

INDIAN INSTITUTE OF TECHNOLOGY (IIT) KHARAGPUR (W.B)

Dated: 13.01.2015

AMENDMENT NO. – V

Project Name - Construction of Super specialty hospital and other facilities for Dr. B. C. Roy Institute of Medical Sciences and Research at IIT-Kharagpur, West Bengal.

Tender No.- HSCC/IIT-KGP/SS/HOSPITAL/2014;dated 12.12.2014

This has reference to subject work, the following Amendment may be noted, which shall be treated as a part of the contract to be uploaded along with tender/ contract:

- 1) The items of Civil works under subhead (11.00) “Road work & Signages” have been amended, and the details are attached at Annexure - I.
Bidders are requested to quote the rate considering the amended items description and Unit.**
- 2) IO-Summary for IBMS against HVAC works for the above mentioned tender document has also been attached at Annexure - II.**

All other terms & conditions of the tender shall remain unchanged.

Prospective bidders are advised to regularly scan through HSCC e-tender portal <http://www.tenderwizard.com/HSCC> as corrigendum/amendments etc., if any, will be notified on this portal only and separate advertisement will not be made for this.

(- Sd -)

Sr. Manager (Civil),
HSCC (India) Ltd.,
For & on behalf of Director, IIT Kharagpur

ANNEXURE - I

Project Name - Construction of Super specialty hospital and other facilities for Dr. B. C. Roy Institute of Medical Sciences and Research at IIT-Kharagpur, West Bengal

Item No.	As Per BOQ			As Amended		
11.00	ROAD WORK & SIGNAGES			ROAD WORK & SIGNAGES		
	Item	Qty	Unit	Item	Qty	Unit
1	2	3	4	5	6	7
11.06	Manufacturing, supplying and fixing retro reflective overhead signage boards made up of 2 mm thick aluminium sheet, face to be fully covered with high intensity and encapsulated lens type heat activated retro reflective sheeting conforming to type - III of ASTM-D-4956-01 as approved by Engineer-in-charge, letters, borders etc. as per IRC : 67-2001 in silver white with blue colour back ground and with high intensity grade, pasted on substrate by pressure sensitive adhesive backing which shall be activated by applying pressure conforming to class II ofASTM-D-4956-01 and fixing the same to the plate of structural frame work by means of suitable sized aluminium alloys, rivets or bolts & nuts @ 300 mm centre to centre all along the periphery as well as in two vertical rows along with theft resistant measures, including the cost of painting with two or more coats of epoxy paint in grey colour on the back side of aluminium sheet including appropriate priming coat.			Manufacturing, supplying and fixing retro reflective overhead signage boards made up of 2 mm thick aluminium sheet, face to be fully covered with high intensity and encapsulated lens type heat activated retro reflective sheeting conforming to type - III of ASTM-D-4956-01 as approved by Engineer-in-charge, letters, borders etc. as per IRC : 67-2001 in silver white with blue colour back ground and with high intensity grade, pasted on substrate by pressure sensitive adhesive backing which shall be activated by applying pressure conforming to class II ofASTM-D-4956-01 and fixing the same to the plate of structural frame work by means of suitable sized aluminium alloys, rivets or bolts & nuts @ 300 mm centre to centre all along the periphery as well as in two vertical rows along with theft resistant measures, including the cost of painting with two or more coats of epoxy paint in grey colour on the back side of aluminium sheet including appropriate priming coat.		

ANNEXURE - I

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Item No.	As Per BOQ			As Amended		
11.00	ROAD WORK & SIGNAGES			ROAD WORK & SIGNAGES		
	Item	Qty	Unit	Item	Qty	Unit
1	2	3	4	5	6	7
	The rate includes the cost of rounding off the corners, lowering down the structural frame work from the gantry, fixing and erecting the same in position all complete as per drawings, specification and direction of the engineer-in-charge.(Structural frame work including M.S. plate to be provided separately. Rectangular area of the sheet only shall be measured for seperately.			The rate includes the cost of rounding off the corners, lowering down the structural frame work from the gantry, fixing and erecting the same in position all complete as per drawings, specification and direction of the engineer-in-charge.(Structural frame work including M.S. plate to be provided separately. Rectangular area of the sheet only shall be measured for seperately.		
a)	Overhead informatory road signage	10.00	Each	Overhead informatory road signage	10.00	Sqm
11.08	Providing & fixing of external signages of varying sizes & shapes using GI sheet of atleast 19G, painting the entire board both surfaces with 1 coat of primer & 2 coats of synthetic enamel painting, lettering of approved type on board of any sizes in English / Hindi or Local language complete as per technical specifications & directions of Engineer.	100.00	Sqft	Providing & fixing of external signages of varying sizes & shapes using GI sheet of atleast 19G, painting the entire board both surfaces with 1 coat of primer & 2 coats of synthetic enamel painting, with Vinyl Pasted lettering of approved type on board of any sizes in English / Hindi or Local language complete as per technical specifications & directions of Engineer.	100.00	Sqft

ANNEXURE - I

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Item No.	As Per BOQ			As Amended		
11.00	ROAD WORK & SIGNAGES			ROAD WORK & SIGNAGES		
	Item	Qty	Unit	Item	Qty	Unit
1	2	3	4	5	6	7
11.09	Providing & Fixing Wall Mounted Nonlit Fire Exit 24" x 9" Internal sign of approved make & made of 10mm Acrylic with the required text matters stuck on it with plotted self adhesive vinyl & Mounted on 3mm Aluminium Composit Panel bracketed at suitable locations including necessary fittings & fastening etc. complete & as directed by The Engineer in charge.	400.00	Nos	Providing & Fixing Wall Mounted Nonlit Fire Exit 24" x 9" Internal sign of approved make & made of 10mm Acrylic with the required text matters stuck on it with plotted self adhesive vinyl & Mounted on 3mm Aluminium Composit Panel (Sandwich Construction with a thermoplastic core of LDPE between two Aluminium sheets of 0.25 mm on both sides having PVDF coating on one side and Polymer (Service) Coating on other face) bracketed at suitable locations including necessary fittings & fastening etc. complete & as directed by The Engineer in charge.	400.00	Nos
11.10	Providing & Fixing Wall Mounted Nonlit Utility 6" x 6" Internal sign of approved make & made of 10mm Acrylic with the required text matters stuck on it with plotted self adhesive vinyl & Mounted on 3mm Aluminium Composit Panel bracketed at suitable locations including necessary fittings & fastening etc. complete & as directed by The Engineer in charge.	500.00	Nos	Providing & Fixing Wall Mounted Nonlit Utility 6" x 6" Internal sign of approved make & made of 10mm Acrylic with the required text matters stuck on it with plotted self adhesive vinyl & Mounted on 3mm Aluminium Composit Panel (Sandwich Construction with a thermoplastic core of LDPE between two Aluminium sheets of 0.25 mm on both sides having PVDF coating on one side and Polymer (Service) Coating on other face) bracketed at suitable locations including necessary fittings & fastening etc. complete & as directed by The Engineer in charge.	500.00	Nos

ANNEXURE - I

Project Name - Construction of Super specialty hospital and other facilities for Dr. B. C. Roy Institute of Medical Sciences and Research at IIT-Kharagpur, West Bengal

Item No.	As Per BOQ			As Amended		
11.00	ROAD WORK & SIGNAGES			ROAD WORK & SIGNAGES		
	Item	Qty	Unit	Item	Qty	Unit
1	2	3	4	5	6	7
11.11	Providing & Fixing Wall Mounted Nonlit Identification sign 18"x5" of approved make & made of 10mm Acrylic with the required text matters stuck on it with plotted self adhesive vinyl & Mounted on 3mm Aluminium Composit Panel bracketed at suitable locations including necessary fittings & fastening etc. complete & as directed by The Engineer in charge.	500.00	Nos	Providing & Fixing Wall Mounted Nonlit Identification sign 18"x5" of approved make & made of 10mm Acrylic with the required text matters stuck on it with plotted self adhesive vinyl & Mounted on 3mm Aluminium Composit Panel (Sandwich Construction with a thermoplastic core of LDPE between two Aluminium sheets of 0.25 mm on both sides having PVDF coating on one side and Polymer (Service) Coating on other face) bracketed at suitable locations including necessary fittings & fastening etc. complete & as directed by The Engineer in charge.	500.00	Nos
11.12	Providing & Fixing Wall Mounted Nonlit directory sign 2' x 3' of approved make & made of 10mm Acrylic with the required text matters stuck on it with plotted self adhesive vinyl & Mounted on 3mm Aluminium Composit Panel bracketed at suitable locations including necessary fittings & fastening etc. complete & as directed by The Engineer in charge.	100.00	Nos	Providing & Fixing Wall Mounted Nonlit directory sign 2' x 3' of approved make & made of 10mm Acrylic with the required text matters stuck on it with plotted self adhesive vinyl & Mounted on 3mm Aluminium Composit Panel (Sandwich Construction with a thermoplastic core of LDPE between two Aluminium sheets of 0.25 mm on both sides having PVDF coating on one side and Polymer (Service) Coating on other face) bracketed at suitable locations including necessary fittings & fastening etc. complete & as directed by The Engineer in charge.	100.00	Nos

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Item No.	As Per BOQ			As Amended		
11.00	ROAD WORK & SIGNAGES			ROAD WORK & SIGNAGES		
	Item	Qty	Unit	Item	Qty	Unit
1	2	3	4	5	6	7
11.13	Providing & Fixing Wall Mounted Nonlit directory sign 3' x 4' of approved make & made of 10mm Acrylic with the required text matters stuck on it with plotted self adhesive vinyl & Mounted on 3mm Aluminium Composit Panel bracketed at suitable locations including necessary fittings & fastening etc. complete & as directed by The Engineer in charge.	50.00	Nos	Providing & Fixing Wall Mounted Nonlit directory sign 3' x 4' of approved make & made of 10mm Acrylic with the required text matters stuck on it with plotted self adhesive vinyl & Mounted on 3mm Aluminium Composit Panel (Sandwich Construction with a thermoplastic core of LDPE between two Aluminium sheets of 0.25 mm on both sides having PVDF coating on one side and Polymer (Service) Coating on other face) bracketed at suitable locations including necessary fittings & fastening etc. complete & as directed by The Engineer in charge.	50.00	Nos
11.14	Providing & Fixing Wall Mounted Nonlit directory sign 3' x 3.5' of approved make & made of 10mm Acrylic with the required text matters stuck on it with plotted self adhesive vinyl & Mounted on 3mm Aluminium Composit Panel bracketed at suitable locations including necessary fittings & fastening etc. complete & as directed by The Engineer in charge.	50.00	Nos	Providing & Fixing Wall Mounted Nonlit directory sign 3' x 3.5' of approved make & made of 10mm Acrylic with the required text matters stuck on it with plotted self adhesive vinyl & Mounted on 3mm Aluminium Composit Panel (Sandwich Construction with a thermoplastic core of LDPE between two Aluminium sheets of 0.2mm on both sides having PVDF coating on one side and Polymer (Service) Coating on other face) bracketed at suitable locations including necessary fittings & fastening etc. complete & as directed by The Engineer in charge.	50.00	Nos

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Item No.	As Per BOQ			As Amended		
11.00	ROAD WORK & SIGNAGES			ROAD WORK & SIGNAGES		
	Item	Qty	Unit	Item	Qty	Unit
1	2	3	4	5	6	7
11.16	Providing & Fixing Wall Mounted Nonlit directory sign 15' x 11' of approved make & made of 10mm Acrylic with the required text matters stuck on it with plotted self adhesive vinyl & Mounted on 3mm Aluminium Composit Panel bracketed at suitable locations including necessary fittings & fastening etc. complete & as directed by The Engineer in charge.	2.00	Nos	Providing & Fixing Wall Mounted Nonlit directory sign 15' x 11' of approved make & made of 10mm Acrylic with the required text matters stuck on it with plotted self adhesive vinyl & Mounted on 3mm Aluminium Composit Panel (Sandwich Construction with a thermoplastic core of LDPE between two Aluminium sheets of 0.25 mm on both sides having PVDF coating on one side and Polymer (Service) Coating on other face) bracketed at suitable locations including necessary fittings & fastening etc. complete & as directed by The Engineer in charge.	2.00	Nos

ANNEXURE - II

Project Name - Construction of Super specialty hospital and other facilities for Dr. B. C. Roy Institute of Medical Sciences and Research at IIT-Kharagpur, West Bengal

IO-Summary for IBMS								
Sr. No.	Description	AI	DI	AO	DO	S/W	By IBMS Contractor	By 3rd Party Contractors
F.1	Chiller 5 Nos					90	Data to be integrated on Modbus/ BACnet/IP protocol from Chiller to BMS	HVAC Vendor to provide BACnet/IP or RS 485 MODBUS interface in each panel . All mapping details & the Master/slave ID setting in the Chillers to be done by the HVAC Contractor
F.1.1	Chiller oN Off command				5		Potential Free Contact from BMS to Chiller panel	Acceptance of Potential Free Output in Panel
F.1.2	Chiller run status		5				Potential Free Contact to BMS from Chiller MCC panel	Potential Free Contact in Chiller Panel
F.1.3	Chillers Trip / Fault		5				Potential Free Contact to BMS from Chiller MCC panel	Potential Free Contact in Chiller Panel
F.1.4	CHW supply temp.	5					Immersion temperature sensor	Suitable Insertion Provision in Water Line
F.1.5	CDW supply temp.	5					Immersion temperature sensor	Suitable Insertion Provision in Water Line
F.1.6	Common Header CHW supply / common return temp.	2					Immersion temperature sensor	Suitable Insertion Provision in Water Line
F.1.7	Common Header CDW supply / common return temp.	2					Immersion temperature sensor	Suitable Insertion Provision in Water Line
F.1.8	Ambient Temperature & Humidity	2					Ambient temp/Humidity sensor	
F.1.9	Chilled Water Flow Status		5				Water flow switch	Suitable Insertion Provision in Water Line
F.1.10	Chilled water outlet Motorised Butterfly valve Open/ close				5		Potential Free Contact from BMS to Valve actuator	Suitable BMS compatible Butterfly valve
F.1.11	Chilled water outlet Motorised Butterfly valve Open/ close Status		10				Signal from potential free contact.	Potential Free Contact from Valve actuator
F.1.12	Condensor water outlet Motorised Butterfly valve Open/ close				5		Potential Free Contact from BMS to Valve actuator	Suitable BMS compatible Butterfly valve
F.1.13	Condensor water outlet Motorised Butterfly valve Open/ close Status		10				Signal from potential free contact.	Potential Free Contact from Valve actuator
F.2	Primary Chilled Water Pumps 5 Nos							
F.2.1	Pump ON / OFF				5		Potential Free Contact from BMS to Pump Starter panel	Acceptance of Potential Free Output in Pump Panel
F.2.2	Pump run status		5				Differential Pressure switch	Potential Free Contact in Pump Panel

Sr. No.	Description	AI	DI	AO	DO	S/W	By IBMS Contractor	By 3rd Party Contractors
F.2.3	Pump Auto / Manual switch status		5				Potential Free Contact at Auto/Manual Switch	Potential Free Contact in Pump Panel
F.2.4	CHW pump trip status.		5				Signal from potential free contact.	Potential Free Contact in Pump Panel
F.3	Condenser water pump 5 Nos							
F.3.1	Pump ON / OFF				5		Potential Free Contact from BMS to Pump Starter panel	Acceptance of Potential Free Output in Pump Panel
F.3.2	Pump run status		5				Differential Pressure switch	Potential Free Contact in Pump Panel
F.3.3	Pump Auto / Manual switch status		5				Potential Free Contact at Auto/Manual Switch	Potential Free Contact in Pump Panel
F.3.4	CHW pump trip status.		5				Signal from potential free contact.	Potential Free Contact in Pump Panel
F.4	Cooling Towers -5 nos							
F.4.1	cooling Towers ON / OFF				5		Potential Free Contact from BMS to Pump Starter panel	Acceptance of Potential Free Output in Pump Panel
F.4.2	CT fan run status		5				Current relay	Potential Free Contact in Pump Panel
F.4.3	CT Auto / Manual switch status		5				Potential Free Contact at Auto/Manual Switch	Potential Free Contact in Pump Panel
F.4.4	CT fan trip status.		5				Signal from potential free contact.	Potential Free Contact in Pump Panel
F.4.5	CT outlet temp	5					Immersion temperature sensor	Suitable Insertion Provision in Water Line
F.4.6	Common Header CDW supply / common return temp.	2					Immersion temperature sensor	Suitable Insertion Provision in Water Line
F.4.7	Cooling tower water outlet Motorised Butterfly valve Open/ close				5		Potential Free Contact from BMS to Valve actuator	Suitable BMS compatible Butterfly valve
F.4.8	Cooling tower water outlet Motorised Butterfly valve Open/ close Status		10				Signal from potential free contact.	Potential Free Contact from Valve actuator
F.4.9	cooling tower Low level status		5				Water level switch	Suitable Insertion Provision
F.4.10	Chilled water header Flow rate	1					Water Flow meter	Suitable Insertion Provision
F.5	Secondary Chilled Water Pumps 6 Nos							
F.5.1	Pump Auto/Manual status		6				Potential Free Contact at Auto/Manual Switch	Potential Free Contact in Pump Panel
F.5.2	Secondary pump Enable/disable command				6		Potential Free Contact from BMS to PLC	Suitable provision in PLC
F.5.3	Secondary pumping PLC integration					60	Data to be integrated on Modbus RS485 protocol from CPM to BMS	HVAC Vendor to provide RS 485 MODBUS interface in each plc . All mapping details & the Master/slave ID setting in the Chillers to be done by the HVAC Contractor
	Sub Total (F.1+F.2+F.3+F.4+F.5)	24	101	0	41	150	0	0
F.6	Air Handling Units - Type -1							

Sr. No.	Description	AI	DI	AO	DO	S/W	By IBMS Contractor	By 3rd Party Contractors
F.6.1	AHU ON/OFF				11		Potential Free Contact from BMS to fan Starter panel	Acceptance of Potential Free Output in AHU Panel
F.6.2	AHU Air Flow status		11				Differential Switch across Fans	Suitable Insertion Provision in AHU
F.6.3	AHU filter status		11				Differential Switch across Filter	Suitable Insertion Provision in AHU
F.6.4	AHU A/M Status		11				Potential Free Contact at Auto/Manual Switch	Potential Free Contact in A/M switch in AHU Panel
F.6.5	Return Air temperature & RH	11					Duct Temperature + RH Sensor	Suitable Insertion Provision in AHU
F.6.6	Chilled water valve control			11			0-10V DC/4-20mA signal to valve	Suitable Insertion Provision in AHU
F.6.7	Reheat strip heater			11			0-10V DC /4-20mA signal to thyrister heater banks	Suitable provision to accept BMS signal
F.6.8	AHUVFD control			11			0-10V DC/4-20mA signal to VFD	Suitable VFD
F.6.9	AHU Fan VFD feedback	11					0-10V DC/4-20mA signal from VFD to DDC	0-10 VDC/4-20mA signal to BMS
F.6.10	AHU VFD trip status		11				Signal from potential free contact.	Potential Free Contact from VFD in electrical Panel
F.6.11	Room Differential Pressure monitoring	11					Differential Pressure Sensor (Air)	Suitable Insertion Provision in room
	Sub Total (F.6)	33	44	33	11	0	0	0
		3	4	3	1			
F.7	Air Handling Units - (AHUs Type -2)							
F.7.1	AHU ON/OFF				38		Potential Free Contact from BMS to fan Starter panel	Acceptance of Potential Free Output in AHU Panel
F.7.2	AHU Air Flow status		38				Differential Switch across Fans	Suitable Insertion Provision in AHU
F.7.3	AHU filter status		38				Differential Switch across Filter	Suitable Insertion Provision in AHU
F.7.4	AHU A/M Status		38				Potential Free Contact at Auto/Manual Switch	Potential Free Contact in A/M switch in AHU Panel
F.7.5	Return temperature & RH	38					Room Temperature + RH Sensor	Suitable Insertion Provision in AHU
F.7.6	Chilled water valve control			38			0-10V DC/4-20mA signal to valve	Suitable Insertion Provision in AHU
F.7.7	Reheat strip heater			10			0-10V DC /4-20mA signal to thyrister heater banks	Suitable provision to accept BMS signal
F.7.8	AHUVFD control			34			0-10V DC/4-20mA signal to VFD	Suitable VFD
F.7.9	AHU Fan VFD feedback	34					0-10V DC/4-20mA signal from VFD to DDC	0-10 VDC/4-20mA signal to BMS
F.7.10	AHU VFD trip status		34				Signal from potential free contact.	Potential Free Contact from VFD in electrical Panel
F.7.11	Room Differential Pressure monitoring	34					Differential Pressure Sensor (Air)	Suitable Insertion Provision in room
	Sub Total (F.7)	106	148	82	38	0	0	0
		3	4	3	1			
F.8	Treated Fresh Air Handling Units -							
F.8.1	TFA ON/OFF				10		Potential Free Contact from BMS to fan Starter panel	Acceptance of Potential Free Output in TFA Panel
F.8.2	TFA Air Flow status		10				Differential Switch across Fans	Suitable Insertion Provision in TFA
F.8.3	TFA Air filter status		10				Differential Switch across Filter	Suitable Insertion Provision in TFA
F.8.4	TFA A/M Status		10					Potential Free contact from TFA panel
F.8.5	Chilled water valve control			10			0-10V DC/4-20mA signal to valve	Suitable Insertion Provision in AHU

Sr. No.	Description	AI	DI	AO	DO	S/W	By IBMS Contractor	By 3rd Party Contractors
F.8.6	Reheat strip heater			10			0-10V DC /4-20mA signal to thyrister heater banks	Suitable provision to accept BMS signal
F.8.7	TFA supply air temperature	10					Duct Temperature Sensor	Suitable Insertion Provision in TFA
	Sub Total (F.8)	10	30	20	10	0	0	0
F.9	VAV boxes- 292 Nos.							
F.9.1	VAV controllers intergration					1460	Integration through BACnet/IP Protocol	VAV vendor to provide BACnet/IP procol for integratiopn to IBMS.
		0	0	0	0	1460		
F.10	Liftwell & Pressurization Fans							
F.10.1	Fan Air Flow status		18				Differential Switch across Fans	Suitable Insertion Provision in AHU
F.10.2	Fan Air A/M status		18				Signal from potential free contact.	Potential Free Contact from A/M switch in electrical Panel
	Sub Total (F.10)	0	36	0	0	0	0	0
F.11	FA/ Exhaust Fans							
F.11.1	Fan On Off				40		Potential Free Contact from BMS to fan Starter panel	Acceptance of Potential Free Output in electrical Panel
F.11.2	Fan Air Flow status		40				Differential Switch across Fans	Suitable Insertion Provision
F.11.3	Fan A/M status		40				Signal from potential free contact.	Potential Free Contact from A/M switch in electrical Panel
F.11.4	Parking area CO level monitoring	8					CO sensor	Suitable Insertion Provision
	Sub Total (F.11)	8	80	0	40	0	0	0
F.12	Fire Fighting System							
F.12.1	Hydrant pressure monitroing	1					Pressure Sensor	Suitable Insertion Provision in Water Line
F.12.2	Sprinkler pressure monitroing	1					Pressure Sensor	Suitable Insertion Provision in Water Line
F.12.3	Jockey Pump run status		1				Differential Pressure switch	Suitable Insertion Provision in Water Line
F.12.4	Sprinkler Pump run status		1				Differential Pressure switch	Suitable Insertion Provision in Water Line
F.12.5	Hydrant Fire Pump Run Status		1				Differential Pressure switch	Suitable Insertion Provision in Water Line
F.12.6	Diesel Fire Pump Run Status		1				Differential Pressure switch	Suitable Insertion Provision in Water Line
F.12.7	FFTG room Diesel Tank Low level status		1				Flame Proof level switch	Suitable Insertion Provision
	Sub Total (F.12)	2	5	0	0	0	0	0
F.13	U G Tanks and pumps							
F.13.1	Raw UG Tank Level High /Low status		2				Water level switch	Suitable Insertion Provision
F.13.2	Treated water UG Tank Level High /Low status		2				Water level switch	Suitable Insertion Provision

Sr. No.	Description	AI	DI	AO	DO	S/W	By IBMS Contractor	By 3rd Party Contractors
F.13.3	Fire Tank Level High /Low status		4				Water level switch	Suitable Insertion Provision
F.13.4	Terrace Pump run status		1				Differential Pressure switch	Suitable Insertion Provision
F.13.5	Terrace Pump Trip status		1				Signal from potential free contact.	Potential Free Contact from electrical Panel
F.13.6	Borewell Pump run status		2				Differential Pressure switch	
F.13.7	Borwell Pump Trip status		2				Signal from potential free contact.	Potential Free Contact from electrical Panel
F.13.8	Hydropneumatic Domestic water supply pumps run status		2				Differential Pressure switch	
F.13.9	Hydropneumatic Domestic water supply pumps Trip status		2				Signal from potential free contact.	Potential Free Contact from electrical Panel
F.13.10	Filter Feed pumps run staus		2				Differential Pressure switch	
F.13.11	Filter Feed pumps trip staus		2				Signal from potential free contact.	Potential Free Contact from electrical Panel
F.13.12	Sump pumps run status		2				Differential Pressure switch	
F.13.13	Sump pumps trip status		2				Signal from potential free contact.	Potential Free Contact from electrical Panel
F.13.14	Make up/ Expansion water tank Hi Low level status		4				Signal from level switch	Suitable Insertion Provision
F.13	Sub Total (F.13)	0	30	0	0	0	0	0
F.14	Water Supply System							
F.14.1	water recycling pumps (flushing) run status		2				Differential Pressure switch	
F.14.2	water recycling pumps (flushing)trip status		2				Signal from potential free contact.	Potential Free Contact from electrical Panel
F.14.3	STP (Treated water) tank high/ low level		2				water level switch	Suitable insertion provision
F.14.4	STP pumps run status		10				Differential Pressure switch	
F.14.5	STP pumps trip status		10				Signal from potential free contact.	Potential Free Contact from electrical Panel
F.14.6	WTP pumps run status (Pump room)		4				Signal from potential free contact.	Suitable Insertion Provision in Water Line
F.14.7	WTP pumps trip status (Pump room)		4				Signal from potential free contact.	Potential Free Contact from electrical Panel
F.14.8	irrigation water pumps run status		2				Differential Pressure switch	Suitable Insertion Provision in Water Line
F.14.9	irrigation water pumps trip status		2				Signal from potential free contact.	Potential Free Contact from electrical Panel
F.14.10	Plant area Tank High / Low level status		2				water level switch	Suitable insertion provision
F.14.11	Overflow tank high/ low level ststus		2				water level switch	Suitable insertion provision
F.14.12	Solar System (circulation)pumps run status		2				Signal from potential free contact.	Suitable Insertion Provision in Water Line
F.14.13	Solar System (circulation)pumps trip status		2				Signal from potential free contact.	Potential Free Contact from electrical Panel
F.14	Sub Total (F.14)	0	46	0	0	0	0	0

Sr. No.	Description	AI	DI	AO	DO	S/W	By IBMS Contractor	By 3rd Party Contractors
F.15	Diesel Generator - 3 Nos.					90	Integration through Modbus RS485 Protocol	DG Panel vendor to provide RS 485 MODBUS RTU.All mapping details & the Master/slave ID setting in the meter to be done by the DG vendor
F.15.1	DG set Run status		3				Signal from potential free contact.	Potential Free Contact from electrical Panel
F.15.2	Fault Alarm Status		3				Signal from potential free contact.	Potential Free Contact from electrical Panel
F.15.3	Oil tank Low level status		3				Flame Proof Level Switch	Suitable Insertion Provision
F.15.4	DG battery voltage status	3					DC voltage transducer	Suitable Insertion Provision
F.15.5	Main UG HSD tank level monitoring	1					Flame Proof Level transmitter	Suitable Insertion Provision
	Sub Total (F.15)	4	9	0	0	90	0	0
F.16	Electrical							
F16.1	HT Main incoming Breaker status		1				Signal from potential free contact.	Potential Free Contact from electrical Panel
F16.2	Trip Alarm		1				Signal from potential free contact.	Potential Free Contact from electrical Panel
F16.3	Over current Alarm		1				Signal from potential free contact.	Potential Free Contact from electrical Panel
F16.4	Earth Fault Alarm		1				Signal from potential free contact.	Potential Free Contact from electrical Panel
F16.5	Transformer Fault status		1				Signal from potential free contact.	Potential Free Contact from electrical Panel
F16.6	LT main Incoming / outgoing metering (47)					470	Integration of energy meter through Modbus Protocol.	Vendor to provide RS 485 MODBUS in each equipment
F16.7	LT Isolator outgoing breaker Status		1				Signal from potential free contact.	Potential Free Contact from electrical Panel
F16.8	Isolator panel Breaker On off status		3				Signal from potential free contact.	Potential Free Contact from electrical Panel
F16.9	Isolator panel Breaker trip status		3				Signal from potential free contact.	Potential Free Contact from electrical Panel
F16.10	LT main incomer Breaker status		6					
F16.11	Bus Coupler Status		2				Signal from potential free contact.	Potential Free Contact from electrical Panel
F16.12	Power Factor Monitoring	3					Single Phase Power Factor Transducer	Suitable Insertion Provision in electrical panel with required CT/PT
F16.13	Transformer Oil temperature Alarm		3				Signal from potential free contact.	Potential Free Contact from Transformer Panel
	Sub Total (F.16)	3	23	0	0	470	0	0
F.17	Scrubber							
F.17.1	Scrubber Start / stop				3		Potential Free Contact from BMS to fan Starter panel	Acceptance of Potential Free Output in electrical Panel
F.17.2	Scrubber Run status		3				Signal from potential free contact.	Potential Free Contact from electrical Panel

Sr. No.	Description	AI	DI	AO	DO	S/W	By IBMS Contractor	By 3rd Party Contractors
F.17.3	Scrubber A/M status		3				Signal from potential free contact.	Potential Free Contact from electrical Panel
	Sub total F.17	0	6	0	3	0	0	0
F.18	Lifts :(9 nos.)							
F.18.1	Lifts Run status		9				Signal from potential free contact.	Potential Free Contact from electrical Panel
F.18.2	Lifts Alarm status		9				Signal from potential free contact.	Potential Free Contact from electrical Panel
	Sub total F.18	0	18	0	0	0	0	0
F.19	Fire Alarm System							
	Fire Alarm System	0	0	0	0	800	Integration of FAS through BACnet/IP Protocols of all devices/detectors	FDA Vendor to provide BACnet /IP in each equipment
	Sub total F.19	0	0	0	0	800		
F.20	UPS							
F.20.1	UPS Common alarm		1				Signal from potential free contact.	Potential Free Contact from UPS Panel
F.20.2	UPS integration	0	0	0	0	30	Integration of UPS microprocessor through BACnet/IP or Modbus RS 485 Protocol on the device	UPS Vendor to provide BACnet /IP or Modbus RS 485 protocol in each equipment
	Sub Total (F.20)=	0	1	0	0	30	0	0
	Grand Total (F.1 to F.20)	190	577	135	143	3000		
			1045					