**1**	**12**			

SF PAC - DX (UPS fo S&T)

Sl.No	Signal Description	Soft Points	QTY	IO POINTS						Remarks
			1	AO	AI	DO	DI			
1	Pre-Filter dust status						1			BMS to Provide Air DP Switch
2	Bag filter dust status						1			BMS to Provide Air DP Switch
3	PIBCV control valve - control for cooling coil			1						BMS to Provide modulating type Valve and actuator
4	PIBCV PID control valve - feedback for cooling coil				1					BMS to Provide modulating type Valve and actuator
5	SA duct temp sensor				2					BMS to Provide combined Duct type Temp sensor
6	RA duct type temp sensor				2					BMS to Provide combined Duct type Temp sensor
7	AHU Fan On /Off Command					1				Potential Free Contact from BMS to Electrical Starter panel
8	AHU Fan On /Off Status						1			BMS to Provide Air DP Switch
9	AHU Panel Incomer ACB On/Off Status						2			potential free contact from AHU Panel to BMS
10	AHU Panel Incomer ACB Trip Status						1			potential free contact from AHU Panel to BMS
11	VFD - Trip status						1			potential Free Contact from BMS
12	AHU Fan VFD - Speed Control			1						0-10VDC from BMS to VFD
13	AHU Fan VFD - Status feed back				1					0-10VDC from BMS to VFD
14	AHU Fan Auto/Manual						1			Potential Free Contact to BMS from Electrical Starter panel
15	AHU Fan Bypass (VFD)						1			
16	Inlet & Out let Immersion type Temp Sensor				2					
17	CO2 Sensor				1					
18	Fa damper position status						1			
19	Cfm Sensor				1					
20	VAV'S Cfm			1						
21	SF Dx Split Softpoints		20							
	Sub Total		**20**	**3**	**10**	**1**	**10**			
	Spare 20%			1	2	0	2			
	Total I/O Points		**20**	**4**	**12**	**1**	**12**			

SF PAC - CHW (UPS fo S&T)

Sl.No	Signal Description	Soft Points	QTY	IO POINTS						Remarks
			1	AO	AI	DO	DI			
1	Pre-Filter dust status						1			BMS to Provide Air DP Switch
2	Bag filter dust status						1			BMS to Provide Air DP Switch
3	PIBCV control valve - control for cooling coil			1						BMS to Provide modulating type Valve and actuator
4	PIBCV PID control valve - feedback for cooling coil				1					BMS to Provide modulating type Valve and actuator
5	SA duct temp sensor				2					BMS to Provide combined Duct type Temp sensor
6	RA duct type temp sensor				2					BMS to Provide combined Duct type Temp sensor
7	AHU Fan On /Off Command					1				Potential Free Contact from BMS to Electrical Starter panel
8	AHU Fan On /Off Status						1			BMS to Provide Air DP Switch
9	AHU Panel Incomer ACB On/Off Status						2			potential free contact from AHU Panel to BMS
10	AHU Panel Incomer ACB Trip Status						1			potential free contact from AHU Panel to BMS
11	VFD - Trip status						1			potential Free Contact from BMS
12	AHU Fan VFD - Speed Control			1						0-10VDC from BMS to VFD
13	AHU Fan VFD - Status feed back				1					0-10VDC from BMS to VFD
14	AHU Fan Auto/Manual						1			Potential Free Contact to BMS from Electrical Starter panel
15	AHU Fan Bypass (VFD)						1			
16	Inlet & Out let Immersion type Temp Sensor				2					
17	CO2 Sensor				1					
18	Fa damper position status						1			
19	Cfm Sensor				1					

20	VAV'S Cfm			1						
	Sub Total		**0**	**3**	**10**	**1**	**10**			
	Spare 20%			1	2	0	2			
	Total I/O Points		**0**	**4**	**12**	**1**	**12**			

SF PAC - DX (AFC CC & CCHS Room)

Sl.No	Signal Description	Soft Points	QTY	IO POINTS						Remarks
			1	AO	AI	DO	DI			
1	Pre-Filter dust status						1			BMS to Provide Air DP Switch
2	Bag filter dust status						1			BMS to Provide Air DP Switch
3	PIBCV control valve - control for cooling coil			1						BMS to Provide modulating type Valve and actuator
4	PIBCV PID control valve - feedback for cooling coil				1					BMS to Provide modulating type Valve and actuator
5	SA duct temp sensor				2					BMS to Provide combined Duct type Temp sensor
6	RA duct type temp sensor				2					BMS to Provide combined Duct type Temp sensor
7	AHU Fan On /Off Command					1				Potential Free Contact from BMS to Electrical Starter panel
8	AHU Fan On /Off Status						1			BMS to Provide Air DP Switch
9	AHU Panel Incomer ACB On/Off Status						2			potential free contact from AHU Panel to BMS
10	AHU Panel Incomer ACB Trip Status						1			potential free contact from AHU Panel to BMS
11	VFD - Trip status						1			potential Free Contact from BMS
12	AHU Fan VFD - Speed Control			1						0-10VDC from BMS to VFD
13	AHU Fan VFD - Status feed back				1					0-10VDC from BMS to VFD
14	AHU Fan Auto/Manual						1			Potential Free Contact to BMS from Electrical Starter panel
15	AHU Fan Bypass (VFD)						1			
16	Inlet & Out let Immersion type Temp Sensor				2					
17	CO2 Sensor				1					
18	Fa damper position status						1			
19	Cfm Sensor				1					
20	VAV'S Cfm			1						
21	SF Dx Split Softpoints		20							
	Sub Total		**20**	**3**	**10**	**1**	**10**			
	Spare 20%			1	2	0	2			
	Total I/O Points		**20**	**4**	**12**	**1**	**12**			

SF PAC - CHW (AFC CC & CCHS Room)

Sl.No	Signal Description	Soft Points	QTY	IO POINTS						Remarks
			1	AO	AI	DO	DI			
1	Pre-Filter dust status						1			BMS to Provide Air DP Switch
2	Bag filter dust status						1			BMS to Provide Air DP Switch
3	PIBCV control valve - control for cooling coil			1						BMS to Provide modulating type Valve and actuator
4	PIBCV PID control valve - feedback for cooling coil				1					BMS to Provide modulating type Valve and actuator
5	SA duct temp sensor				2					BMS to Provide combined Duct type Temp sensor
6	RA duct type temp sensor				2					BMS to Provide combined Duct type Temp sensor
7	AHU Fan On /Off Command					1				Potential Free Contact from BMS to Electrical Starter panel
8	AHU Fan On /Off Status						1			BMS to Provide Air DP Switch
9	AHU Panel Incomer ACB On/Off Status						2			potential free contact from AHU Panel to BMS
10	AHU Panel Incomer ACB Trip Status						1			potential free contact from AHU Panel to BMS
11	VFD - Trip status						1			potential Free Contact from BMS
12	AHU Fan VFD - Speed Control			1						0-10VDC from BMS to VFD
13	AHU Fan VFD - Status feed back				1					0-10VDC from BMS to VFD
14	AHU Fan Auto/Manual						1			Potential Free Contact to BMS from Electrical Starter panel
15	AHU Fan Bypass (VFD)						1			
16	Inlet & Out let Immersion type Temp Sensor				2					
17	CO2 Sensor				1					
18	Fa damper position status						1			
19	Cfm Sensor				1					
20	VAV'S Cfm			1						
	Sub Total		**0**	**3**	**10**	**1**	**10**			
	Spare 20%			1	2	0	2			
	Total I/O Points		**0**	**4**	**12**	**1**	**12**			

SF PAC - DX (AFC SR & AFC Analyst)

Sl.No	Signal Description	Soft Points	QTY	IO POINTS						Remarks
			1	AO	AI	DO	DI			
1	Pre-Filter dust status						1			BMS to Provide Air DP Switch
2	Bag filter dust status						1			BMS to Provide Air DP Switch
3	PIBCV control valve - control for cooling coil			1						BMS to Provide modulating type Valve and actuator
4	PIBCV PID control valve - feedback for cooling coil				1					BMS to Provide modulating type Valve and actuator
5	SA duct temp sensor				2					BMS to Provide combined Duct type Temp sensor
6	RA duct type temp sensor				2					BMS to Provide combined Duct type Temp sensor
7	AHU Fan On /Off Command					1				Potential Free Contact from BMS to Electrical Starter panel

8	AHU Fan On /Off Status						1			BMS to Provide Air DP Switch
9	AHU Panel Incomer ACB On/Off Status						2			potential free contact from AHU Panel to BMS
10	AHU Panel Incomer ACB Trip Status						1			potential free contact from AHU Panel to BMS
11	VFD - Trip status						1			potential Free Contact from BMS
12	AHU Fan VFD - Speed Control			1						0-10VDC from BMS to VFD
13	AHU Fan VFD - Status feed back				1					0-10VDC from BMS to VFD
14	AHU Fan Auto/Manual						1			Potential Free Contact to BMS from Electrical Starter panel
15	AHU Fan Bypass (VFD)						1			
16	Inlet & Out let Immersion type Temp Sensor				2					
17	CO2 Sensor				1					
18	Fa damper position status						1			
19	Cfm Sensor				1					
20	VAV'S Cfm			1						
21	SF Dx Split Softpoints		20							
	Sub Total		**20**	**3**	**10**	**1**	**10**			
	Spare 20%			1	2	0	2			
	Total I/O Points		**20**	**4**	**12**	**1**	**12**			

SF PAC - CHW (AFC SR & AFC Analyst)

Sl.No	Signal Description	Soft Points	QTY	IO POINTS						Remarks
			1	AO	AI	DO	DI			
1	Pre-Filter dust status						1			BMS to Provide Air DP Switch
2	Bag filter dust status						1			BMS to Provide Air DP Switch
3	PIBCV control valve - control for cooling coil			1						BMS to Provide modulating type Valve and actuator
4	PIBCV PID control valve - feedback for cooling coil				1					BMS to Provide modulating type Valve and actuator
5	SA duct temp sensor				2					BMS to Provide combined Duct type Temp sensor
6	RA duct type temp sensor				2					BMS to Provide combined Duct type Temp sensor
7	AHU Fan On /Off Command					1				Potential Free Contact from BMS to Electrical Starter panel
8	AHU Fan On /Off Status						1			BMS to Provide Air DP Switch
9	AHU Panel Incomer ACB On/Off Status						2			potential free contact from AHU Panel to BMS
10	AHU Panel Incomer ACB Trip Status						1			potential free contact from AHU Panel to BMS
11	VFD - Trip status						1			potential Free Contact from BMS
12	AHU Fan VFD - Speed Control			1						0-10VDC from BMS to VFD
13	AHU Fan VFD - Status feed back				1					0-10VDC from BMS to VFD
14	AHU Fan Auto/Manual						1			Potential Free Contact to BMS from Electrical Starter panel
15	AHU Fan Bypass (VFD)						1			
16	Inlet & Out let Immersion type Temp Sensor				2					
17	CO2 Sensor				1					
18	Fa damper position status						1			
19	Cfm Sensor				1					
20	VAV'S Cfm			1						
	Sub Total		**0**	**3**	**10**	**1**	**10**			
	Spare 20%			1	2	0	2			
	Total I/O Points		**0**	**4**	**12**	**1**	**12**			

SF PAC - DX (AFC SR & AR Room)

Sl.No	Signal Description	Soft Points	QTY	IO POINTS						Remarks
			1	AO	AI	DO	DI			
1	Pre-Filter dust status						1			BMS to Provide Air DP Switch
2	Bag filter dust status						1			BMS to Provide Air DP Switch
3	PIBCV control valve - control for cooling coil			1						BMS to Provide modulating type Valve and actuator
4	PIBCV PID control valve - feedback for cooling coil				1					BMS to Provide modulating type Valve and actuator
5	SA duct temp sensor				2					BMS to Provide combined Duct type Temp sensor
6	RA duct type temp sensor				2					BMS to Provide combined Duct type Temp sensor
7	AHU Fan On /Off Command					1				Potential Free Contact from BMS to Electrical Starter panel
8	AHU Fan On /Off Status						1			BMS to Provide Air DP Switch
9	AHU Panel Incomer ACB On/Off Status						2			potential free contact from AHU Panel to BMS
10	AHU Panel Incomer ACB Trip Status						1			potential free contact from AHU Panel to BMS
11	VFD - Trip status						1			potential Free Contact from BMS
12	AHU Fan VFD - Speed Control			1						0-10VDC from BMS to VFD
13	AHU Fan VFD - Status feed back				1					0-10VDC from BMS to VFD
14	AHU Fan Auto/Manual						1			Potential Free Contact to BMS from Electrical Starter panel
15	AHU Fan Bypass (VFD)						1			
16	Inlet & Out let Immersion type Temp Sensor				2					
17	CO2 Sensor				1					
18	Fa damper position status						1			
19	Cfm Sensor				1					
20	VAV'S Cfm			1						
21	SF Dx Split Softpoints		20							
	Sub Total		**20**	**3**	**10**	**1**	**10**			

	Spare 20%			1	2	0	2			
	Total I/O Points		**20**	**4**	**12**	**1**	**12**			

SF PAC - CHW (AFC SR & AR Room)

Sl.No	Signal Description	Soft Points	QTY	IO POINTS						Remarks
			1	AO	AI	DO	DI			
1	Pre-Filter dust status						1			BMS to Provide Air DP Switch
2	Bag filter dust status						1			BMS to Provide Air DP Switch
3	PIBCV control valve - control for cooling coil			1						BMS to Provide modulating type Valve and actuator
4	PIBCV PID control valve - feedback for cooling coil				1					BMS to Provide modulating type Valve and actuator
5	SA duct temp sensor				2					BMS to Provide combined Duct type Temp sensor
6	RA duct type temp sensor				2					BMS to Provide combined Duct type Temp sensor
7	AHU Fan On /Off Command					1				Potential Free Contact from BMS to Electrical Starter panel
8	AHU Fan On /Off Status						1			BMS to Provide Air DP Switch
9	AHU Panel Incomer ACB On/Off Status						2			potential free contact from AHU Panel to BMS
10	AHU Panel Incomer ACB Trip Status						1			potential free contact from AHU Panel to BMS
11	VFD - Trip status						1			potential Free Contact from BMS
12	AHU Fan VFD - Speed Control			1						0-10VDC from BMS to VFD
13	AHU Fan VFD - Status feed back				1					0-10VDC from BMS to VFD
14	AHU Fan Auto/Manual						1			Potential Free Contact to BMS from Electrical Starter panel
15	AHU Fan Bypass (VFD)						1			
16	Inlet & Out let Immersion type Temp Sensor				2					
17	CO2 Sensor				1					
18	Fa damper position status						1			
19	Cfm Sensor				1					
20	VAV'S Cfm			1						
	Sub Total		**0**	**3**	**10**	**1**	**10**			
	Spare 20%			1	2	0	2			
	Total I/O Points		**0**	**4**	**12**	**1**	**12**			

SF PAC - DX (AFC Equipment)

Sl.No	Signal Description	Soft Points	QTY	IO POINTS						Remarks
			1	AO	AI	DO	DI			
1	Pre-Filter dust status						1			BMS to Provide Air DP Switch
2	Bag filter dust status						1			BMS to Provide Air DP Switch
3	PIBCV control valve - control for cooling coil			1						BMS to Provide modulating type Valve and actuator
4	PIBCV PID control valve - feedback for cooling coil				1					BMS to Provide modulating type Valve and actuator
5	SA duct temp sensor				2					BMS to Provide combined Duct type Temp sensor
6	RA duct type temp sensor				2					BMS to Provide combined Duct type Temp sensor
7	AHU Fan On /Off Command					1				Potential Free Contact from BMS to Electrical Starter panel
8	AHU Fan On /Off Status						1			BMS to Provide Air DP Switch
9	AHU Panel Incomer ACB On/Off Status						2			potential free contact from AHU Panel to BMS
10	AHU Panel Incomer ACB Trip Status						1			potential free contact from AHU Panel to BMS
11	VFD - Trip status						1			potential Free Contact from BMS
12	AHU Fan VFD - Speed Control			1						0-10VDC from BMS to VFD
13	AHU Fan VFD - Status feed back				1					0-10VDC from BMS to VFD
14	AHU Fan Auto/Manual						1			Potential Free Contact to BMS from Electrical Starter panel
15	AHU Fan Bypass (VFD)						1			
16	Inlet & Out let Immersion type Temp Sensor				2					
17	CO2 Sensor				1					
18	Fa damper position status						1			
19	Cfm Sensor				1					
20	VAV'S Cfm			1						
21	SF Dx Split Softpoints		20							
	Sub Total		**20**	**3**	**10**	**1**	**10**			
	Spare 20%			1	2	0	2			
	Total I/O Points		**20**	**4**	**12**	**1**	**12**			

SF PAC - CHW (AFC Equipment)

Sl.No	Signal Description	Soft Points	QTY	IO POINTS						Remarks
			1	AO	AI	DO	DI			
1	Pre-Filter dust status						1			BMS to Provide Air DP Switch
2	Bag filter dust status						1			BMS to Provide Air DP Switch
3	PIBCV control valve - control for cooling coil			1						BMS to Provide modulating type Valve and actuator
4	PIBCV PID control valve - feedback for cooling coil				1					BMS to Provide modulating type Valve and actuator
5	SA duct temp sensor				2					BMS to Provide combined Duct type Temp sensor
6	RA duct type temp sensor				2					BMS to Provide combined Duct type Temp sensor
7	AHU Fan On /Off Command					1				Potential Free Contact from BMS to Electrical Starter panel
8	AHU Fan On /Off Status						1			BMS to Provide Air DP Switch
9	AHU Panel Incomer ACB On/Off Status						2			potential free contact from AHU Panel to BMS

10	AHU Panel Incomer ACB Trip Status						1			potential free contact from AHU Panel to BMS
11	VFD - Trip status						1			potential Free Contact from BMS
12	AHU Fan VFD - Speed Control			1						0-10VDC from BMS to VFD
13	AHU Fan VFD - Status feed back				1					0-10VDC from BMS to VFD
14	AHU Fan Auto/Manual						1			Potential Free Contact to BMS from Electrical Starter panel
15	AHU Fan Bypass (VFD)						1			
16	Inlet & Out let Immersion type Temp Sensor				2					
17	CO2 Sensor				1					
18	Fa damper position status						1			
19	Cfm Sensor				1					
20	VAV'S Cfm			1						
	Sub Total		**0**	**3**	**10**	**1**	**10**			
	Spare 20%			1	2	0	2			
	Total I/O Points		**0**	**4**	**12**	**1**	**12**			

SF CASSETTE - (HUB room)

Sl.No	Signal Description	Soft Points	QTY	IO POINTS						Remarks
			1	AO	AI	DO	DI			
1	CASSETTE UNIT Fan ON/OFF Command					1				Potential Free Contact from BMS to Electrical Starter panel
2	CASSETTE UNIT Fan Auto/Manual Status						1			Potential Free Contact to BMS from Electrical Starter panel
3	CASSETTE UNIT Fan ON/OFF Status						1			BMS Vendor to Provide Air DP Switch
4	PIBCV Valve control			1						BMS Vendor to Provide modulating type Valve and actuator
	Sub Total		**0**	**1**	**0**	**1**	**2**			
	Spare 20%			0	0	0	0			
	Total I/O Points		**0**	**1**	**0**	**1**	**2**			

	Total I/O Points Floor Wise - Third flr	140	55	180	19	179	

3F AHU 1 - (LEFT WING)

Sl.No	Signal Description	Soft Points	QTY	IO POINTS						Remarks
			1	AO	AI	DO	DI			
1	Pre-Filter dust status						1			BMS to Provide Air DP Switch
2	Bag filter dust status						1			BMS to Provide Air DP Switch
3	PIBCV control valve - control for cooling coil			1						BMS to Provide modulating type Valve and actuator
4	PIBCV PID control valve - feedback for cooling coil				1					BMS to Provide modulating type Valve and actuator
5	SA duct temp sensor				2					BMS to Provide combined Duct type Temp sensor
6	RA duct type temp sensor				2					BMS to Provide combined Duct type Temp sensor
7	AHU Fan On /Off Command									Potential Free Contact from BMS to Electrical Starter panel
8	AHU Fan On /Off Status						1			BMS to Provide Air DP Switch
9	AHU Panel Incomer ACB On/Off Status						2			potential free contact from AHU Panel to BMS
10	AHU Panel Incomer ACB Trip Status						1			potential free contact from AHU Panel to BMS
11	VFD - Trip status						1			potential Free Contact from BMS
12	AHU Fan VFD - Speed Control			1						0-10VDC from BMS to VFD
13	AHU Fan VFD - Status feed back				1					0-10VDC from BMS to VFD
14	AHU Fan Auto/Manual						1			Potential Free Contact to BMS from Electrical Starter panel
15	AHU Fan Bypass (VFD)						1			
16	Inlet & Out let Immersion type Temp Sensor				2					
17	CO2 Sensor				1					
18	Fa damper position status						1			
19	Cfm Sensor				1					
20	VAV'S Cfm			1						
21	VFD - Softpoint status		10							
	Sub Total		**10**	**3**	**10**	**0**	**10**			
	Spare 20%			1	2	0	2			
	Total I/O Points		**10**	**4**	**12**	**0**	**12**			

3F AHU 2 - (Right Wing)

Sl.No	Signal Description	Soft Points	QTY	IO POINTS						Remarks
			1	AO	AI	DO	DI			
1	Pre-Filter dust status						1			BMS to Provide Air DP Switch
2	Bag filter dust status						1			BMS to Provide Air DP Switch
3	PIBCV control valve - control for cooling coil			1						BMS to Provide modulating type Valve and actuator
4	PIBCV PID control valve - feedback for cooling coil				1					BMS to Provide modulating type Valve and actuator
5	SA duct temp sensor				2					BMS to Provide combined Duct type Temp sensor
6	RA duct type temp sensor				2					BMS to Provide combined Duct type Temp sensor
7	AHU Fan On /Off Command					1				Potential Free Contact from BMS to Electrical Starter panel
8	AHU Fan On /Off Status						1			BMS to Provide Air DP Switch
9	AHU Panel Incomer ACB On/Off Status						2			potential free contact from AHU Panel to BMS
10	AHU Panel Incomer ACB Trip Status						1			potential free contact from AHU Panel to BMS
11	VFD - Trip status						1			potential Free Contact from BMS

12	AHU Fan VFD - Speed Control			1					0-10VDC from BMS to VFD
13	AHU Fan VFD - Status feed back				1				0-10VDC from BMS to VFD
14	AHU Fan Auto/Manual						1		Potential Free Contact to BMS from Electrical Starter panel
15	AHU Fan Bypass (VFD)						1		
16	Inlet & Out let Immersion type Temp Sensor				2				
17	CO2 Sensor				1				
18	Fa damper position status						1		
19	Cfm Sensor				1				
20	VAV'S Cfm			1					
21	VFD - Softpoint status		10						
	Sub Total		**10**	**3**	**10**	**1**	**10**		
	Spare 20%			1	2	0	2		
	Total I/O Points		**10**	**4**	**12**	**1**	**12**		

3F AHU 3 - (Top Wing)

Sl.No	Signal Description	Soft Points	QTY	IO POINTS						Remarks
			1	AO	AI	DO	DI			
1	Pre-Filter dust status						1			BMS to Provide Air DP Switch
2	Bag filter dust status						1			BMS to Provide Air DP Switch
3	PIBCV control valve - control for cooling coil			1						BMS to Provide modulating type Valve and actuator
4	PIBCV PID control valve - feedback for cooling coil				1					BMS to Provide modulating type Valve and actuator
5	SA duct temp sensor				2					BMS to Provide combined Duct type Temp sensor
6	RA duct type temp sensor				2					BMS to Provide combined Duct type Temp sensor
7	AHU Fan On /Off Command					1				Potential Free Contact from BMS to Electrical Starter panel
8	AHU Fan On /Off Status						1			BMS to Provide Air DP Switch
9	AHU Panel Incomer ACB On/Off Status						2			potential free contact from AHU Panel to BMS
10	AHU Panel Incomer ACB Trip Status						1			potential free contact from AHU Panel to BMS
11	VFD - Trip status						1			potential Free Contact from BMS
12	AHU Fan VFD - Speed Control			1						0-10VDC from BMS to VFD
13	AHU Fan VFD - Status feed back				1					0-10VDC from BMS to VFD
14	AHU Fan Auto/Manual						1			Potential Free Contact to BMS from Electrical Starter panel
15	AHU Fan Bypass (VFD)						1			
16	Inlet & Out let Immersion type Temp Sensor				2					
17	CO2 Sensor				1					
18	Fa damper position status						1			
19	Cfm Sensor				1					
20	VAV'S Cfm			1						
21	VFD - Softpoint status		10							
	Sub Total		**10**	**3**	**10**	**1**	**10**			
	Spare 20%			1	2	0	2			
	Total I/O Points		**10**	**4**	**12**	**1**	**12**			

3F AHU 4 - (OCC Control Room)

Sl.No	Signal Description	Soft Points	QTY	IO POINTS						Remarks
			1	AO	AI	DO	DI			
1	Pre-Filter dust status						1			BMS to Provide Air DP Switch
2	Bag filter dust status						1			BMS to Provide Air DP Switch
3	PIBCV control valve - control for cooling coil			1						BMS to Provide modulating type Valve and actuator
4	PIBCV PID control valve - feedback for cooling coil				1					BMS to Provide modulating type Valve and actuator
5	SA duct temp sensor				2					BMS to Provide combined Duct type Temp sensor
6	RA duct type temp sensor				2					BMS to Provide combined Duct type Temp sensor
7	AHU Fan On /Off Command					1				Potential Free Contact from BMS to Electrical Starter panel
8	AHU Fan On /Off Status						1			BMS to Provide Air DP Switch
9	AHU Panel Incomer ACB On/Off Status						2			potential free contact from AHU Panel to BMS
10	AHU Panel Incomer ACB Trip Status						1			potential free contact from AHU Panel to BMS
11	VFD - Trip status						1			potential Free Contact from BMS
12	AHU Fan VFD - Speed Control			1						0-10VDC from BMS to VFD
13	AHU Fan VFD - Status feed back				1					0-10VDC from BMS to VFD
14	AHU Fan Auto/Manual						1			Potential Free Contact to BMS from Electrical Starter panel
15	AHU Fan Bypass (VFD)						1			
16	Inlet & Out let Immersion type Temp Sensor				2					
17	CO2 Sensor				1					
18	Fa damper position status						1			
19	Cfm Sensor				1					
20	VAV'S Cfm			1						
21	VFD - Softpoint status		10							
	Sub Total		**10**	**3**	**10**	**1**	**10**			
	Spare 20%			1	2	0	2			
	Total I/O Points		**10**	**4**	**12**	**1**	**12**			

3F CASSETTE - (HUB room)										
Sl.No	Signal Description	Soft Points	QTY	IO POINTS						Remarks
			1	AO	AI	DO	DI			
1	CASSETTE UNIT Fan ON/OFF Command					1				Potential Free Contact from BMS to Electrical Starter panel
2	CASSETTE UNIT Fan Auto/Manual Status						1			Potential Free Contact to BMS from Electrical Starter panel
3	CASSETTE UNIT Fan ON/OFF Status						1			BMS Vendor to Provide Air DP Switch
4	PIBCV Valve control			1						BMS Vendor to Provide modulating type Valve and actuator
	Sub Total		**0**	**1**	**0**	**1**	**2**			
	Spare 20%			0	0	0	0			
	Total I/O Points		**0**	**1**	**0**	**1**	**2**			

Total I/O Points Floor Wise - Third flr	40	16	48	5	50	

Total I/O Points for PLC/RPU - 2	180	71	228	24	229	

RPU / PLC - 3

4th Floor AHU-1 - (OCC Theatre)										
Sl.No	Signal Description	Soft Points	QTY	IO POINTS						Remarks
			4	AO	AI	DO	DI			
1	Pre-Filter dust status						4			BMS to Provide Air DP Switch
2	Bag filter dust status						4			BMS to Provide Air DP Switch
3	PIBCV control valve - control for cooling coil			4						BMS to Provide modulating type Valve and actuator
4	PIBCV PID control valve - feedback for cooling coil				4					BMS to Provide modulating type Valve and actuator
5	SA duct temp sensor				8					BMS to Provide combined Duct type Temp sensor
6	RA duct type temp sensor				8					BMS to Provide combined Duct type Temp sensor
7	AHU Fan On /Off Command					4				Potential Free Contact from BMS to Electrical Starter panel
8	AHU Fan On /Off Status						4			BMS to Provide Air DP Switch
9	AHU Panel Incomer ACB On/Off Status						2			potential free contact from AHU Panel to BMS
10	AHU Panel Incomer ACB Trip Status						1			potential free contact from AHU Panel to BMS
11	VFD - Trip status						4			potential Free Contact from BMS
12	AHU Fan VFD - Speed Control			4						0-10VDC from BMS to VFD
13	AHU Fan VFD - Status feed back				4					0-10VDC from BMS to VFD
14	AHU Fan Auto/Manual						4			Potential Free Contact to BMS from Electrical Starter panel
15	AHU Fan Bypass (VFD)						4			
16	Inlet & Out let Immersion type Temp Sensor				8					
17	CO2 Sensor				4					
18	Fa damper position status						4			
19	Cfm Sensor				4					
20	VAV'S Cfm			4						
21	VFD - Softpoint status		10							
	Sub Total		**10**	**12**	**40**	**4**	**31**			
	Spare 20%			2	8	1	6			
	Total I/O Points		**10**	**14**	**48**	**5**	**37**			

4th Floor AHU-2 - (Left Wing)										
Sl.No	Signal Description	Soft Points	QTY	IO POINTS						Remarks
			1	AO	AI	DO	DI			
1	Pre-Filter dust status						1			BMS to Provide Air DP Switch
2	Bag filter dust status						1			BMS to Provide Air DP Switch
3	PIBCV control valve - control for cooling coil			1						BMS to Provide modulating type Valve and actuator
4	PIBCV PID control valve - feedback for cooling coil				1					BMS to Provide modulating type Valve and actuator
5	SA duct temp sensor				2					BMS to Provide combined Duct type Temp sensor
6	RA duct type temp sensor				2					BMS to Provide combined Duct type Temp sensor
7	AHU Fan On /Off Command					1				Potential Free Contact from BMS to Electrical Starter panel
8	AHU Fan On /Off Status						1			BMS to Provide Air DP Switch
9	AHU Panel Incomer ACB On/Off Status						2			potential free contact from AHU Panel to BMS
10	AHU Panel Incomer ACB Trip Status						1			potential free contact from AHU Panel to BMS
11	VFD - Trip status						1			potential Free Contact from BMS
12	AHU Fan VFD - Speed Control			1						0-10VDC from BMS to VFD
13	AHU Fan VFD - Status feed back				1					0-10VDC from BMS to VFD
14	AHU Fan Auto/Manual						1			Potential Free Contact to BMS from Electrical Starter panel
15	AHU Fan Bypass (VFD)						1			
16	Inlet & Out let Immersion type Temp Sensor				2					
17	CO2 Sensor				1					
18	Fa damper position status						1			
19	Cfm Sensor				1					
	VAV'S Cfm			1						
	VFD - Softpoint status		10							
	Sub Total		**10**	**3**	**10**	**1**	**10**			

	Spare 20%			1	2	0	2			
	Total I/O Points		**10**	**4**	**12**	**1**	**12**			

4th Floor AHU-3 - (Right Wing)										
Sl.No	**Signal Description**	**Soft Points**	**QTY**	**IO POINTS**						**Remarks**
			1	**AO**	**AI**	**DO**	**DI**			
1	Pre-Filter dust status						1			BMS to Provide Air DP Switch
2	Bag filter dust status						1			BMS to Provide Air DP Switch
3	PIBCV control valve - control for cooling coil			1						BMS to Provide modulating type Valve and actuator
4	PIBCV PID control valve - feedback for cooling coil				1					BMS to Provide modulating type Valve and actuator
5	SA duct temp sensor				2					BMS to Provide combined Duct type Temp sensor
6	RA duct type temp sensor				2					BMS to Provide combined Duct type Temp sensor
7	AHU Fan On /Off Command					1				Potential Free Contact from BMS to Electrical Starter panel
8	AHU Fan On /Off Status						1			BMS to Provide Air DP Switch
9	AHU Panel Incomer ACB On/Off Status						2			potential free contact from AHU Panel to BMS
10	AHU Panel Incomer ACB Trip Status						1			potential free contact from AHU Panel to BMS
11	VFD - Trip status						1			potential Free Contact from BMS
12	AHU Fan VFD - Speed Control			1						0-10VDC from BMS to VFD
13	AHU Fan VFD - Status feed back				1					0-10VDC from BMS to VFD
14	AHU Fan Auto/Manual						1			Potential Free Contact to BMS from Electrical Starter panel
15	AHU Fan Bypass (VFD)						1			
16	Inlet & Out let Immersion type Temp Sensor				2					
17	CO2 Sensor				1					
18	Fa damper position status						1			
19	Cfm Sensor				1					
20	VAV'S Cfm			1						
21	VFD - Softpoint status		10							
	Sub Total		**10**	**3**	**10**	**1**	**10**			
	Spare 20%			1	2	0	2			
	Total I/O Points		**10**	**4**	**12**	**1**	**12**			

4th Floor AHU-4										
Sl.No	**Signal Description**	**Soft Points**	**QTY**	**IO POINTS**						**Remarks**
			1	**AO**	**AI**	**DO**	**DI**			
1	Pre-Filter dust status						1			BMS to Provide Air DP Switch
2	Bag filter dust status						1			BMS to Provide Air DP Switch
3	PIBCV control valve - control for cooling coil			1						BMS to Provide modulating type Valve and actuator
4	PIBCV PID control valve - feedback for cooling coil				1					BMS to Provide modulating type Valve and actuator
5	SA duct temp sensor				2					BMS to Provide combined Duct type Temp sensor
6	RA duct type temp sensor				2					BMS to Provide combined Duct type Temp sensor
7	AHU Fan On /Off Command					1				Potential Free Contact from BMS to Electrical Starter panel
8	AHU Fan On /Off Status						1			BMS to Provide Air DP Switch
9	AHU Panel Incomer ACB On/Off Status						2			potential free contact from AHU Panel to BMS
10	AHU Panel Incomer ACB Trip Status						1			potential free contact from AHU Panel to BMS
11	VFD - Trip status						1			potential Free Contact from BMS
12	AHU Fan VFD - Speed Control			1						0-10VDC from BMS to VFD
13	AHU Fan VFD - Status feed back				1					0-10VDC from BMS to VFD
14	AHU Fan Auto/Manual						1			Potential Free Contact to BMS from Electrical Starter panel
15	AHU Fan Bypass (VFD)						1			
16	Inlet & Out let Immersion type Temp Sensor				2					
17	CO2 Sensor				1					
18	Fa damper position status						1			
19	Cfm Sensor				1					
20	VAV'S Cfm			1						
21	VFD - Softpoint status		10							
	Sub Total		**10**	**3**	**10**	**1**	**10**			
	Spare 20%			1	2	0	2			
	Total I/O Points		**10**	**4**	**12**	**1**	**12**			

4F CASSETTE - (HUB room)										
Sl.No	**Signal Description**	**Soft Points**	**QTY**	**IO POINTS**						**Remarks**
			1	**AO**	**AI**	**DO**	**DI**			
1	CASSETTE UNIT Fan ON/OFF Command					1				Potential Free Contact from BMS to Electrical Starter panel
2	CASSETTE UNIT Fan Auto/Manual Status						1			Potential Free Contact to BMS from Electrical Starter panel
3	CASSETTE UNIT Fan ON/OFF Status						1			BMS Vendor to Provide Air DP Switch
4	PIBCV Valve control			1						BMS Vendor to Provide modulating type Valve and actuator
	Sub Total		**0**	**1**	**0**	**1**	**2**			
	Spare 20%			0	0	0	0			
	Total I/O Points		**0**	**1**	**0**	**1**	**2**			

Total I/O Points Floor Wise - Fourth flr	40	26	84	10	76

Terrace Floor -HRW (Left / Right /Top)

Sl.No	Signal Description	Soft Points	QTY	IO POINTS						Remarks
			3	AO	AI	DO	DI			
1	HRW TFA Supply Air Fans ON/OFF Command						3			IBMS vendor shall be wire the Potential free contact from chiller panel to IBMS.
2	HRW TFA Supply Air Fans ON/OFF Status					3				
3	HRW TFA Supply Auto/Manual staus					3				
4	HRW TFA Supply Trip staus					3				
5	VFD Speed control command for Supply air fan				3					
6	VFD Speed control feedback status for Supply air fan			3						
7	HRW TFA Exhaust Air Fans ON/OFF Command						3			
8	HRW TFA Exhaust Air Fans ON/OFF Status					3				
9	HRW TFA Exhaust Auto/Manual status					3				
10	HRW TFA Supply Trip staus					3				
11	VFD Speed control command for Exhaust Air Fans				3					
12	VFD Speed control feedback status for Exhaust Air Fans			3						
13	HRW Wheel ON/OFF Command						3			
14	HRW Wheel ON/OFF Status					3				
15	HRW Wheel Auto/Manual status					3				
16	HRW Wheel Trip Status					3				
17	Supply Air Temperature leaving Wheel			3						IBMS vendor to provide the Field devises. Cabling provided between Field devices to PLC Panel
18	Return Air Temperature Entering Wheel			3						
19	Differential Pressure Switch across filter					3				
20	Outdoor Temperatue sensor (1no. Sufficient for 2 nos HRW)			3						
21	Outdoor CO2 sensor (1no. Sufficient for 2 nos HRW)			3						
22	Duct static pressure sensor in Supply air fan			3						
23	Fire Status and Damper Status					1				
	Sub Total		**0**	**21**	**6**	**31**	**9**			
	Spare 20%			4	1	6	2			
	Total I/O Points		**0**	**25**	**7**	**37**	**11**			

Terrace Floor - TOILET EXHAUST FAN (Left / Right /Top)

Sl.No	Signal Description	Soft Points	QTY	IO POINTS						Remarks
			5	AO	AI	DO	DI			
1	Fans ON/OFF command						5			BAS vendor shall be wire the Potential free contact from starter panel to PLC controller.
2	Fans ON/OFF status					5				
3	Fan Auto / Manual Status					5				
4	Fan Trip Status					5				
5	Fire Status					5				
6	Filter Status					5				
7	Ventilation Panel Incomer ACB On/Off Status						2			potential free contact from Ventilation Panel to BMS
8	Ventilation Panel Incomer ACB Trip Status						1			potential free contact from Ventilation Panel to BMS
	Sub Total		**0**	**0**	**0**	**25**	**8**			
	Spare 20%			0	0	5	2			
	Total I/O Points		**0**	**0**	**0**	**30**	**10**			

Terrace Floor - TOILET FRESH AIR FAN (Left / Right /Top)

Sl.No	Signal Description	Soft Points	QTY	IO POINTS						Remarks
			3	AO	AI	DO	DI			
1	Fans ON/OFF command						3			BAS vendor shall be wire the Potential free contact from starter panel to PLC controller.
2	Fans ON/OFF status					3				
3	Fan Auto / Manual Status					3				
4	Fan Trip Status					1				
5	Fire Status					1				
6	Filter Status					1				
7	Ventilation Panel Incomer ACB On/Off Status						2			potential free contact from Ventilation Panel to BMS
8	Ventilation Panel Incomer ACB Trip Status						1			potential free contact from Ventilation Panel to BMS
	Sub Total		**0**	**0**	**0**	**9**	**6**			
	Spare 20%			0	0	2	1			
	Total I/O Points		**0**	**0**	**0**	**11**	**7**			

Terrace Floor - LIFT LOBBY CABINET TYPE FAN

Sl.No	Signal Description	Soft Points	QTY	IO POINTS						Remarks
			1	AO	AI	DO	DI			
1	Fans ON/OFF command						1			BAS vendor shall be wire the Potential free contact from starter panel to PLC controller.
2	Fans ON/OFF status					1				
3	Fan Auto / Manual Status					1				
4	Fan Trip Status					1				
5	Fire Status					1				

6	Filter Status					1				
7	Ventilation Panel Incomer ACB On/Off Status						2			potential free contact from Ventilation Panel to BMS
8	Ventilation Panel Incomer ACB Trip Status						1			potential free contact from Ventilation Panel to BMS
	Sub Total		**0**	**0**	**0**	**5**	**4**			
	Spare 20%			0	0	1	1			
	Total I/O Points		**0**	**0**	**0**	**6**	**5**			

Terrace Floor - ELECTRICAL ROOM EXHAUST FAN

Sl.No	Signal Description	Soft Points	QTY	IO POINTS						Remarks
			1	AO	AI	DO	DI			
1	Exhaust Fans ON/OFF command						1			
2	Exhaust Fans ON/OFF status					1				
3	Exhaust Fan Auto / Manual Status					1				BAS vendor shall be wire the Potential free contact from starter panel to PLC controller.
4	Exhaust Fan Trip Status					1				
5	Ventilation Panel Incomer ACB On/Off Status						2			
6	Ventilation Panel Incomer ACB Trip Status						1			
	Sub Total		**0**	**0**	**0**	**3**	**4**			
	Spare 20%			0	0	1	1			
	Total I/O Points		**0**	**0**	**0**	**4**	**5**			

Terrace Floor -LIFF WELL PRESSURIZATION

Sl.No	Signal Description	Soft Points	QTY	IO POINTS						Remarks
			2	AO	AI	DO	DI			
1	Pressurization Fans ON/OFF command & Status					2	2			
2	Pressurization Fan Auto / Manual Status					2				
3	Pressurization Fan Trip Status					2				BAS vendor shall be wire the Potential free contact from starter panel to PLC controller.
4	Ventilation Panel Incomer ACB On/Off Status						2			
5	Ventilation Panel Incomer ACB Trip Status						1			
	Sub Total		**0**	**0**	**0**	**6**	**5**			
	Spare 20%			0	0	1	1			
	Total I/O Points		**0**	**0**	**0**	**7**	**6**			

Terrace Floor -STAIRCASE PRESSURIZATION

Sl.No	Signal Description	Soft Points	QTY	IO POINTS						Remarks
			2	AO	AI	DO	DI			
1	Pressurization Fans ON/OFF command & Status					2	2			
2	Pressurization Fan Auto / Manual Status					2				
3	Pressurization Fan Trip Status					2				BAS vendor shall be wire the Potential free contact from starter panel to PLC controller.
4	Ventilation Panel Incomer ACB On/Off Status						2			
5	Ventilation Panel Incomer ACB Trip Status						1			
	Sub Total		**0**	**0**	**0**	**6**	**5**			
	Spare 20%			0	0	1	1			
	Total I/O Points		**0**	**0**	**0**	**7**	**6**			

Terrace Floor - ATRIUM (Axial Fan)

Sl.No	Signal Description	Soft Points	QTY	IO POINTS						Remarks
			5	AO	AI	DO	DI			
1	Axial Fans ON/OFF command & Status					0	0			
2	Axial Fan Auto / Manual Status					0				
3	Axial Fan Trip Status					0				BAS vendor shall be wire the Potential free contact from starter panel to PLC controller.
4	Ventilation Panel Incomer ACB On/Off Status						2			
5	Ventilation Panel Incomer ACB Trip Status						1			
	Sub Total		**0**	**0**	**0**	**0**	**3**			
	Spare 20%			0	0	0	1			
	Total I/O Points		0	**0**	**0**	**0**	**4**			

Terrace Floor - VRV Outdoor Unit

Sl.No	Signal Description	Soft Points	QTY	IO POINTS						Remarks
			1	AO	AI	DO	DI			
1	VRV ON/OFF command						0			
2	VRV ON/OFF status					0				
3	Exhaust Fan Auto / Manual Status					0				
4	Exhaust Fan Trip Status					1				BAS vendor shall be wire the Potential free contact from starter panel to PLC controller.
4	Ventilation Panel Incomer ACB On/Off Status						2			
5	Ventilation Panel Incomer ACB Trip Status						1			
	Sub Total		**0**	**0**	**0**	**1**	**3**			
	Spare 20%			0	0	0	1			
	Total I/O Points		**0**	**0**	**0**	**1**	**4**			

	Total I/O Points Floor Wise - Terrace flr		**0**	**25**	**7**	**103**	**56**			

Total I/O Points for PLC/RPU - 3	40	52	91	113	132

RPU / PLC - 4

CHILLER PLANT ROOM I/O SUMMARY

Sl.No	Point Description	Soft Points	QTY	IO POINTS						Remarks
				AO	AI	DO	DI			
	Water cooled chiller 5 (2W +1S + 2F)		5							
1	Chiller Evaporator Isolation Valve command						5			
2	Chiller Evaporator Isolation Valve Open/Close status					5				Potential free contat from valve actuator
3	Chiller On / Off command						5			
4	Chiller On / Off status					5				Potential free contat from chiller panel
5	Chiller Alarm status					5				Potential free contat from chiller panel
6	Chiller Auto/ Manual status					5				Auto/Manual Switch status from chiller
7	Outside air temperature			1						Outside air Temperature Sensor
8	Outside air Relative Humidity			1						Outside air Relative Humidity Sensor (4-20mA)
9	CHW inlet Immersion type temperature		5	5						
10	CHW outlet Immersion type temperature		5	5						
11	CDW inlet Immersion type temperature		5	5						
12	CDW outlet Immersion type temperature		5	5						
13	CHW supply header temperature			1						Immersion Temperature sensor
14	CHW return header temperature			1						Immersion Temperature sensor
15	CDW supply header temperature			1						Immersion Temperature sensor
16	CDW return header temperature			1						Immersion Temperature sensor
17	Condenser Outlet Valve (ON/OFF) Command						2			
18	Condenser Outlet Valve (OPEN/CLOSE) Status					2				
19	CHW Differential Pressure Switch Status						1			
20	CHW Flow Switch Status						1			
21	CDW Differential Pressure Switch Status						1			
22	CDW Flow Switch Status						1			
23	Chiller Panel Incomer ACB ON/OFF Status						2			
24	Chiller Panel Incomer ACB Trip Status						1			
	Primary chilled water pumps 5 (2W +1S + 2F) No's		5							
1	Pump Start / Stop command					5				
2	Pump Auto/ Manual status						5			Potential free contat from pump panel
3	Pump run status						**5**			Potential free contat from pump panel
4	Pump trip status						5			Potential free contat from pump panel
	Secondary chilled water pumps 5 (2W +1S + 2F) No's with pump Logic controller		5							
1	VFD Enable Start/Stop command via PLC					1				
2	VFD Enable Auto/ manual status via PLC						1			Potential free contat from pump panel
3	VFD run status via PLC						1			Potential free contat from pump panel
4	VFD trip status via PLC						1			Potential free contat from pump panel
	Condenser water pumps 5 (2W +1S + 2F)		5							
1	Pump Start / Stop command					5				
2	Pump Auto/ manual status						5			Potential free contat from pump panel
3	Pump run status						5			Potential free contat from pump panel
4	Pump trip status						5			Potential free contat from pump panel
	Condenser water pumps 2 No's		2							
1	Pump Start / Stop command					2				
2	Pump Auto/ manual status						2			Potential free contat from pump panel
3	Pump run status						2			Potential free contat from pump panel
4	Pump trip status						2			Potential free contat from pump panel
	Cooling Tower 5 (2W +1S + 2F)		5							
1	Cooling tower VFD controle			5						
2	CT VFD Feedback				5					
3	CT Outlet temperature			5						
4	Cooling tower fan Start/stop command					5				
5	Cooling tower fan Auto/manual command					5				Potential free contat from pump panel
6	Cooling tower fan Run status						5			Potential free contat from pump panel
7	Cooling tower fan Trip status						5			Potential free contat from pump panel
8	Cooling tower inlet isolation valve command					5				
9	Cooling tower inlet isolation valve Open/Close status						5			Potential free contat from pump panel
10	Cooling tower outlet valve command					5				
11	Cooling tower outlet valve Open/Close status						5			
12	Emergency Stop button status					1				
	Misc									
1	Cooling tower sump level						10			
2	Low Suction Pressure		5							

3										
	SUB TOTAL		**52**	**36**	**5**	**56**	**88**			
	Spare 10 %			2	1	8	3			
	Total I/O Points		**52**	**38**	**6**	**64**	**91**			

	Total I/O Points		52	38	6	64	91			
	Total I/O Points for PLC/RPU - 4		**52**	**38**	**6**	**64**	**91**			

RPU / PLC - 5

RMG Outdoor Panel

Sl.No	Signal Description	Soft Points	QTY	IO POINTS						Remarks
				AO	AI	DO	DI			
1	RMG Outdoor Panel ON/OFF status						6			BAS vendor shall be wire the Potential free contact from starter panel to PLC controller.
2	RMG Outdoor Panel Trip Status						3			
	Sub Total		**0**	**0**	**0**	**0**	**9**			
	Spare 20%		0	0	0	0	2			
	Total I/O Points		**0**	**0**	**0**	**0**	**11**			

HT Outdoor Panel

Sl.No	Signal Description	Soft Points	QTY	IO POINTS						Remarks
				AO	AI	DO	DI			
1	HT Outdoor Panel ON/OFF status						2			BAS vendor shall be wire the Potential free contact from starter panel to PLC controller.
2	HT Outdoor Panel Trip Status						1			
3	TVM with RS 485 (Soft)		12							
4	HT Outdoor Panel Outgoing Feeder VCB ON/OFF status						3			
5	HT Outdoor Panel Outgoing Feeder VCB Trip status						3			
	Sub Total		**12**	**0**	**0**	**0**	**9**			
	Spare 20%		0	0	0	0	2			
	Total I/O Points		**12**	**0**	**0**	**0**	**11**			

Lighting Distribution Panels

Sl.No	Signal Description	Soft Points	QTY	IO POINTS						Remarks
				AO	AI	DO	DI			
1	LDB Panel Basement Floor ON/OFF status						8			BAS vendor shall be wire the Potential free contact from starter panel to PLC controller.
2	LDB Panel Basement Floor Trip status						4			
3	LDB Panel Ground Floor ON/OFF status						12			
4	LDB Panel Ground Floor Trip status						6			
5	LDB Panel First Floor ON/OFF status						12			
6	LDB Panel First Floor Trip status						6			
7	LDB Panel Second Floor ON/OFF status						20			
8	LDB Panel Second Floor Trip status						10			
9	LDB Panel Third Floor ON/OFF status						12			
10	LDB Panel Third Floor Trip status						6			
11	LDB Panel Fourth Floor ON/OFF status						12			
12	LDB Panel Fourth Floor Trip status						6			
13	LDB Panel Terrace Floor ON/OFF status						8			
14	LDB Panel Terrace Floor Trip status						4			
	Sub Total		**0**	**0**	**0**	**0**	**126**			
	Spare 20%		0	0	0	0	25			
	Total I/O Points		**0**	**0**	**0**	**0**	**151**			

UPS Panels

Sl.No	Signal Description	Soft Points	QTY	IO POINTS						Remarks
				AO	AI	DO	DI			
1	UPS Panel - 1 Incomer ON/OFF status						4			BAS vendor shall be wire the Potential free contact from starter panel to PLC controller.
2	UPS Panel - 1 Incomer Trip status						2			
3	UPS Panel - 1 O/G Feeder ON/OFF status						4			
4	UPS Panel - 1 O/G Feeder Trip status						2			
5	UPS Panel - 2 Incomer ON/OFF status						4			
6	UPS Panel - 2 Incomer Trip status						2			
7	UPS Panel - 2 Ground Floor Incomer ON/OFF status						4			
8	UPS Panel - 2 Ground Floor Incomer Trip status						2			
9	UPS Panel - 2 First Floor Incomer ON/OFF status						4			
10	UPS Panel - 2 First Floor Incomer Trip status						2			
11	UPS Panel - 2 Second Floor Incomer ON/OFF status						4			
12	UPS Panel - 2 Second Floor Incomer Trip status						2			
13	UPS Panel - 2 Third Floor Incomer ON/OFF status						4			
14	UPS Panel - 2 Third Floor Incomer Trip status						2			
15	UPS Panel - 2 Fourth Floor Incomer ON/OFF status						4			

16	UPS Panel - 2 Fourth Floor Incomer Trip status						2		
	Sub Total		**0**	**0**	**0**	**0**	**48**		
	Spare 20%		0	0	0	0	10		
	Total I/O Points		**0**	**0**	**0**	**0**	**58**		

	Total I/O Points		12	0	0	0	230		
	Total I/O Points for PLC/RPU - 5		**12**	**0**	**0**	**0**	**230**		

RPU / PLC - 4A (Remote I/O Panel)

MPCC Panel

Sl.No	Signal Description		Soft Points	IO POINTS					Remarks
			1	AO	AI	DO	DI		
1	MPCC Panel Incomer - 1 ON/OFF status						2		
2	MPCC Panel Incomer - 1 Trip Status						1		
3	MDC with RS 485 (Soft)		12						
4	MPCC Panel Incomer - 2 ON/OFF status						2		
5	MPCC Panel Incomer - 2 Trip Status						1		
6	MDC with RS 485 (Soft)		12						
7	MPCC Panel Incomer - 3 ON/OFF status						2		
8	MPCC Panel Incomer - 3 Trip Status						1		
9	MFM with RS 485 (Soft)		12						
10	MPCC Panel Incomer - 4 ON/OFF status						2		
11	MPCC Panel Incomer - 4 Trip Status						1		
12	MFM with RS 485 (Soft)		12						
13	MPCC Panel Bus Coupler - 1 ON/OFF status						2		BAS vendor shall be wire the Potential free contact from starter panel to PLC controller.
14	MPCC Panel Bus Coupler - 1 Trip Status						1		
15	MPCC Panel Bus Coupler - 2 ON/OFF status						2		
16	MPCC Panel Bus Coupler - 2 Trip Status						1		
17	MPCC Panel Bus Coupler - 3 ON/OFF status						2		
18	MPCC Panel Bus Coupler - 3 Trip Status						1		
19	MPCC Outgoing Feeder ACB ON/OFF status						10		
20	MPCC Outgoing Feeder ACB Trip status						10		
21	MPCC Outgoing Feeder MCCB ON/OFF status						16		
22	MPCC Outgoing Feeder MCCB Trip status						16		
	Sub Total		**48**	**0**	**0**	**0**	**73**		
	Spare 20%		0	0	0	0	15		
	Total I/O Points		**48**	**0**	**0**	**0**	**88**		

FFTG Pump - Fire Fighting Panel

Sl.No	Signal Description		Soft Points	IO POINTS					Remarks
			1	AO	AI	DO	DI		
1	FFTG Pump Panel Incomer - 1 ON/OFF status						2		
2	FFTG Pump Panel Incomer - 1 Trip Status						1		
3	MDC with RS 485 (Soft)		12						
4	FFTG Pump Panel Incomer - 2 ON/OFF status						2		
5	FFTG Pump Panel Incomer - 2 Trip Status						1		
6	MDC with RS 485 (Soft)		12						
7	FFTG Pump Panel Bus Coupler - 1 ON/OFF status						2		BAS vendor shall be wire the Potential free contact from starter panel to PLC controller.
8	FFTG Pump Panel Bus Coupler - 1 Trip Status						1		
9	FFTG Sump Level Switch - High						2		
10	FFTG Sump Level Switch - Low						2		
	Sub Total		**24**	**0**	**0**	**0**	**13**		
	Spare 20%		0	0	0	0	3		
	Total I/O Points		**24**	**0**	**0**	**0**	**16**		

Drinking Water Pump Panel

Sl.No	Signal Description		Soft Points	IO POINTS					Remarks
			1	AO	AI	DO	DI		
1	Drinking water Pump Panel Incomer - 1 ON/OFF status						2		
2	Drinking water Pump Panel Incomer - 1 Trip Status						1		
3	MDC with RS 485 (Soft)		12						
4	Drinking water Pump Panel Incomer - 2 ON/OFF status						2		
5	Drinking water Pump Panel Incomer - 2 Trip Status						1		
6	MDC with RS 485 (Soft)		12						
7	Drinking water Pump Panel Bus Coupler - 1 ON/OFF status						2		BAS vendor shall be wire the Potential free contact from starter panel to PLC controller.
8	Drinking water Pump Panel Bus Coupler - 1 Trip Status						1		
9	Drinking Water Sump Level Switch - High						1		
10	Drinking Water Sump Level Switch - Low						1		
	Sub Total		**24**	**0**	**0**	**0**	**11**		

	Spare 20%		0	0	0	0	2		
	Total I/O Points		**24**	**0**	**0**	**0**	**13**		

Sewage Treatment Pump Panel

Sl.No	Signal Description		Soft Points	IO POINTS						Remarks
			1	AO	AI	DO	DI			
1	Sewage Treatment Pump Panel Incomer - 1 ON/OFF status						2			
2	Sewage Treatment Pump Panel Incomer - 1 Trip Status						1			
3	MDC with RS 485 (Soft)		12							
4	Sewage Treatment Pump Panel Incomer - 2 ON/OFF status						2			
5	Sewage Treatment Pump Panel Incomer - 2 Trip Status						1			
6	MDC with RS 485 (Soft)		12							
7	Sewage Treatment Pump Panel Bus Coupler - 1 ON/OFF status						2			BAS vendor shall be wire the Potential free contact from starter panel to PLC controller.
8	Sewage Treatment Pump Panel Bus Coupler - 1 Trip Status						1			
9	Sewage Treatment Sump Level Switch - High						1			
10	Sewage Treatment Sump Level Switch - Low						1			
	Sub Total		**24**	**0**	**0**	**0**	**11**			
	Spare 20%		0	0	0	0	2			
	Total I/O Points		**24**	**0**	**0**	**0**	**13**			

Booster Water Pump Panel

Sl.No	Signal Description		Soft Points	IO POINTS						Remarks
			1	AO	AI	DO	DI			
1	Booster Water Pump Panel Incomer - 1 ON/OFF status						2			
2	Booster Water Pump Panel Incomer - 1 Trip Status						1			
3	MDC with RS 485 (Soft)		12							
4	Booster Water Pump Panel Incomer - 2 ON/OFF status						2			
5	Booster Water Pump Panel Incomer - 2 Trip Status						1			
6	MDC with RS 485 (Soft)		12							
7	Booster Water Pump Panel Bus Coupler - 1 ON/OFF status						2			BAS vendor shall be wire the Potential free contact from starter panel to PLC controller.
8	Booster Water Pump Panel Bus Coupler - 1 Trip Status						1			
9	Booster Water Sump Level Switch - High						1			
10	Booster Water Sump Level Switch - Low						1			
	Sub Total		**24**	**0**	**0**	**0**	**11**			
	Spare 20%		0	0	0	0	2			
	Total I/O Points		**24**	**0**	**0**	**0**	**13**			

Booster Water Pump Pumps (No of Pumps shall be included based on detailed engineering qty)

Sl.No	Signal Description		Soft Points	IO POINTS						Remarks
			1	AO	AI	DO	DI			
1	Booster Water Pump Pump - 1 ON/OFF status						2			
2	Booster Water Pump Pump - 1 Trip Status						1			
3	Booster Water Pump Pump - 2 ON/OFF status						2			
4	Booster Water Pump Pump - 2 Trip Status						1			
5	Booster Water Pump Pump - 3 ON/OFF status						2			
6	Booster Water Pump Pump - 3 Trip Status						1			BAS vendor shall be wire the Potential free contact from starter panel to PLC controller.
7	Booster Water Pump Pump - 4 ON/OFF status						2			
8	Booster Water Pump Pump - 4 Trip Status						1			
	Sub Total		**0**	**0**	**0**	**0**	**12**			
	Spare 20%		0	0	0	0	2			
	Total I/O Points		**0**	**0**	**0**	**0**	**14**			

PHE - Plumbing Health Engineering Pumps

Sl.No	Signal Description		Soft Points	IO POINTS						Remarks
			1	AO	AI	DO	DI			
1	PHE Pump - 1 ON/OFF status						2			
2	PHE Pump - 1 Trip Status						1			
3	PHE Pump - 2 ON/OFF status						2			
4	PHE Pump - 2 Trip Status						1			
5	PHE Pump - 3 ON/OFF status						2			BAS vendor shall be wire the Potential free contact from starter panel to PLC controller.
6	PHE Pump - 3 Trip Status						1			
	Sub Total		**0**	**0**	**0**	**0**	**9**			
	Spare 20%		0	0	0	0	2			
	Total I/O Points		**0**	**0**	**0**	**0**	**11**			

DG Panel

Sl.No	Signal Description		Soft Points	IO POINTS						Remarks
			1	AO	AI	DO	DI			
1	DG Panel Incomer - 1 ON/OFF status						2			
2	DG Panel Incomer - 1 Trip Status						1			

3	MDC with RS 485 (Soft)		12							
4	DG Panel Incomer - 2 ON/OFF status						2			
5	DG Panel Incomer - 2 Trip Status						1			
6	MDC with RS 485 (Soft)		12							
7	DG Panel Incomer - 3 ON/OFF status						2			
8	DG Panel Incomer - 3 Trip Status						1			
9	MFM with RS 485 (Soft)		12							
10	DG Panel Incomer - 4 ON/OFF status						2			
11	DG Panel Incomer - 4 Trip Status						1			
12	MFM with RS 485 (Soft)		12							BAS vendor shall be wire the Potential free contact from starter panel to PLC controller.
13	DG Panel Bus Coupler - 1 ON/OFF status						2			
14	DG Panel Bus Coupler - 1 Trip Status						1			
15	DG Panel Bus Coupler - 2 ON/OFF status						2			
16	DG Panel Bus Coupler - 2 Trip Status						1			
17	DG Panel Bus Coupler - 3 ON/OFF status						2			
18	DG Panel Bus Coupler - 3 Trip Status						1			
19	DG Outgoing Feeder ACB ON/OFF status						4			
20	DG Outgoing Feeder ACB Trip status						4			
	Sub Total		**48**	**0**	**0**	**0**	**29**			
	Spare 20%		0	0	0	0	6			
	Total I/O Points		**48**	**0**	**0**	**0**	**35**			

Total I/O Points	**192**	**0**	**0**	**0**	**203**	
Total I/O Points for PLC/RPU - 4A	**192**	**0**	**0**	**0**	**203**	
Total I/O Points for All PLC/RPU	**506**	**216**	**430**	**252**	**1009**	