



Bangladesh Sugar & Food Industries Corporation

ChinishilpaBhaban, 3 Dilkusha C/A, Dhaka-1000

ADDENDUM OF TENDER DOCUMENT FOR

***PROCUREMENT OF EPC (ENGINEERING, PROCUREMENT, CONSTRUCTION
& COMMISSIONING) CONTRACTOR***

FOR

PACKGE- TSM-2: I) DISTILLERY PLANT (30KLPD)

II) BIO-GAS PLANT AND

III) BIO-COMPOST PLANT

UNDER THE PROJECT

**REPLACEMENT OF OLD MACHINERY AND ADDITION OF MACHINERY FOR
BEET SUGAR PRODUCTION AT THAKURGAON SUGAR MILLS LTD.**

LOCATION: THAKURGAON, BANGLADESH

Ref. No: BSFIC/Project/TSM/EPC/5016/20.01/2017/

Issued on:

Sub: The Addendum of the Tender Document for Package-TSM-2.

SL. No.	Volume No.	Page No.	Section No.	Clause No	As per Tender Document issued on 11/06/2017	Addendum
1		2		3	4	5
01	Vol.-I	39	Section-2 TDS	ITT 14.1(b) (Last line of 1 st , 2 nd and 3 rd para)	<p>Specific Experience of Tenderers:</p> <p>Lot-1-Distillery Plant (30 KLPD): --- and the value of completion of a Distillery plant must be of minimum USD 15.00 million.</p> <p>Lot-2: Bio-gas Plant: ----- and the value of completion of a Bio-gas Plant must be of minimum USD 2.50 million.</p> <p>Lot-3-Bio-Compost Plant: ----- and the value of completion of a Bio-Compost Plant must be of minimum USD 1.00 million.</p>	<p>Specific Experience of Tenderers:</p> <p>Lot-1-Distillery Plant (30 KLPD): ----; and the value of at least 1 (one) completed Distillery plant must be of minimum USD 15.00 million.</p> <p>Lot-2: Bio-gas Plant: -----; and the value of at least 1 (one) completed Bio-gas Plant must be of minimum USD 2.50 million.</p> <p>Lot-3-Bio-Compost Plant: ----; and the value of at least 1 (one) completed Bio-Compost Plant must be of minimum USD 1.00 million.</p>
02	Vol.-I	42	Section-2 TDS	ITT 23.8	The price to be quoted in Tender Submission Letter for Financial part (Form -3) shall be the total price of the Tender, excluding any discounts offered, only in case of being awarded more than one package, by the Tenderer.	Discount offer not Applicable.
03	Vol.-I	42	Section-2 TDS	ITT 23.9	The Tenderer wishing to offer any discount shall indicate the methodology for their application in the Tender Submission Letter (Form -1) for being awarded of more than one package.	Discount offer not Applicable.

SL. No.	Volume No.	Page No.	Section No.	Clause No	As per Tender Document issued on 11/06/2017	Addendum
04	Vol.-I	43	Section-2 TDS	ITT 36.1	The Deadline for Submission of Tenderers is upto 12.30 P.M. on 23-08-2017	The Deadline for Submission of Tenders is upto 12.30 P.M. on 26-09-2017
05	Vol.-I	44	Section-2 TDS	ITT 53.2	If the winning package is missing some items as stated under ITT Sub Clause 53.1, comprising less than twenty percent (20%), the Purchaser may procure the missing items from the Tenderer offering the least cost for those remaining items.	Not Applicable
06	Vol.-I	63	Appendix A	Clause- 4 (e)	GCC Sub-Clause 45.3	Replaced by Annexure-II Sub-Clause 38.3.
07	Vol.-I	64	Appendix A	Clause- 5 (in 4 th para)	GCC Sub-Clause 45.3	Replaced by Annexure-II Sub-Clause 38.3.
08	Vol.-I	65	Appendix A	Clause- 6 (d) (in 6 th para)	GCC Sub-Clause 12.3.	Replaced by GCC Sub-Clause 27.5
09	Vol.-I	67	Annex- Dispute Board Guideline	Clause- 5	GCC Sub-Clause 45.3	Replaced by Annexure-II Sub-Clause 38.3
10	Vol.-I	68	Annex- Dispute Board Guideline	Clause- 9	GCC Sub-Clause 45.3	Replaced by Annexure-II Sub-Clause 38.3,
11	Vol.-I	76	Section-4 PCC	Annexure- II 7.3.2 (2 nd Line)	--- “Production Of Electricity By Co-Generation And Establishment Of Sugar Refinery At North Bengal Sugar Mills” Project, --	-----“Replacement of Old Machinery and Addition of Machinery for Beet Sugar Production at Thakurgaon Sugar Mills Limited” Project, ---
12	Vol.-I	76	Section-4 PCC	Annexure- II 7.3.3	GCC clause 27.8	Replaced by Anexure-II clause 20.8

SL. No.	Volume No.	Page No.	Section No.	Clause No	As per Tender Document issued on 11/06/2017	Addendum
13	Vol.-I	76	Section-4 PCC	Annexure -II 14.2.4	Sub-clause 21.4	Replaced by Annexure-II Sub-clause 14.2.4
14	Vol.-I	77	Section-4 PCC	Annexure-II 16.3	Sub-Clause 23.3:	Replaced by Annexure-II Sub-Clause 16.3
15	Vol.-I	77	Section-4 PCC	Annexure- II 40	Sub-Clause 14.2 as follows:	Replaced by Sub-Clause 40.2.
16	Vol.-I	78	Section-4 PCC	Annexure- II 40(d) (1 st Line)	d) Customs and Import Duties, Levies and all other Charges for BSFIC Property: The project “Production Of Electricity By Co-Generation And Establishment Of Sugar Refinery At North Bengal Sugar Mills”---	d) Customs and Import Duties, Levies and all other Charges for BSFIC Property: The project “Replacement of Old Machinery and Addition of Machinery for Beet Sugar Production at Thakurgaon Sugar Mills Limited” --
17	Vol.-I	116	Section-5	Lot-1 Form-3D (ii)	Civil works, Erection & Commissioning and other services (Lot-1)	Civil works, Erection & Commissioning and other services (Lot-1) The following note is included in this Form-3D (ii) of Lot-1: Note: Items not covered in the price schedule no. 3D(ii) but required for the completion of the project are deemed to have been included in the offered price schedule.
18	Vol.-I	124	Section-5	Lot-2 Form-3D (ii)	Civil works, Erection & Commissioning and other services (Lot-2)	Civil works, Erection & Commissioning and other services (Lot-2) The following note is included in this Form-3D (ii) of Lot-2: Note: Items not covered in the price schedule no. 3D(ii) but required for the completion of the project are deemed to have been included in the offered price schedule.

SL. No.	Volume No.	Page No.	Section No.	Clause No	As per Tender Document issued on 11/06/2017	Addendum
19	Vol.-I	132	Section-5	Lot-3 Form-3D (ii)	Civil works, Erection & Commissioning and other services (Lot-3)	Civil works, Erection & Commissioning and other services (Lot-3) The following note is included in this Form-3D (ii) of Lot-3: Note: Items not covered in the price schedule no. 3D(ii) but required for the completion of the project are deemed to have been included in the offered price schedule.
20	Vol.-I	201	Annexure-II	Clause- 5.5	GCC Clause 1	Replaced by GCC Clause 6.3
21	Vol.-I	205	Annexure-II	Clause-12.1	EPC Contractor may appoint subcontractor with his own responsibilities after signing the contract agreement keeping informed the purchaser. But the whole liabilities of the work or facilities of the plants will remain with the contractor's liabilities. No claim or payment of the subcontractor will be considered by the Purchaser.	This clause is deleted.
22	Vol.-I	207	Annexure-II	Sub-Clause-13.2.7	GCC Sub-Clause 13.2	Replaced by Annexure-II Sub-Clause 13.2
23	Vol.-I	207	Annexure-II	Sub-Clause-14.1	GCC Sub-Clause 14.2	Replaced by Annexure-II Sub-Clause 14.2
24	Vol.-I	208	Annexure-II	Sub-Clause-14.3	14.2.1, 14.2.2, 14.2.3 and 14.2.4	Replaced by 14.3.1, 14.3.2, 14.3.3 and 14.3.4
25	Vol.-I	208	Annexure-II	Sub-Clause-14.3 (Custom Clearance)	14.3 <u>Customs Clearance</u> & GCC Sub-clause 14.2	Replaced by 14.4 <u>Customs Clearance</u> & Replaced by Annexure-II Sub-clause 14.2

SL. No.	Volume No.	Page No.	Section No.	Clause No	As per Tender Document issued on 11/06/2017	Addendum	
26	Vol.-I	242	Annexure-II	Sub-Clause-38.5 (d)	GCC Sub-Clause 5.3	Replaced by GCC Sub-Clause 7	
27	Vol-II	5	2.0 (Design Basis)	6	6. Design basis of Bio-Methanisation Plant a. Spent wash Feed quantity for Bio-Methanisation Plant	6. Design basis of Bio-Gas Plant a. Spent wash Feed quantity for Bio-Gas Plant	
28	Vol-II	5	2.0 (Design Basis)	10	Bio-Methanisation Unit	Bio-Gas Plant unit	
29	Vol -II	5	2.0 (Design Basis)	11		Following Specification of Furnace oil used in the Boiler is included in the design basis:	
						Furnace Oil Specifications	
						Description	Value
						Density (Approx. g/cc at 15 ⁰ C)	0.89-0.95
						Flash Point (⁰ C)	66
						Pour Point (⁰ C)	20
						GCV (kcal/kg)	10,500
						Sediment (% wt. max.)	0.25
						Sulphur total (% wt. Max.)	Upto 4.0
						Water Content (% Vol. max.)	1.0
Ash (% Wt. max.)	0.1						
30	Vol -II	6	2.0 (Design Basis)	12	-----	Following Clause is included in the design basis: 12. Bottling Plant (a) Liquor is packed in 750ml, 375ml and 180ml bottles (b) ROPP (Roll On Pilfer Proof) cap details are 22mm, 25mm and 28mm.	

SL. No.	Volume No.	Page No.	Section No.	Clause No	As per Tender Document issued on 11/06/2017	Addendum
31	Vol-II	13	3.1	1	Molasses Storage and Day Tanks 10. ---- 11.----	Molasses Storage and Day Tanks 10. Molasses Weigh Bridge: 50 MT Capacity, Pitless and Load Cell type. 11. Molasses receiving Pit: 6M X 8M X 4M (RCC Underground)
32	Vol-II	14	3.1	5	Pre Fermenters (Pitching Vat) 3. Capacity: 10.0 M ³ , 30.0M ³	Pre Fermenters (Pitching Vat) 3. Capacity: 30 M ³ each
33	Vol-II	16	3.1	13	Reboilers 1. Analyser Reboiler :1 no., 180m ² , SS304, Shell & tube	Reboilers 1. Analyser Reboiler : 2 nos., 180m ² , SS304, Shell & tube
34	Vol-II	30	3.1	40 (17)	17. Exhaust Steam Pressure at outlet: 1.0 Kg/cm ²	17. Exhaust Steam Pressure at outlet: 3.5 Kg/cm ²
35	Vol-II	31	3.1	42	42. DISTILLERY LAB 1. Freezers : 2nos. 2. Incubator : 2nos. 3. Autoclave : 2nos. 4. Spectrophotometer : 1no. 5. Laminar flow chamber : 1no. 6. Digital microscope : 2nos. 7. Flame photometer : 1no. 8. Inoculation chamber : 1no. 9. Homocytometer : 1no.	42. DISTILLERY LAB 1. Freezers a) -20 ⁰ C Deep Freezer : 1 nos. i) Type : Door type ii) Adjustable Temp. range : -10 to – 25 ⁰ C iii) Capacity : 650-7500L b) -80 ⁰ C Ultra low Temperature Freezer: 1 nos. i) Type : Door type ii) Adjustable Temp. range : -40 to – 86 ⁰ C iii) Capacity : 650-750L iv) Control : Microprocessor 2. Incubator a) Low Temp. Incubator : 1 No. i) Temp. Range : -20 ⁰ C to + 80 ⁰ C

SL. No.	Volume No.	Page No.	Section No.	Clause No	As per Tender Document issued on 11/06/2017	Addendum
					10. Muffle furnace : 1no.	ii) Capacity : 350-450L
					11. Water distillation set : 1no.	iii) Controller : Microprocessor PID multi-function
					12. Shaker : 1no.	b) Shaking Incubator : 1 no.
					13. Water analysis kit : 1no.	i) Type : front door
					14. TDS meter : 1 set	ii) Temp. Range : +5 to 70 ⁰ C
					15. pH meter : 1no.	iii) Shaking speed : 30 – 250 rpm
					16. Electronic balance : 1no.	iv) Capacity : 150-200 liter
					17. Sykes hydrometers : 4 sets	3. Autoclave : 2nos.
					18. Saccharo meter : 4 sets	i) Capacity : 80-100 Liter
					19. Glass apparatus : 1 set	ii) Type : Vertical
					20. Others : As required.	iii) Temperature : 110 to 134 ⁰ C
						iv) MOC : SS 304
						4. Spectrophotometer : 1no.
						i) Wavelength range : 190-1100 nm
						ii) Optical System : Double Beam
						iii) Power : 220V 50Hz
						iv) Accessories : 12pcs quartz cell, 12 pcs optical glass cell, 1pc deuterium lamp, 1pc tangstant lamp, cell tray etc
						5. Laminar flow chamber: 1no.
						i) Type : Horizontal (Class II)
						ii) Air volume : 1300-1400 M ³ /hr
						iii) MOC : SS 304
						iv) Light : UV and FL
						v) HEPA Filter : class 100, purity 0.3 μm particle removal 99.99%

SL. No.	Volume No.	Page No.	Section No.	Clause No	As per Tender Document issued on 11/06/2017	Addendum
						<p>vi) Pre filter : 3~ 30µm particle removal</p> <p>6. Digital microscope : 2nos.</p> <p>i) Illumination : LED/Halogen, LED fluorescence retrofitable</p> <p>ii) Nose Piece : Backward quadruple</p> <p>iii) Eie piece : EW10X/20mm</p> <p>iv) Objective : Semi plan achromatic objective 4x, 10x, 40x, 100x</p> <p>v) USB Digital Camera : 2 MP USB High Resolution CCD CMOS Digital Microscope Camera with Photo lens, Microscope adapter , Capture software.</p> <p>7. Flame photometer : 1no.</p> <p>i) Range : Na, K, & Li :1-100 ppm and Ca:15-100 ppm, Ba 200 ppm</p> <p>ii) Sensitivity : To display minimum of 100 units, Na <0.5 ppm, K <0.5 ppm, Li 5 ppm, Ca 5 ppm, Ba 200 ppm</p> <p>iii) Linearity :< 3%</p> <p>iv) Reproducibility : 2% CV for 20 samples</p> <p>v) Detector :Photo Cell</p> <p>vi) Ignition System :Electrical Ignition</p> <p>vii) Flame System : LPG & Dry Oil Free Air</p> <p>viii) Gas Control :Adjustable with Knob</p> <p>ix) Automiser : Axial Flow Type</p> <p>x) Oil free Air Compressor : Supplied with Built-in Air Filter with Pressure Regulator & Gauge to</p>

SL. No.	Volume No.	Page No.	Section No.	Clause No	As per Tender Document issued on 11/06/2017	Addendum
						<p>deliver stable and moisture / oil free air supply.</p> <p>xi) Power Supply : 230 V, AC $\pm 10\%$, 50 Hz</p> <p>xii) Accessories : Li Filter, Ca Filter, LPG Gas with cylinder and gas regulator.</p> <p>8) Laboratory Oven : 1no.</p> <p>i) Temperature range : +30 to + 300⁰C</p> <p>ii) Capacity : 75 L</p> <p>iii) MOC : The inner chambers as well as the inner side of door including frames are made of stainless steel.</p> <p>iv) Power : 230V, 50/60Hz</p> <p>9) Homocytometer : 1no.</p> <p>10) Muffle furnace : 1no.</p> <p>i) Chamber volume : 45L</p> <p>ii) Max. Furnace Temp. : 1200⁰C</p> <p>iii) Connecting Voltage : 420V, 3/N/PE</p> <p>11) Water distillation set : 1no.</p> <p>i) Type: Double Distillation</p> <p>ii) Capacity: Distilled water output max. 5L/hr</p> <p>iii) Biological activity: Pyrogen free.</p> <p>iv) pH : 6.9-7.0</p> <p>v) Conductivity: $<1 \times 10^{-6}$ S/cm</p> <p>vi) Electrical Requirement: 440volts, 3 phase</p> <p>vii) Controller: Microprocessor control</p>

SL. No.	Volume No.	Page No.	Section No.	Clause No	As per Tender Document issued on 11/06/2017	Addendum
						<p>12) Shaker: 1no.</p> <ul style="list-style-type: none"> i) Shaking motion : Orbital ii) Shaking plate size: Min. 600X480 iii) Speed Range: 10-300 rpm iv) Maximum load: 20kg v) Number of clips: 50ml-35 nos., 125ml-20nos., 250ml-12nos., 500-6nos., 1000-4nos. vi) Accessories: Universal tray with spring vii) Option to shake clockwise and anticlockwise <p>13) Water analysis kit : 1no.</p> <ul style="list-style-type: none"> i) Number of test: each 100 ii) Name of Test: <ul style="list-style-type: none"> a) Arsenic b) Iron c) Chloride d) Phosphate e) Sulphate f) Nitrate nitrogen g) Total hardness h) Calcium hardness i) Magnesium hardness j) Potassium k) BOD l) COD m) Alkalinity

SL. No.	Volume No.	Page No.	Section No.	Clause No	As per Tender Document issued on 11/06/2017	Addendum														
						14) Conductivity & TDS meter: 1 set														
						<table border="1"> <tr> <td>Conductivity</td> <td>Range: 0.1µS/cm to 200mS/cm Resolution:0.01µS Relative: 0.5% reading ±1 digit Accuracy Relative Temp.:20,25°C(default) Temp. Compen.:Linear (0.0 to 10.0%/°C) Compatible Cell constants: 0.001 to 10</td> </tr> <tr> <td>TDS</td> <td>Range: 1 to 19.999mg/L Resolution:4 significant digit Relative accuracy: 0.5% reading ±1 digit. TDS Factor range: Linear 0.01 to 10.00 default 0.49</td> </tr> <tr> <td>Temperature</td> <td>Range: -5 to 105°C, Resolution:0.1 Relative accuracy:±0.1 Offset calibration: Yes</td> </tr> <tr> <td>Data logger</td> <td>Number of Data logger: 200 with time and data storage.</td> </tr> <tr> <td>Inputs</td> <td>8-pin mini-DIN</td> </tr> <tr> <td>AC Adapter</td> <td>Universal 100-20VAC, Optional Battery Power—4AAs, Life 2000 hs</td> </tr> <tr> <td colspan="2">Complete set with conductivity cell K=1.0, Conductivity standard ,1415 µs,5x60ml, Electrode, Electrode Holder and Power adapter.</td> </tr> </table>	Conductivity	Range: 0.1µS/cm to 200mS/cm Resolution:0.01µS Relative: 0.5% reading ±1 digit Accuracy Relative Temp.:20,25°C(default) Temp. Compen.:Linear (0.0 to 10.0%/°C) Compatible Cell constants: 0.001 to 10	TDS	Range: 1 to 19.999mg/L Resolution:4 significant digit Relative accuracy: 0.5% reading ±1 digit. TDS Factor range: Linear 0.01 to 10.00 default 0.49	Temperature	Range: -5 to 105°C, Resolution:0.1 Relative accuracy:±0.1 Offset calibration: Yes	Data logger	Number of Data logger: 200 with time and data storage.	Inputs	8-pin mini-DIN	AC Adapter	Universal 100-20VAC, Optional Battery Power—4AAs, Life 2000 hs	Complete set with conductivity cell K=1.0, Conductivity standard ,1415 µs,5x60ml, Electrode, Electrode Holder and Power adapter.	
Conductivity	Range: 0.1µS/cm to 200mS/cm Resolution:0.01µS Relative: 0.5% reading ±1 digit Accuracy Relative Temp.:20,25°C(default) Temp. Compen.:Linear (0.0 to 10.0%/°C) Compatible Cell constants: 0.001 to 10																			
TDS	Range: 1 to 19.999mg/L Resolution:4 significant digit Relative accuracy: 0.5% reading ±1 digit. TDS Factor range: Linear 0.01 to 10.00 default 0.49																			
Temperature	Range: -5 to 105°C, Resolution:0.1 Relative accuracy:±0.1 Offset calibration: Yes																			
Data logger	Number of Data logger: 200 with time and data storage.																			
Inputs	8-pin mini-DIN																			
AC Adapter	Universal 100-20VAC, Optional Battery Power—4AAs, Life 2000 hs																			
Complete set with conductivity cell K=1.0, Conductivity standard ,1415 µs,5x60ml, Electrode, Electrode Holder and Power adapter.																				

SL. No.	Volume No.	Page No.	Section No.	Clause No	As per Tender Document issued on 11/06/2017	Addendum												
						<p>15) pH meter(Mettler Toledo): 1no.</p> <table border="1"> <tr> <td>PH</td> <td>Range: -2.000 to 16.000 Resolution:0.1, 0.01, Relative accuracy: ± 0.01 Calibration: Up to 3 Points</td> </tr> <tr> <td>mV/Rel mV/ORP</td> <td>Range: $\pm 1600.0\text{mV}$ Resolution:0.1 Relative accuracy: $\pm 0.2\text{ mV}$ or $\pm 0.05\%$ of reading whichever if greater</td> </tr> <tr> <td>Temperature</td> <td>Range: -5 to 105°C, Resolution:0.1 Relative accuracy: ± 0.1</td> </tr> <tr> <td>Data logger</td> <td>Number of Data logger: 50 with time and date stamp</td> </tr> <tr> <td>Inputs</td> <td>pH Electrode: BNC , interface pin ATC Probe: 8-pin mini-DIN</td> </tr> <tr> <td>AC Adapter</td> <td>Universal 100-20VAC, Optional Battery Power—4AAs, Life 2000 hrs</td> </tr> </table> <p>Combined long life epoxy body pH electrode, refillable, with BNC Connector (plug in Head) to be supplied. Reference chamber of Electrode to be kept dry for long time storage. Filling solution will be used at the time of commissioning.</p> <ul style="list-style-type: none"> • Auto calibration with auto recognition of buffer, with display slop value • Auto self diagnosis & Temp. Compensation 	PH	Range: -2.000 to 16.000 Resolution:0.1, 0.01, Relative accuracy: ± 0.01 Calibration: Up to 3 Points	mV/Rel mV/ORP	Range: $\pm 1600.0\text{mV}$ Resolution:0.1 Relative accuracy: $\pm 0.2\text{ mV}$ or $\pm 0.05\%$ of reading whichever if greater	Temperature	Range: -5 to 105°C, Resolution:0.1 Relative accuracy: ± 0.1	Data logger	Number of Data logger: 50 with time and date stamp	Inputs	pH Electrode: BNC , interface pin ATC Probe: 8-pin mini-DIN	AC Adapter	Universal 100-20VAC, Optional Battery Power—4AAs, Life 2000 hrs
PH	Range: -2.000 to 16.000 Resolution:0.1, 0.01, Relative accuracy: ± 0.01 Calibration: Up to 3 Points																	
mV/Rel mV/ORP	Range: $\pm 1600.0\text{mV}$ Resolution:0.1 Relative accuracy: $\pm 0.2\text{ mV}$ or $\pm 0.05\%$ of reading whichever if greater																	
Temperature	Range: -5 to 105°C, Resolution:0.1 Relative accuracy: ± 0.1																	
Data logger	Number of Data logger: 50 with time and date stamp																	
Inputs	pH Electrode: BNC , interface pin ATC Probe: 8-pin mini-DIN																	
AC Adapter	Universal 100-20VAC, Optional Battery Power—4AAs, Life 2000 hrs																	

SL. No.	Volume No.	Page No.	Section No.	Clause No	As per Tender Document issued on 11/06/2017	Addendum
						<p style="text-align: center;">Facilities</p> <p>Complete set including Triode 3-in-1 PH/ATC probe, solution kit 60ml each of 4,7 and 10 buffer, storage solution, cleaning solution, Electrode holder and Power adapter.</p> <p>16) Electronic balance (4 digit): 1no. i) Max. Capacity: 220g ii) Readability : 0.1mg iii) Repeatability: 0.1mg iv) Linearity : 0.2mg v) Response time:4s vi) Sensitivity drift: (1030 °C) vii) Supply with glass draft shield viii) Display: 5" colour capacitive touchscreen</p> <p>17) Electronic balance : 1no. i) Max. Capacity: 2000g ii) Readability : 0.1g iii) Repeatability: 0.1g iv) Linearity : 0.2g v) Display: 5" colour capacitive touchscreen</p> <p>18) Sykes hydrometers : 4 sets i) Brix Hydrometer with Thermometer at 27.5°C & 20°C (Range: 0/10, 10/20, 20/30, 0/30, 30/60 & 60/90: 1 set ii) Alcohol meter (V / V, Volume By Volume) at 15.6°C (Range: 0-20, 20-40, 40-60, 60-80, & 80-</p>

SL. No.	Volume No.	Page No.	Section No.	Clause No	As per Tender Document issued on 11/06/2017	Addendum
						<p>100): 1 set</p> <p>iii) Baume Hydrometers, Digital (Range : 0.0 – 210): 1 Set</p> <p>iv) Sikes Hydrometer at 51°F (Range: 0/20 A 0/20 20/40 40/60 60/80 80/100): 1 set</p> <p>19) Automatic Polarimeter/ Saccharimeter : 1no.</p> <p>i) Measurement Scales: International Sugar Scale (with Automatic Temperature Compensation)</p> <p>ii) Measurement range: Angle of Rotation : -89.9999 to +90.0000° and -360.0000 to +360.0000° International Sugar Scale : -259.0000 to +259.0000°Z</p> <p>iii) Resolution: Angle of Rotation : 0.0001°, International Sugar Scale : 0.0001°Z</p> <p>iv) Temperature compensation range: 10 to 40°C</p> <p>v) Display method: 7.5-inch color LCD + touch screen</p> <p>vi) Data output to USB flash drive: CSV text file format</p> <p>vii) Communication via: USB-Serial</p> <p>viii) Observation tube included: Observation tubes (100mm [5ml], 200mm [10ml])</p> <p>20) Magnetic stirrer with hot plate: 3 nos.</p> <p>21) Centrifuges: 1 no.</p> <p>i) Capacity: 4 x 100ml/32 x 15 ml</p> <p>ii) Speed, RCF: 15,000 RPM, 21,382 RCF</p>

SL. No.	Volume No.	Page No.	Section No.	Clause No	As per Tender Document issued on 11/06/2017	Addendum
						22) Glass apparatus: i) Burette (25ml, 50ml, 100ml): 6 pcs each ii) Pipette (0.1ml, 0.2ml, 0.5ml, 1ml, 5ml, 10ml, 25ml): 12 pcs each iii) Petridish (35, 60, 100 and 150mm): 24 sets each iv) Macro Kjeldhal apparatus: 1 set v) Round bottom Flask (50, 100, 250ml): 12 pcs each vi) Round bottom Flask (500, 1000 ml): 6 pcs each vii) Condenser (200,400mm): 3 pcs each viii) Three way thermometer adapter with a compression cap: 3 nos. ix) Vacuum takeoff adapter: 3 nos. x) Distillation adaptor: 3 nos. xi) Bent Glass adapter (24/29, 24/40, 29/40): 4pcs each xii) Test Tube (5,10,20ml): 100 pcs each xiii) Conical flask (50, 100, 250,500): 12 pcs each xiv) Suction Flask (250, 500ml): 6 nos. each xv) Beaker (50, 100, 250,500): 12 pcs each xvi) Funnel (50,75, 100ml): 12 pcs. Each xvii) Buchner funnel: 6 nos. xviii) Separatory funnel:6 nos. xix) Oil bath: 6 nos. xx) Water bath: 6 nos. xxi) Glass rod (different size): 6 pcs xxii) Desiccator: 3 nos. xxiii) Round bottle (50, 100,250, 500,1000): 12 pcs. each

SL. No.	Volume No.	Page No.	Section No.	Clause No	As per Tender Document issued on 11/06/2017	Addendum
						23) Others (Moisture analyzer, Burette stand, Clump, Test tube rack, iron ring, mortar and pestle, spatula, wash bottle, evaporating dish, watch glass, glass plate, dropper, forceps, funnel support, rubber tube, cork borer, cork, spirit lamp, Bunsen burner, tongs, inoculation wire loop, nichrome wire loop etc): 12 set 24) Any items required for all lab test required for the distillery, Bio-gas and Bio-compost plant.
36	Vol-II	67	4.0	6.0	Electrical:	Electrical: The following point is included. • MOC of Busbar, Busbar trunking, cables and wires, winding of motor & transformer is Copper.
37	Vol-II	108	5.0	Item no. 3.19	Hand Railing 100mm high	Hand Railing 1000mm high
38	Vol-II	109	5.0	Item no. 3.22	Control room & other areas: 40 mm thick vitrified ceramic tiles.	Control room & other areas: 8-12 mm thick vitrified ceramic tiles.
39	Vol-II	110	5.0	3.24	Table	Table: 10. Molasses Receiving Pit: 6M X 8M X 4M (RCC Underground)
40	Vol-II	186	7.0	C. 1	Operation & instruction manual of the turbo-alternator in three sets	Operation & instruction manual of the Distillery Plant, Bio-Gas Plant & Bio-Compost plant with all equipments in three sets

SL. No.	Volume No.	Page No.	Section No.	Clause No	As per Tender Document issued on 11/06/2017	Addendum																																
41	Vol-II	191	8.0	DM And Soft Water Specification		<p>The Performance Parameter of DM Plant and Soft Water Plant is included in this section.</p> <p><u>IV. DM AND SOFT WATER SPECIFICATION:</u> (Other parameters should be WHO standard)</p> <table border="1"> <thead> <tr> <th></th> <th></th> <th>DM Water</th> <th>Soft Water</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Hardness (PPM)</td> <td>Nil</td> <td>< 0.5</td> </tr> <tr> <td>2</td> <td>pH @ 25⁰C</td> <td>8.8 to 9.2</td> <td>Neutral (6.8 to 7.2)</td> </tr> <tr> <td>3</td> <td>Electrical Conductivity at 20⁰ C (MS/cm)</td> <td><0.15</td> <td><0.15</td> </tr> <tr> <td>4</td> <td>Silica as SiO₂ (mg/l)</td> <td>< 0.02</td> <td>-</td> </tr> <tr> <td>5</td> <td>Total Dissolve Solids (mg/l)</td> <td>< 0.1</td> <td>-</td> </tr> <tr> <td>6</td> <td>Turbidity (ppb)</td> <td>Nil</td> <td>< 50</td> </tr> <tr> <td>5</td> <td>Residual Hydrazine (PPM)</td> <td><0.02</td> <td>-</td> </tr> </tbody> </table>			DM Water	Soft Water	1	Hardness (PPM)	Nil	< 0.5	2	pH @ 25 ⁰ C	8.8 to 9.2	Neutral (6.8 to 7.2)	3	Electrical Conductivity at 20 ⁰ C (MS/cm)	<0.15	<0.15	4	Silica as SiO ₂ (mg/l)	< 0.02	-	5	Total Dissolve Solids (mg/l)	< 0.1	-	6	Turbidity (ppb)	Nil	< 50	5	Residual Hydrazine (PPM)	<0.02	-
		DM Water	Soft Water																																			
1	Hardness (PPM)	Nil	< 0.5																																			
2	pH @ 25 ⁰ C	8.8 to 9.2	Neutral (6.8 to 7.2)																																			
3	Electrical Conductivity at 20 ⁰ C (MS/cm)	<0.15	<0.15																																			
4	Silica as SiO ₂ (mg/l)	< 0.02	-																																			
5	Total Dissolve Solids (mg/l)	< 0.1	-																																			
6	Turbidity (ppb)	Nil	< 50																																			
5	Residual Hydrazine (PPM)	<0.02	-																																			
42	Vol-II	191	8.0	3 rd Point	BOD Reduction: 65% reduction +/-5%	COD Reduction: 65% reduction +/-5%																																

N.B.: The Following documents are available in The Project Office, Chinishilpa Bhaban (9th Floor), 3, Dilkusha C/A, Dhaka. If required the tenderer may contact the Project Director.

- The Existing Machinery List of Thakurgaon Sugar Mills Ltd.
- The Process Description
- Present Environmental NORMS of Bangladesh
- Topographical Digital Survey Report
- Soil Analysis Report
- Water analysis Report.