

Contract Agreement

THIS AGREEMENT is made the 13th day of March 2012

BETWEEN

(1) Guwahati Metropolitan Development Authority, a corporation incorporated under the laws of India and having its principal place of business at Statefed Building, GMCH Road, Bhangagrah, Guwahati-781005, Assam India (hereinafter called "the Employer"), and (2) JWIL-Ranhill JV (Consortium of JITF Water Infrastructure Limited, India and Ranhill Utilities Sdn Bhd., Malaysia), a corporation incorporated under the laws of India and having its principal place of business at 28 Shivaji Marg, New Delhi-110015, India (hereinafter called "the Contractor").

WHEREAS the Employer desires to engage the Contractor to design, manufacture, test, deliver, install, complete and commission certain Facilities, viz. Procurement of Design, Supply, Installation and Commissioning of Intake Facilities, Transmission Mains, Water Treatment Plant and Reservoir for the North Zone including 5 years Operation and Maintenance, Contract Package C-01 ("the Facilities"), and the Contractor has agreed to such engagement upon and subject to the terms and conditions hereinafter appearing.

NOW IT IS HEREBY AGREED as follows:

Article 1.

Contract Documents

1.1 Contract Documents (Reference GC Clause 2)

The following documents shall constitute the Contract between the Employer and the Contractor, and each shall be read and construed as an integral part of the Contract:

- (a) This Contract Agreement and the Appendices hereto
- (b) Letter of Technical Bid, Letter of Price Bid and Price

Project Director

Project Implementation Unit (P.I.U)
JICA Funded Guwahati Water Supply Project

Schedules submitted by the Contractor

- (c) Addendum to Bid Documents
- (d) Particular Conditions
- (e) General Conditions
- (f) Specification (separate volume)
- (g) Drawings (separate volume)
- (h) Other completed bidding forms submitted with the Bid (separate volume)
- (i) Any other documents forming part of the Employer's Requirements
- (i) Acknowledgment of Compliance with Guidelines for Procurement under Japanese ODA Loans
- (j) Functional Guarantee for Power and Chemical Consumption
- (k) Contract Agreement for Operation and Maintenance

1.2 **Order of Precedence** (Reference GC Clause 2)

In the event of any ambiguity or conflict between the Contract Documents listed above, the order of precedence shall be the order in which the Contract Documents are listed in Article 1.1 (Contract Documents) above.

1.3 **Definitions** (Reference GC Clause 1)

Capitalized words and phrases used herein shall have the same meanings as are ascribed to them in the General Conditions.

**Article 2.
Contract Price
and Terms of
Payment**

2.1 **Contract Price** (Reference GC Clause 11)

The Employer hereby agrees to pay to the Contractor the Contract Price in consideration of the performance by the Contractor of its obligations hereunder. The Contract Price shall be the aggregate of: **INR 808,939,834**, (*Indian Rupees Eight Hundred Eight Million Nine Hundred Thirty Nine Thousand Eight Hundred and Thirty Four only*) as specified in Price Schedule No. VIII (Grand Summary), or such other sums as may be determined in accordance with the terms and conditions of the Contract.

2.2 **Terms of Payment** (Reference GC Clause 12)

The terms and procedures of payment according to which the Employer will reimburse the Contractor are given in the Appendix (Terms and Procedures of Payment) hereto.

The Employer may instruct its bank to issue an irrevocable confirmed documentary credit made available to the Contractor in a bank in the country of the Contractor. The credit shall be for an amount of *[total named in Schedule IIA less than advance payment to be made for Plant and Equipment supplied from abroad: nil]*; and shall be subject to the Uniform Customs and Practice for Documentary Credits 1993 Revision, ICC Publication No. 600.

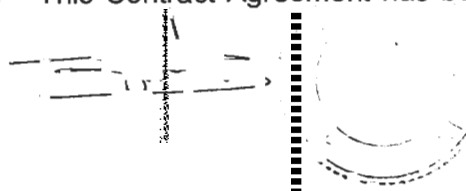
In the event that the amount payable under Schedule No. IIA is adjusted in accordance with GC 11.2 or with any of the other terms of the Contract, the Employer shall arrange for the documentary credit to be amended accordingly.

**Article 3.
Effective Date**

3.1 **Effective Date** (Reference GC Clause 1)

The Effective Date from which the Time for Completion of the Facilities shall be counted is the date when all of the following conditions have been fulfilled:

- (a) This Contract Agreement has been duly executed for and



Handwritten signature and circular stamp.

Project Director (P.I.U)
Project

on behalf of the Employer and the Contractor;

- (b) The Contractor has submitted to the Employer the Performance Security and the advance payment guarantee;
- (c) The Employer has paid the Contractor the advance payment; and
- (d) The Contractor has been advised that the documentary credit referred to in Article 2.2 above has been issued in its favor.

Each party shall use its best efforts to fulfill the above conditions for which it is responsible as soon as practicable.

3.2 If the conditions listed under 3.1 are not fulfilled within two (2) months from the date of this Contract notification because of reasons not attributable to the Contractor, the Parties shall discuss and agree on an equitable adjustment to the Contract Price and the Time for Completion and/or other relevant conditions of the Contract.

**Article 4.
Communications**

- 4.1 The address of the Employer for notice purposes, pursuant to GC 4.1 is: Statefed Building, GMCH Road, Bhangagarh, Guwahati - 78100 5, Assam, India.
- 4.2 The address of the Contractor for notice purposes, pursuant to GC 4.1 is: 28 Shivaji Marg, New Delhi – 110015, India.

**Article 5.
Appendices**

- 5.1 The Appendices listed in the attached List of Appendices shall be deemed to form an integral part of this Contract Agreement.
- 5.2 Reference in the Contract to any Appendix shall mean the Appendices attached hereto, and the Contract shall be read and construed accordingly.

IN WITNESS WHEREOF the Employer and the Contractor have caused this Agreement to be duly executed by their duly authorized representatives the day and year first above written.

Handwritten signature of Mr. Prateek Hajela

Signed by: Mr. Prateek Hajela
(Project Director, PIU)

for and on behalf of the Employer

in the presence of

Signature: _____

Name: _____

Designation: _____

Date: _____



Handwritten signature of the Contractor

Signed by: _____

for and on behalf of the Contractor

in the presence of

Signature: _____

Name: *Handwritten name of Contractor*

Designation: _____

Date: *Handwritten date*

Handwritten signature of Mr. Prateek Hajela
Project Director
PIU

OFFICE OF
THE PROJECT DIRECTOR
PROJECT IMPLEMENTATION UNIT
JICA ASSISTED GUWAHATI WATER SUPPLY PROJECT
SAIKIA COMMERCIAL COMPLEX, CHRISTIAN BASTI
G S ROAD, GUWAHATI-781005

No.PIU/JICA/GHTY/6/Pt./2010/214

Dated: March 09, 2012

To: M/S JWIL-RANHILL JV
28 Shivaji Marg, New Delhi-110015, India

Attention: Mr. Sunil Trehan, Executive Director
Fax Number: 011-45021982
E-mail address: info@jindalaquasource.com

Sub: Notification of Award-Letter of Acceptance: Contract Package No. C#01 under JICA assisted GWSP, ID-P 201

Sir,

This is to notify you that your Bid dated 20th December 2011 for execution of the JICA assisted Guwahati Water Supply Project under Loan No ID-P 201, Procurement of Design, Supply, Installation and Commissioning of Intake Facilities, Transmission Mains, Water Treatment Plant and Reservoir for the North Zone including 5 years Operation and Maintenance, Contract Package No. C-01 for the Accepted Contract Amount of the equivalent of INR 808,939,834 (Indian Rupees Eight Hundred Eight Million Nine Hundred Thirty Nine Thousand Eight Hundred and Thirty Four only), as corrected and modified in accordance with the Instructions to Bidders, is hereby accepted by our Agency.

You are requested to furnish the Performance Security within 28 days in accordance with the Conditions of Contract, using for that purpose one of the Performance Security Forms included in Section IX, Contract Forms, of the Bidding Documents.

In addition, you requested to submit the following items by 12th March 2012:

1. Cost breakdown in accordance with the format of BOQs in the Bid Documents
2. Guaranteed parameters for power and chemical consumption in accordance with the format of the Bid Documents

Yours faithfully,

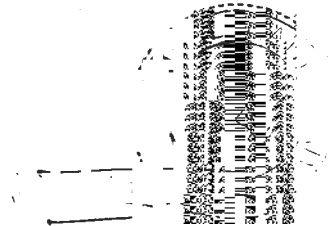
sd -
(Prateek Hajela, IAS)
Project Director
Project Implementation Unit
JICA Assisted GWSP

Memo No. PIU/JICA/GHTY/6/Pt./2010/214 - A

Copy for:

1. The Commissioner & Secretary to the Government of Assam, Guwahati Development Department, Dispur, Assam
2. The Chief Executive Officer, GMDA, Statefed Building, Guwahati
- ✓ 3. Mr. Shinichi Yamanaka, Chief Representative, JICA India Office, 2nd Floor, Dr. Gopal Das Bhawan, 28, Barakhamba Road, New Delhi-110001
4. The Team Leader, PMC, JICA assisted GWSP, Six Mile, Khanapara, Guwahati-22

sd -



sd -
Project Director
Project Implementation Unit
JICA Assisted GWSP

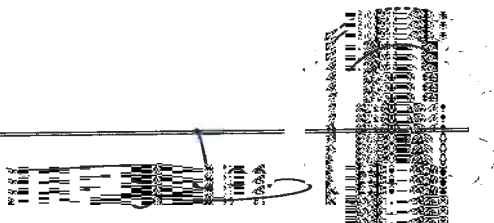
Project Director
Project Implementation Unit (P.I.U.)
JICA Funded Guwahati Water Supply Project

Project Director
Project Implementation Unit (P.I.U.)
JICA Assisted Guwahati Water Supply Project

**Letter of Technical Bid, Letter of Price Bid
and
Price Schedules**

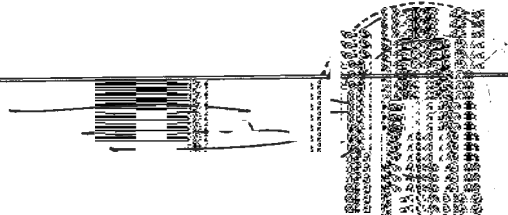
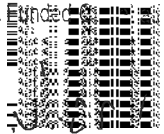
Project Director
Project Implementation Unit (P.I.U.)
JICA Funded Guwahati Water Supply Project

Project Director
Project Implementation Unit (P.I.U.)
JICA Funded Guwahati Water Supply Project



Letter of Technical Bid

Project Director
Project Implementation Unit (P.I.U)
JICA Funded Guwahati Water Supply Project



Letter of Technical Bid

Date: December 12, 2011
Loan No.: JICA Loan No. ID P-201
Invitation for Bid No.: GMDA/JICA/24/2011/22

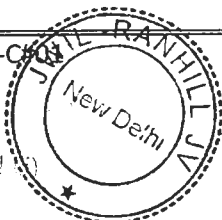
To:
The Chief Executive Officer,
Guwahati Metropolitan Development Authority,
3rd Floor, STATFED Building, GMCH Road, Bhangagarh,
Guwahati-781005, Assam, India

We, the undersigned, declare that:

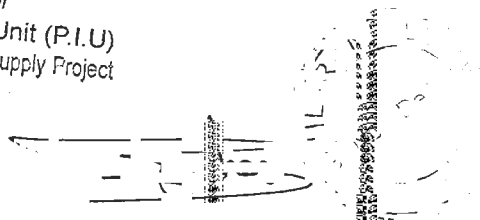
- (a) We have examined and have no reservations to the Bidding Document, including Addenda issued in accordance with Instructions to Bidders (ITB) 8;
- (b) We offer to design, manufacture, test, deliver, install, pre-commission and commission in conformity with the Bidding Document; the following Plant and Services: **Procurement of Turnkey Contract - Design, Supply, Installation and Commissioning of Intake Facilities, Transmission Mains, Water Treatment Plant and Reservoir for the North Zone (Contract Package No. C-01).**
- (c) The price of our Bid, excluding any discounts offered is given in the Price Proposal enclosed in separate envelope;
- (d) Our bid consisting of the Technical Bid and the Price Bid shall be valid for a period of **One Hundred Twenty days (120 days)** from the date fixed for the bid submission deadline in accordance with the Bidding Documents, and it shall remain binding upon us and may be accepted at any time before the expiration of that period;
- (e) If our bid is accepted, we undertake to provide an advance payment security and a performance security in the form, in the amounts, and within the times specified in the bidding documents;
- (f) We accept the arrangement for resolution of disputes out of this contract;
- (g) We undertake, if our bid is accepted, to commence the Facilities and to achieve Completion within the respective times stated in the bidding documents;
- (h) We, including any subcontractors or suppliers for any part of the contract, have or will have nationalities from eligible countries, in accordance with ITB 4.2;
- (i) We, including any subcontractors or suppliers for any part of the contract, do not have any conflict of interest in accordance with ITB 4.2;
- (j) We, including any subcontractor and suppliers for any part of the contract, have not been declared ineligible by JICA in accordance with ITB 4.5;
- (k) We are not participating, as a Bidder or as a subcontractor, in more than one bid in this bidding process in accordance with ITB 4.4, other than alternative offers submitted in accordance with ITB 13;
- (l) Until a formal contract is prepared and executed between us, this bid, together with your written acceptance thereof and your notification of award, shall constitute a binding contract between us;

Guwahati Water Supply Project – GWSP-CH

Project Director
Project Implementation Unit (P.I.U.)
JICA Funded Guwahati Water Supply Project



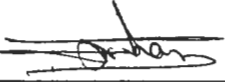
Project Director
Project Implementation Unit (P.I.U.)
JICA Funded Guwahati Water Supply Project



(m) We understand that you are not bound to accept the lowest or any bid you may receive

Name SUNIL TREHAN

In the capacity of EXECUTIVE DIRECTOR, JITF Water Infrastructure Limited-Lead Partner

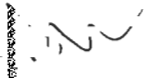
Signed  _____

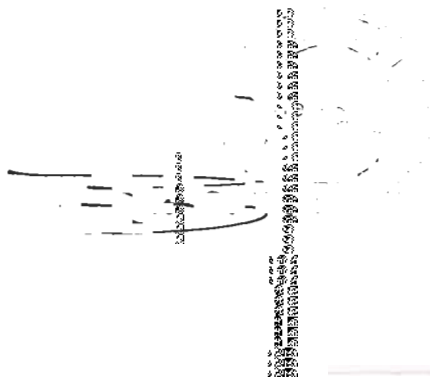
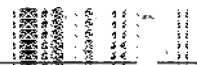
Duly authorized to sign the bid for and on behalf of JWIL – RANHILL JV

Dated on 12th day of December, 2011.



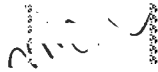
Project Director
Project Implementation Unit (P.I.U)
JICA Funded Guwahati Water Supply Project



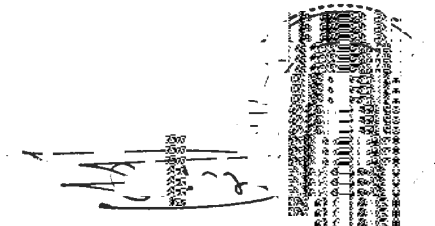


Letter of Price Bid

Project Director
Project Implementation Unit (P.I.U)
JICA Funded Guwahati Water Supply Project



QWSP/C#01



Letter of Price Bid

Date: December 19th, 2011
Loan No.: JICA Loan No. ID P-201
Invitation for Bid No.:
GMDA/JICA/24/2011/22

To:
The Chief Executive Officer,
Guwahati Metropolitan Development Authority,
3rd Floor, STATED Building
GMCH Road, Bhangagarh,
Guwahati-781005, Assam, India

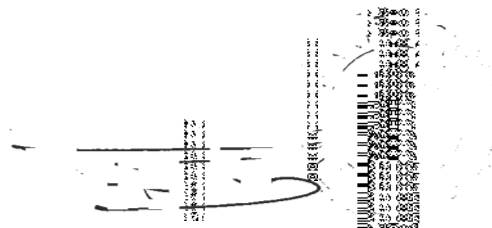
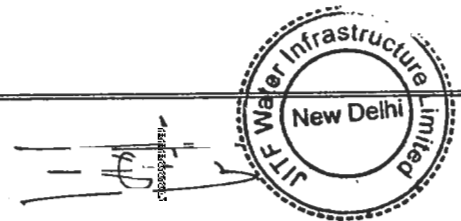
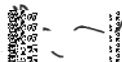
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We, the undersigned, declare that:

- (a) We have examined and have no reservations to the Bidding Documents, including Addenda issued in accordance with Instructions to Bidders (ITB) 8;
- (b) We offer to **Design, Supply, Installation and Commissioning of Intake Facilities, Transmission Mains, Water Treatment Plant and Reservoir for the North Zone** - (Contract Package No. C-01)., in conformity with the Bidding Documents, the following Plant and Installation Services: **Procurement of Turnkey Contract - Design, Supply, Installation and Commissioning of Intake Facilities, Transmission Mains, Water Treatment Plant and Reservoir for the North Zone including 5 years Operation & Maintenance.**
- (c) The price of our Bid, excluding any discounts offered in item (d) below is the sum of:
Rs 89,41,50,824 (Rs Eighty Nine Crore Forty One Lacs Fifty Thousand Eight Hundred Twenty Four Only)
- (d) The discounts offered and the methodology for their application are: 10.42 % (Ten decimal Four Two Only) on schedule I to V of Schedule VIII (Grand Summary) on prorata basis.
- (e) Our bid shall be valid for a period of One Hundred Twenty (120) days from the date fixed for the bid submission deadline in accordance with the Bidding Documents, and it shall remain binding upon us and may be accepted at any time before the expiration of that period;
- (f) If our bid is accepted, we commit to obtain a Performance Security in accordance with the Bidding Documents;

Guwahati Water Supply Project – GWSP-C#01

Project Director
Project Implementation Unit (P.I.U)
JICA Funded Guwahati Water Supply Project

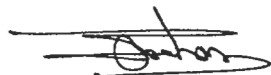


- (g) We, including any subcontractors or manufacturers for any part of the contract, have or will have nationalities from eligible countries, in accordance with ITB 4.2;
- (h) We, including any subcontractors or manufacturers for any part of the contract, do not have any conflict of interest in accordance with ITB 4.3;
- (i) We are not submitting more than one bid in this bidding process as a Bidder, either individually or as a partner in a joint venture, in accordance with ITB 4.4, except for alternative offers permitted under ITB 13;
- (j) We, including any subcontractors or manufacturers for any part of the contract, have not been declared ineligible by JICA in accordance with ITB 4.5;
- (k) We understand that this bid, together with your written acceptance thereof included in your notification of award, shall constitute a binding contract between us, until a formal contract is prepared and executed; and
- (l) We understand that you are not bound to accept the lowest evaluated bid or any other bid that you may receive.

Name SUNIL TREHAN

In the capacity of EXECUTIVE DIRECTOR, JITF Water Infrastructure Limited-Lead Partner

Signed _____

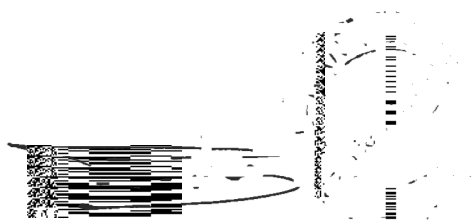


Duly authorized to sign the bid for and on behalf of JWIL – RANHILL JV

Dated on 19th day of December, 2011.

Guwahati Water Supply Project – GWSP-C#01

Project Director
Project Management Unit (P.I.U)
JICA Funded Guwahati Water Supply Project



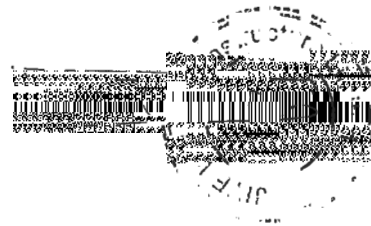
Price Schedule

Project In-charge Director
JICA Funds Unit (P.I.U)
Supply Project

Schedule I: PREPARATION WORKS

Item	Description	Unit	Quantity	Local Currency (INR) ^(a)		
				Amount including Local transport, transit insurance, etc	Amount all taxes and other levies payable etc.	Amount Local Currency including all taxes and other levies payable etc.
-1	-2	-3	-4	-5	-6	(7) = (5) + (6)
I	Preparation Works					
I-1	Temporary Offices and Storage					
I-1.1	Employer's Temporary Office	l.s.	1	173,140	6,020	179,160
I-1.2	Contractor's Temporary Office	l.s.	1	173,140	6,020	179,160
I-1.3	Contractor's Temporary Storage Facilities	l.s.	1	173,140	6,020	179,160
I-1.4	Temporary Fencing and Entrance Gate	l.s.	1	216,426	7,524	223,950
	Total of Item I-1			735,846	25,584	761,430
I-2	Special Provisions					
I-2.1	Temporary Water Supply	l.s.	1	86,570	3,010	89,580
I-2.2	Temporary Drainage and Sanitation	l.s.	1	86,570	3,010	89,580
I-2.3	Temporary Electric Power Supply	l.s.	1	86,570	3,010	89,580
I-2.4	Laboratory Equipment for Field Testing	l.s.	1	86,570	3,010	89,580
	Total of Item I-2			346,280	12,040	358,320
I-3	Any other items not listed above but required for implementation of the Project	l.s.	1	0	0	0
Total of Schedule I				1,082,126	37,624	1,119,750
(Carry over to Grand Summary, Schedule VIII)						

Note : (a) Currency shall be Indian Rupees (INR)



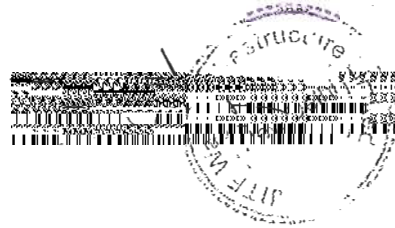
Project Director
Project Implementation Unit (P.I.U)
JICA Funded Guwahati Water Supply Project

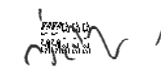
Schedule II.A: PLANT AND EQUIPMENT SUPPLIED FROM ABROAD

Item	Description	Country of Origin	Unit	Quantity	Foreign Currency ^(a)	Local Currency (INR)		
					Amount	Amount	Amount	Amount
					CIF ^(b)	Local transport, transit insurance, etc.	all taxes and other levies payable etc.	Local Currency including all taxes and other levies payable etc.
1	2	3	4	5	6	7	8	9
II A	Plant and Equipment Supplied From Abroad				Not Applicable			
Total of Schedule II.A								
(Carry over to Grand Summary, Schedule VIII)								

Notes:

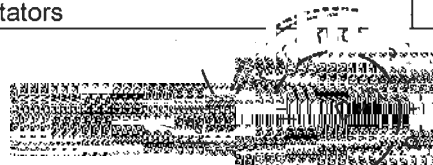
- (a) Currencies shall be in accordance with the Instruction to Bidders. Bidder shall specify currency.
- (b) CIP/CIF: Cost, Insurance, Freight (Term of sale signifying that the price invoiced or quoted by a seller includes insurance and all other charges including delivery to the Project Site)
- © INR: Indian Rupees




 Project Director
 Project Implementation Unit (P.I.U)
 JICA Funded Guwahati Water Supply Project

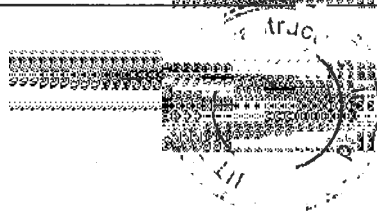
Schedule II.B: PLANT AND EQUIPMENT SUPPLIED FROM EMPLOYER'S COUNTRY

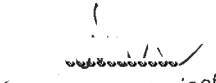
Item	Description	Unit	Quantity	Local Currency (INR)			
				Amount EXW	Amount Local transport, transit insurance, etc.	Amount all taxes and other levies payable etc.	Amount Local Currency including transport, transit insurance etc, including all taxes and other levies payable etc.
-1	-2	-3	-4	-5	-6	-7	(8)=(5)+(6)+(7)
II B	Plant and Equipment Supplied From Employer's Country						
II.B-1	Intake Structure and Raw Water Pump Station and Transmission Main						
	Supply, Factory Testing and Delivery to Site of Material and Equipment for the Following Works :						
II.B-1.1	Mechanical Works						
II.B-1.1.1	Vertical Turbine Pumps and Motors	I.s.	1	6,291,977	158,008	228,657	6,678,642
II.B-1.1.2	Valves on pump discharge pipes including check valves, butterfly valves (motorized), sluice valves (manual), other ancillary valves	I.s.	1	1,442,494	36,225	52,422	1,531,141
II.B-1.1.3	Pipes, fittings and specials of column discharge pipes with necessary protection against thrust force	I.s.	1	291,296	7,316	10,586	309,198
II.B-1.1.4	Pipes, fittings and specials of discharge header (intake well – WTP boundary) with necessary protection against thrust force	I.s.	1	233,037	5,853	8,469	247,359
II.B-1.1.5	Sluice gates with electrical floor operators	I.s.	1	1,106,922	27,798	40,227	1,174,947
II.B-1.1.6	Bar screens with guide frame lifting device	I.s.	1	1,398,218	35,113	50,813	1,484,144
II.B-1.1.7	Lubrication water pump system	I.s.	1	932,145	23,409	33,875	989,429
II.B-1.1.8	Desilting pumps with piping	I.s.	1	1,747,772	43,891	63,516	1,855,179
II.B-1.1.9	EOT Crane	I.s.	1	2,796,435	70,226	101,625	2,968,286
II.B-1.1.10	Surge protection system	I.s.	1	699,109	17,557	25,407	742,073
II.B-1.1.11	Miscellaneous equipment including air conditioning system, ventilation system, fire extinguisher, etc.	I.s.	1	58,260	1,464	2,118	61,842
II.B-1.1.12	Raw Water Transmission Main including pipes, valves, fittings and specials (from shore of river to WTP boundary limit)	I.s.	1	93,214,474	2,340,846	3,387,497	98,942,817
II.B-1.1.13	Any other items not specified in the above but required to complete works	I.s.	1	0	0	0	0
	Subtotal of Item II.B-1.1			110,212,139	2,767,706	4,005,212	116,985,057
II.B-1.2	Electrical Works						
II.B-1.2.1	HV switchboard for power receiving	I.s.	1	3,728,579	93,634	135,500	3,957,713
II.B-1.2.2	Transformers (33 kV/0.433 kV)			1,165,181	29,261	42,344	1,236,786
II.B-1.2.3	Indoor LV Switchboard / MCC / Soft Starters / Capacitors			1,631,254	40,965	59,282	1,731,501



Schedule II.B: PLANT AND EQUIPMENT SUPPLIED FROM EMPLOYER'S COUNTRY

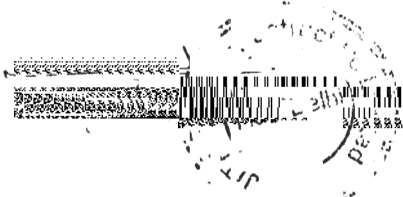
Item	Description	Unit	Quantity	Local Currency (INR)			
				Amount EXW	Amount Local transport, transit insurance, etc.	Amount all taxes and other levies payable etc.	Amount Local Currency including transport, transit insurance etc, including all taxes and other levies payable etc.
-1	-2	-3	-4	-5	-6	-7	(8)=(5)+(6)+(7)
II.B-1.2.4	Other miscellaneous pannels including lighting panels	l.s.	1	7,107,604	178,490	258,297	7,544,391
II.B-1.2.5	Emergency Diesel Generator set including Fuel storage and day tanks, silencers, ventilation, etc.	l.s.	1	4,485,947	112,654	163,024	4,761,625
II.B-1.2.6	Ni-Cd butteries, buttery charger and distribution board	l.s.	1	1,366,758	34,323	49,670	1,450,751
II.B-1.2.7	Indoor and outdoor lighting system with lighting fixtures, poles and cables	l.s.	1	527,827	13,256	19,182	560,265
II.B-1.2.8	Emergency lighting system with cables and fixtures	l.s.	1	99,041	2,488	3,600	105,129
II.B-1.2.9	Cabling system with trays, ducts, any other supports and conduits	l.s.	1	1,747,772	43,891	63,516	1,855,179
II.B-1.2.10	Warning lights with cables and fixtures	l.s.	1	29,130	732	1,059	30,921
II.B-1.2.11	Earthing / Lightning protection system	l.s.	1	1,204,798	30,256	43,784	1,278,838
II.B-1.2.12	Any other items not specified in the above but required to complete works (soft starter/ LPBS etc)		1	466,073	11,705	16,938	494,716
				23,559,964	591,655	856,196	25,007,815
II.B-1.3	Instrumentation nd Control Works						
II.B-1.3.1	PC based local work station including instrument control panels, PLC with software and hardware, complete set of ancillary equipment specified.	l.s.	1	1,165,181	29,261	42,344	1,236,786
II.B-1.3.2	24 V DC power supply system including butteries, buttery chrger, etc	l.s.	1	291,296	7,316	10,586	309,198
II.B-1.3.3	Water level meter (Rader type) and level switch (Conductivity type)	l.s.	1	88,554	2,224		93,997
II.B-1.3.4	Temperature scanner and switches for Raw Water pumps/motors	l.s.	1	55,929	1,405	2,033	59,367
II.B-1.3.5	Pressure meter, switch and gauges	l.s.	1	92,050	2,312	3,346	97,708
II.B-1.3.6	Electromagnetic Flow meter set	l.s.	1	582,591	14,631	21,172	618,394
II.B-1.3.7	Flow switches	l.s.	1	145,648	3,658	5,293	154,599
II.B-1.3.8	Portable temperature meters, sound level meters and vibration meters	l.s.	1	291,296	7,316	10,586	309,198
II.B-1.3.9	Instrumentation and control cables	l.s.	1	291,296	7,316	10,586	309,198
II.B-1.3.10	Any other items not specified in the above but required to complete works	l.s.	1	0	0	0	0
	Subtotal of Item II.B-1.3			3,003,841	75,439	109,165	3,188,445
	Total of Item II.B-1			136,775,944	3,434,800	4,970,573	145,181,317




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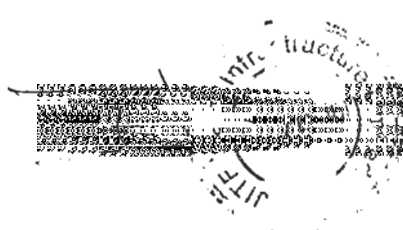
Schedule II.B: PLANT AND EQUIPMENT SUPPLIED FROM EMPLOYER'S COUNTRY


Item	Description	Unit	Quantity	Local Currency (INR)			
				Amount EXW	Amount Local transport, transit insurance, etc.	Amount all taxes and other levies payable etc.	Amount Local Currency including transport, transit insurance etc, including all taxes and other levies payable etc.
-1	-2	-3	-4	-5	-6	-7	(8)=(5)+(6)+(7)
II.B-2	Water Treatment Plant						
II.B-2.1	Mechanical Works						
II.B-2.1.1	Pre-Settling Tanks						
a.	Inlet and outlet sluice gates or valves with manual floor operator and piping	I.s.	1	640,850	16,094	23,290	680,234
b.	Desilting system with traveling girders, trolleys, sand drain pumps, discharge gutters and piping	I.s.	1	3,495,543	87,782	127,032	3,710,357
c.	Utility water pipes, valves, hose valves with rubber hose for wash down and cleaning of tanks	I.s.	1	58,260	1,464	2,118	61,842
d.	Metal works including handrails, step irons, steel ladders, etc.	I.s.	1	58,260	1,464	2,118	61,842
	Subtotal of Item II.B-2.1.1			4,252,913	106,804	154,558	4,514,275
							0
II.B-2.1.2	Cascade Aerator (Optional)						0
a.	Sluice gates or valves with manual operator	I.s.	1	0	0	0	0
b.	Bypass Piping with valves, fittings and specials	I.s.	1	0	0	0	0
c.	Metal works including handrails, step irons, steel ladders, etc.	I.s.	1	58,260	1,464	2,118	61,842
	Subtotal of Item II.B-2.1.2			58,260	1,464	2,118	61,842
							0
II.B-2.1.3	Flash Mixing Tanks						0
a.	Flash Mixers	I.s.	1	221,385	5,560	8,046	234,991
b.	Sluice gates or valves with manual operator and piping	I.s.	1	0	0	0	0
c.	Metal works including handrail, step iron, steel ladders, weir plates, etc.	I.s.	1	58,260	1,464	2,118	61,842
	Subtotal of Item II.B-2.1.3			279,645	7,024	10,164	296,833
							0
II.B-2.1.4	Flocculation Tanks						0
a.	Flocculators	I.s.	1	NA	NA	NA	NA
b.	Sluice gates or valves with manual operator and piping	I.s.	1	396,162	9,949	14,397	420,508
c.	Drain pipes, valves, fittings and specials	I.s.	1	NA	NA	NA	NA



Schedule II.B: PLANT AND EQUIPMENT SUPPLIED FROM EMPLOYER'S COUNTRY

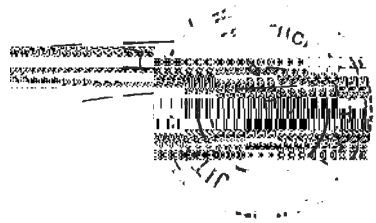
Item	Description	Unit	Quantity	Local Currency (INR)			
				Amount EXW	Amount Local transport, transit insurance, etc.	Amount all taxes and other levies payable etc.	Amount Local Currency including transport, transit insurance etc, including all taxes and other levies payable etc.
-1	-2	-3	-4	-5	-6	-7	(8)=(5)+(6)+(7)
d.	Utility water pipes, valves, hose valves with rubber hose for wash-down and cleaning of tanks	l.s.	1	58,260	1,464	2,118	61,842
e.	Metal works including handrail, step iron, steel ladders, etc.	l.s.	1	58,260	1,464	2,118	61,842
	Subtotal of Item II.B-2.1.4			512,682	12,877	18,633	544,192
							0
II.B-2.1.5	Plate or Tube Settling Tanks						0
B.	Inclining plate/tube modules including support, clips, etc.	l.s.	1	11,565,760	290,445	420,310	12,276,515
b.	Sludge Scrapers (optional)	l.s.	1	NA	NA	NA	NA
c.	Sludge extraction valves (motorized)	l.s.	1	838,931	21,068	30,488	890,487
d.	Sludge extraction piping ¹ with isolation valves (motorized), fittings and specials including extraction header pipes	l.s.	1	174,778	4,390	6,352	185,520
e.	Clarified water collectors	l.s.	1	291,296	7,316	10,586	309,198
f.	Utility water pipes, valves, hose valves with rubber hose for wash down and cleaning of tanks	l.s.	1	58,260	1,464	2,118	61,842
g.	Metal works including handrail, step iron, steel ladders, etc.	l.s.	1	58,260	1,464	2,118	61,842
	Subtotal of Item II.B-2.1.5			12,987,285	326,147	471,972	13,785,404
							0




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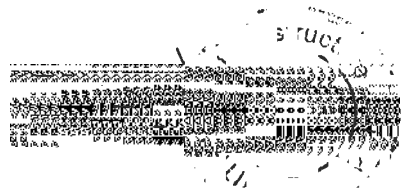
Item	Description	Unit	Quantity	Local Currency (INR)			
				Amount EXW	Amount Local transport, transit insurance, etc.	Amount all taxes and other levies payable etc.	Amount Local Currency including transport, transit insurance etc, including all taxes and other levies payable etc.
-1	-2	-3	-4	-5	-6	-7	(8)=(5)+(6)+(7)
II.B-2.1.6	Filters and Filter House						0
a.	Filter Sand	l.s.	1	1,398,218	35,113	50,813	1,484,144
b.	Supporting Gravel (optional)	l.s.	1	699,109	17,557	25,407	742,073
c.	Underdrain systems	l.s.	1	2,097,326	52,670	76,219	2,226,215
d.	Wash water drain troughs	l.s.	1	0	0	0	0
e.	Inlet gates or valves (motorized)	l.s.	1	1,048,663	26,335	38,110	1,113,108
f.	Wash water drain gates or valves (motorized)	l.s.	1	1,549,691	38,917	56,318	1,644,926
g.	Filtered water outlet valves (motorized) or siphon systems	l.s.	1	1,281,700	32,187	46,579	1,360,466
h.	Backwash valves (motorized)	l.s.	1	1,747,772	43,891	63,516	1,855,179
i.	Air scour valves (motorized)	l.s.	1	1,281,700	32,187	46,579	1,360,466
j.	Filtered water flow meters	l.s.	1	582,591	14,631	21,172	618,394
k.	Miscellaneous valves for filter drain, air release, etc.	l.s.	1	116,519	2,927	4,235	123,681
l.	Piping including fittings and specials	l.s.	1	2,330,362	58,522	84,688	2,473,572
m.	Backwash water flow measuring and control system including, flow control valve and associate piping, but excluding flow meter	l.s.	1	582,591	14,631	21,172	618,394
n.	Air blowers with pipes, valves, fittings, specials, etc.	l.s.	1	1,159,892	29,128	42,152	1,231,172
o.	Sump drain pumps with piping	l.s.	1	116,519	2,927	4,235	123,681
p.	Utility water pipes, valves, hose valve with rubber hose for washdown and cleaning of filters	l.s.	1	58,260	1,464	2,118	61,842
q.	Air conditioning, ventilation, fire extinguisher, etc.	l.s.	1	58,260	1,464	2,118	61,842
r.	Metal works including handrail, step iron, steel ladders, etc.	l.s.	1	116,519	2,927	4,235	123,681
	Subtotal of Item II.2.B-1.6			16,225,692	407,478	589,666	17,222,836

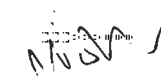



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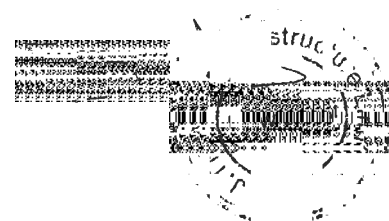
Item	Description	Unit	Quantity	Local Currency (INR)			
				Amount EXW	Amount Local transport, transit insurance, etc.	Amount all taxes and other levies payable etc.	Amount Local Currency including transport, transit insurance etc, including all taxes and other levies payable etc.
-1	-2	-3	-4	-5	-6	-7	(8)=(5)+(6)+(7)
							0
II.B-2.1.7	Clear Water Reservoir and Pumping Station						0
a.	Vertical Turbine Pumps and Motors	I.s.	1	3,845,098	96,560	139,735	4,081,393
b.	Valves on pump discharge pipes including check valves, butterfly valves (motorized), sluice valves (manual), other ancillary valves	I.s.	1	1,136,052	28,530	41,286	1,205,868
c.	Pipes, fittings and specials of column and discharge pipes with necessary protection against thrust force	I.s.	1	116,519	2,927	4,235	123,681
d.	Pipes, fittings and specials of discharge header (up to outlet of pump room) with necessary protection against thrust force	I.s.	1	291,296	7,316	10,586	309,198
e.	Inlet and outlet gates or valves (manual) of reservoirs	I.s.	1	1,048,663	26,335	38,110	1,113,108
f.	Sluice gate with manual floor operator on partition wall of pump sump well	I.s.	1	233,037	5,853	8,469	247,359
g.	EOT Crane with accessories	I.s.	1	1,747,772	43,891	63,516	1,855,179
h.	Sump drain pumps with piping	I.s.	1	116,519	2,927	4,235	123,681
i.	Inlet pipes, drain pipes, overflow pipes of reservoir with fittings and specials up to outer wall of reservoirs or valve chambers	I.s.	1	116,519	2,927	4,235	123,681
j.	Dewatering pumps with piping	I.s.	1	116,519	2,927	4,235	123,681
k.	Metal works including step irons, steel ladders, ventilation vents, manholes/hatches, etc.	I.s.	1	58,260	1,464	2,118	61,842
l.	Air conditioning, ventilation, fire extinguishers, etc.	I.s.	1	29,130	732	1,059	30,921
	Subtotal of Item II.B-2.1.7			8,855,384	222,389	321,819	9,399,592




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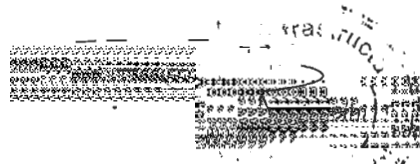
Item	Description	Unit	Quantity	Local Currency (INR)			
				Amount EXW	Amount Local transport, transit insurance, etc.	Amount all taxes and other levies payable etc.	Amount Local Currency including transport, transit insurance etc, including all taxes and other levies payable etc.
-1	-2	-3	-4	-5	-6	-7	(8)=(5)+(6)+(7)
II.B-2.1.8	Chemical House						0
a.	Mixer of Alum mixing/storage tank with Alum dilution trays	I.s.	1	116,519	2,927	4,235	123,681
b.	Chemical transfer pumps for Alum solution with suction/delivery pipes, valve, fittings and specials	I.s.	1	815,627	20,483	29,641	865,751
c.	Alum dosage chambers with pipes, valves, fittings and specials.	I.s.	1	233,037	5,853	8,469	247,359
d.	Alum dosage pipes, valves, fittings and specials from the chemical house to dosage point with a diffuser	I.s.	1	349,555	8,779	12,704	371,038
e.	Mixer of Lime mixing/storage tank with lime powder shooters	I.s.	1	186,429	4,682	6,775	197,886
f.	Chemical transfer pumps for Lime solution with suction/delivery pipes, valve, fittings and specials	I.s.	1	815,627	20,483	29,641	865,751
g.	Lime dosage chambers with pipes, valves, fittings and specials.	I.s.	1	233,037	5,853	8,469	247,359
h.	Lime dosage pipes, valves, fittings and specials from the chemical house to dosage points with diffusers for pre- and post lime	I.s.	1	349,555	8,779	12,704	371,038
i.	Polymer solution preparation and dosage pump with suction/delivery pipes, valves, fittings and specials	I.s.	1	815,627	20,483	29,641	865,751
j.	Polymer dosage pipes, valves, fittings and specials from the chemical house to dosage points with diffusers.	I.s.	1	233,037	5,853	8,469	247,359
k.	All other pipes, valves, fittings and specials for utility water supply, overflow and drain in the chemical house	I.s.	1	116,519	2,927	4,235	123,681
l.	Sump drain pumps with piping	I.s.	1	58,260	1,464	2,118	61,842
m.	EOT monorail hoist with accessories at ground flow and 1st floor	I.s.	1	349,555	8,779	12,704	371,038
n.	Metal works including handrails, step irons, steel ladders, hatches, etc.	I.s.	1	58,260	1,464	2,118	61,842
o.	Air conditioning, ventilation, fire extinguishers, dust collectors/exhaust fans of lime powder feeding, etc.	I.s.	1	58,260	1,464	2,118	61,842
	Subtotal of Item II.B-2.1.8			4,788,904	120,273	174,041	5,083,218
							0

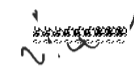



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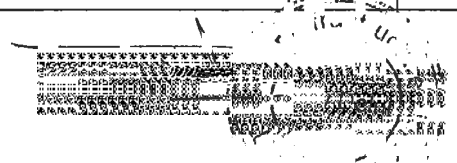
Item	Description	Unit	Quantity	Local Currency (INR)			
				Amount EXW	Amount Local transport, transit insurance, etc.	Amount all taxes and other levies payable etc.	Amount Local Currency including transport, transit insurance etc, including all taxes and other levies payable etc.
-1	-2	-3	-4	-5	-6	-7	(8)=(5)+(6)+(7)
II.B-2.1.9	Chlorine Building						0
a.	Weight Scale with capacity of two 2 chlorine cylinders (1 ton each)	l.s.	1	116,519	2,927	4,235	123,681
b.	Chlorine Cylinders	l.s.	1	815,627	20,483	29,641	865,751
c.	Vacuum type chlorinator for pre-chlorination	l.s.	1	3,495,543	87,782	127,032	3,710,357
d.	Vacuum type chlorinator for post-chlorination	l.s.	1	2,912,953	73,152	105,860	3,091,965
e.	Chlorine ejectors for pre- and post-chlorination	l.s.	1	233,037	5,853	8,469	247,359
f.	Utility water boosting pumps and motors with pipes, valves, fittings and specials	l.s.	1	233,037	5,853	8,469	247,359
g.	HTH mixing tanks with mixer and piping	l.s.	1	116,519	2,927	4,235	123,681
h.	metering pumps and motors for HTH solution with piping	l.s.	1	116,519	2,927	4,235	123,681
i.	Chlorine gas and solution pipes, valves, fitting and specials from the chlorine building up to dosage points (pre and post-chlorination)	l.s.	1	233,037	5,853	8,469	247,359
j.	Sump drain pumps with piping	l.s.	1	58,260	1,464	2,118	61,842
k.	EOT monorail hoist wit accessories	l.s.	1	349,555	8,779	12,704	371,038
l.	Chlorine gas neutralization system including gas leakage detection system and gas collecting ducts	l.s.	1	116,519	2,927	4,235	123,681
m.	Air conditioning, ventilation, fire extinguishers, dust collectors of lime powder feeding, etc.	l.s.	1	58,260	1,464	2,118	61,842
n.	Emergency shower and eye washer	l.s.	1	23,304	586	847	24,737
	Subtotal of Item II.B-2.1.9			8,878,689	222,977	322,667	9,424,333
							0
II.B-2.1.10	Waste Backwash Water (WBW) Holding Tank						0
a.	Inlet gates or valves (manual) with piping	l.s.	1	932,145	23,409	33,875	989,429
b.	submersible mixers	l.s.	1	932,145	23,409	33,875	989,429
c.	Metal works including handrail, step irons, steel ladders, weir plates , etc.	l.s.	1	58,260	1,464	2,118	61,842
	Subtotal of Item II.B-2.1.10			1,922,550	48,282	69,868	2,040,700
							0




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Item	Description	Unit	Quantity	Local Currency (INR)			
				Amount EXW	Amount Local transport, transit insurance, etc.	Amount all taxes and other levies payable etc.	Amount Local Currency including transport, transit insurance etc, including all taxes and other levies payable etc.
-1	-2	-3	-4	-5	-6	-7	(8)=(5)+(6)+(7)
II.B-2.1.11	Sludge Buffer (SB) Tank						0
a.	Inlet gates or valves (manual) with piping	I.s.	1	699,109	17,557	25,407	742,073
b.	submersible mixers	I.s.	1	932,145	23,409	33,875	989,429
c.	Sludge Transfer pumps and motors to Thickener including valves, pipes, fittings and specials in the SB tank	I.s.	1	652,502	16,386	23,713	692,601
d.	Metal works including handrail, step irons, steel ladders, weir plates, etc.	I.s.	1	58,260	1,464	2,118	61,842
	Subtotal of Item II.B-2.1.11			2,342,016	58,816	85,113	2,485,945
							0
II.B-2.1.12	Sludge Thickener						0
a.	Sludge Scrapers with drive unit including access bridge, column pipe, etc.	I.s.	1	4,078,134	102,413	148,203	4,328,750
b.	Thickened sludge extraction pipes to Thickened Sludge Extraction Pump House with valves, fittings and specials	I.s.	1	34,956	878	1,271	37,105
c.	Supernatant water drain pipes, fittings and specials	I.s.	1	116,519	2,927	4,235	123,681
d.	Metal works including handrail, step iron, steel ladder, weir plate, etc.	I.s.	1	58,260	1,464	2,118	61,842
	Subtotal of Item II.B-2.1.12			4,287,869	107,682	155,827	4,551,378
							0
II.B-2.1.13	Thickened Sludge Extraction Pump House						0
a.	Thicken Sludge extraction pumps and motors including pipes, valves, fittings and specials in the pump house	I.s.	1	NA	NA	NA	NA
b.	Metal works including handrail, step iron, steel ladder, hatch, etc.	I.s.	1	NA	NA	NA	NA
c.	Air conditioning, ventilation, fire extinguishers, etc.	I.s.	1	NA	NA	NA	NA
	Subtotal of Item II.B-2.1.13			0	0	0	0
							0
II.B-2.1.14	Sludge Dewatering Building						0
a.	Sludge Dewatering Units	I.s.	1	5,330,703	133,868	193,723	5,658,294
b.	Mixer of Sludge Storage Tanks	I.s.	1	932,145	23,409	33,875	989,429
c.	Polymer solution preparation and feed system including all accessories	I.s.	1	291,296	7,316	10,586	309,198
d.	Sludge day tanks with mixers	I.s.	1	0	0	0	0
e.	Thickened Sludge Feed Pumps and motors including suction/discharge pipes, valve, fittings and specials	I.s.	1	349,555	8,779	12,704	371,038



Schedule II.B: PLANT AND EQUIPMENT SUPPLIED FROM EMPLOYER'S COUNTRY


Item	Description	Unit	Quantity	Local Currency (INR)			
				Amount EXW	Amount Local transport, transit insurance, etc.	Amount all taxes and other levies payable etc.	Amount Local Currency including transport, transit insurance etc, including all taxes and other levies payable etc.
-1	-2	-3	-4	-5	-6	-7	(8)=(5)+(6)+(7)
	f. All other piping including sludge feeding, utility water with a storage tank, centrate, etc. with pipes, valves, fittings and specials in the dewatering building	I.s.	1	233,037	5,853	8,469	247,359
	g. EOT Crane with complete accessories	I.s.	1	1,048,663	26,335	38,110	1,113,108
	h. Sump drain pumps with piping	I.s.	1	58,260	1,464	2,118	61,842
	i. Metal works including handrail, step iron, steel ladder, hatch, etc.	I.s.	1	58,260	1,464	2,118	61,842
	j. Air conditioning, ventilation, fire extinguishers, etc.	I.s.	1	0	0	0	0
	Subtotal of Item II.B-2.1.14			8,301,919	208,488	301,703	8,812,110
II.B-2.1.15	Recycling Water Sump						
	a. Recycling water transfer pumps and motors with pipes, valves, fittings and specials	I.s.	1	1,631,254	40,965	59,282	1,731,501
	Subtotal of Item II.B-2.1.15			1,631,254	40,965	59,282	1,731,501
II.B-2.1.16	Administration Building						
	a. Laboratory equipment and accessories	I.s.	1	932,145	23,409	33,875	989,429
	b. Laboratory glass wares and chemicals/reagents	I.s.	1	233,037	5,853	8,469	247,359
	c. Water quality analyzer rack	I.s.	1	116,519	2,927	4,235	123,681
	d. Sampling pumps with piping from sampling points to laboratory	I.s.	1	116,519	2,927	4,235	123,681
	e. Drain pumps with piping	I.s.	1	58,260	1,464	2,118	61,842
	f. Air conditioning, ventilation and fire extinguishers in entire building	I.s.	1	58,260	1,464	2,118	61,842
	Subtotal of Item II.B-2.1.16			1,514,740	38,044	55,050	1,607,834
II.B-2.1.17	Maintenance Building						
	a. EOT monorail hoist	I.s.	1	349,555	8,779	12,704	371,038
	b. Drain pumps with piping	I.s.	1	0	0	0	0
	c. Air conditioning, ventilation, fire extinguishers, fire extinguishers, etc.	I.s.	1	29,130	732	1,059	30,921
	Subtotal of Item II.B-2.1.17			378,685	9,511	13,763	401,959
II.B-2.1.18	Yard Piping						
	a. Raw Water Transmission Main including pipes, valves (flow controller), fittings and specials (from WTP boundary up to inlet of pre-settling tank)	I.s.	1	233,037	5,853	8,469	247,359



Schedule II.B: PLANT AND EQUIPMENT SUPPLIED FROM EMPLOYER'S COUNTRY

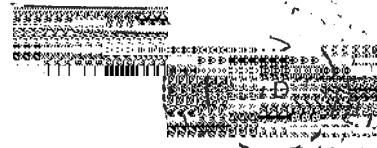
Item	Description	Unit	Quantity	Local Currency (INR)			
				Amount EXW	Amount Local transport, transit insurance, etc.	Amount all taxes and other levies payable etc.	Amount Local Currency including transport, transit insurance etc, including all taxes and other levies payable etc.
-1	-2	-3	-4	-5	-6	-7	(8)=(5)+(6)+(7)
b.	Interconnection pipe between pre-settling tanks, a cascade aerator and flash mixing tanks including pipes, fittings and specials	I.s.	1	NA	NA	NA	NA
c.	Interconnection between flash mixing tanks and flocculation tanks including pipes, fittings and specials	I.s.	1	NA	NA	NA	NA
d.	Interconnection between plate or tube setting tanks and filters including pipes, fittings and specials	I.s.	1	NA	NA	NA	NA
e.	Interconnection between filters and clear water reservoir including pipes, fittings and specials	I.s.	1	NA	NA	NA	NA
f.	Clear Water Transmission Main 1500mm MS pipe from CW pumping station to WTP boundary including pipes, valves (controller), fittings and specials	I.s.	1	1,165,181	29,261	42,344	1,236,786
g.	Sludge drain between plate or tube settling tanks and SB tanks including pipes, fittings and specials	I.s.	1	58,260	1,464	2,118	61,842
h.	Filter wash drain between filters and WBW holding tanks including pipes, fittings and specials	I.s.	1	NA	NA	NA	NA
i.	Interconnecting pipes between SB tanks, sludge thickeners, sludge extraction pump house and sludge dewatering building and recycling water transfer pipe including pipes, valves, fittings and specials	I.s.	1	233,037	5,853	8,469	247,359
j.	Plant water supply for potable water, utility water, irrigation use, etc including pipes, valves, fittings and specials within WTP site	I.s.	1	116,519	2,927	4,235	123,681
k.	Plant drain from WBW holding tanks to Brahmaputra River including pipes, valves, fittings and specials	I.s.	1	NA	NA	NA	NA
	Subtotal of Item II.B-2.1.18			1,806,034	45,358	65,635	1,917,027
							0
II.B-2.1.19	Any other items and sub-items not specified in the above but required to complete works	I.s.	1	0	0	0	0
	Subtotal of Item II.B-2.1			79,024,521	1,984,579	2,871,879	83,880,979

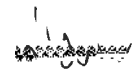



 Project Director
 Project Implementation Unit (P.I.U.)
 JICA Funded Government of Assam Supply Project

Schedule II.B: PLANT AND EQUIPMENT SUPPLIED FROM EMPLOYER'S COUNTRY

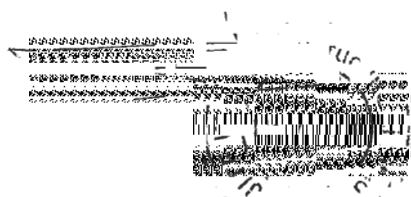
Item	Description	Unit	Quantity	Local Currency (INR)			
				Amount EXW	Amount Local transport, transit insurance, etc.	Amount all taxes and other levies payable etc.	Amount Local Currency including transport, transit insurance etc, including all taxes and other levies payable etc.
-1	-2	-3	-4	-5	-6	-7	(8)=(5)+(6)+(7)
II.B-2.2	Electrical Works						
II.B-2.2.1	Power substation-33 kV outdoor switchyard and Indoor switchboard	I.s.	1	5,825,905	146,303	211,719	6,183,927
II.B-2.2.2	3.3kV/0.415kV Power transformers with neutral grounding	I.s.	1	2,912,953	73,152	105,860	3,091,965
II.B-2.2.3	415 V indoor switchboard / MCC and Main PCC	I.s.	1	1,922,549	48,280	69,868	2,040,697
II.B-2.2.4	415 V Diesel Generator set with control panel, silencer, fuel tanks, fuel transfer pumps, piping, etc.	I.s.	1	11,069,219	277,976	402,266	11,749,461
II.B-2.2.5	LV PCCs and Distribution Boards / MCCs at location proposed in WTP with capacitors	I.s.	1	2,621,658	65,837	95,274	2,782,769
II.B-2.2.6	FCMA Neutral Soft Starter for CW pumps	I.s.	1	1,922,549	48,280	69,868	2,040,697
II.B-2.2.7	LV cabling including trays, trenches, conduits, etc	I.s.	1	273,818	6,877	9,951	290,646
II.B-2.2.8	Indoor lighting system in civil structures and buildings including lighting fixtures, cables, trays, ducts, conduits, etc.	I.s.	1	582,591	14,631	21,172	618,394
II.B-2.2.9	Emergency lighting system in Civil structures and buildings including lighting fixtures, cables, trays, ducts, conduit, etc.	I.s.	1	99,041	2,488	3,600	105,129
II.B-2.2.10	Outdoor lighting system including electric panels, lighting fixtures, poles, cables, trenches, conduits, etc.	I.s.	1	407,814	10,242	14,821	432,877
II.B-2.2.11	Earthing / Lightning Protection systems at civil structures and buildings	I.s.	1	1,549,691	38,917	56,318	1,644,926
II.B-2.2.12	110 V Ni-Cd batteries including battery chargers and distribution panels	I.s.	1	1,806,031	45,354	65,633	1,917,018
II.B-2.2.13	Any other items not specified in the above but required to complete works (LPBs, Soft Starter, DP Structure etc.)	I.s.	1	2,330,362	58,522	84,688	2,473,572
	Subtotal of II-B-2.2			33,324,181	836,859	1,211,038	35,372,078
							0




 Project Director
 Project Implementation Unit (P.I.U)
 JICA Funded Guwahati Water Supply Project

Schedule II.B: PLANT AND EQUIPMENT SUPPLIED FROM EMPLOYER'S COUNTRY

Item	Description	Unit	Quantity	Local Currency (INR)			
				Amount EXW	Amount Local transport, transit insurance, etc.	Amount all taxes and other levies payable etc.	Amount Local Currency including transport, transit insurance etc, including all taxes and other levies payable etc.
-1	-2	-3	-4	-5	-6	-7	(8)=(5)+(6)+(7)
II.B-2.3	Instrumentation and Control Works						0
II.B-2.3.1	PC based SCADA system for remote monitoring and control at central control room in the Administration building including three sets of Laptop computers (min processor, back-up and engineering workstation) with software and hardware, UPS, color monitor, printer, any other ancillary equipment complete	I.s	1	6,991,086	175,564	254,063	7,420,713
II.B-2.3.2	24 V DC power supply system for monitoring and control	I.s.	1	291,296	7,316	10,586	309,198
II.B-2.3.3	Instrument control panels at specified locations including PLC/ICP with software and hardware with complete ancillary equipment	I.s.	1	1,165,181	29,261	42,344	1,236,786
II.B-2.3.4	Flow meters for raw water transmission (parshall flume or electromagnetic), filtered water (parshall flume or electromagnetic) and CW transmission (electromagnetic) with necessary measuring, transmit and integrator.	I.s.	1	506,854	12,729	18,420	538,003
II.B-2.3.5	Electromagnetic flow meters on other flow measuring specified	I.s	1	116,519	2,927	4,235	123,681
II.B-2.3.6	Annubar/thermal dispersion type flow meter on BWA header	I.s.	1	46,608	1,171	1,694	49,473
II.B-2.3.7	Water level meters (Rader type and Ultrasonic type), level switches (conductivity type) as specified	I.s.	1	955,449	23,994	34,722	1,014,165
II.B-2.3.8	Temperature scanner for pumps and switches for specified locations	I.s.	1	655,997	16,474	23,840	696,311
II.B-2.3.9	Pressure meters and switches for pump header and BWA header	I.s.	1	321,590	8,076	11,687	341,353
II.B-2.3.10	Flow switches for pumps	I.s.	1	87,389	2,195	3,176	92,760
II.B-2.3.11	Differential pressure measuring system for each filter	I.s.	1	209,733	5,267	7,622	222,622
II.B-2.3.12	Potable meters for temperature, sound level and vibration level	I.s.	1	291,296	7,316	10,586	309,198

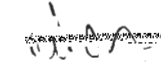


Project Director
 Project Implementation Unit (P.I.U)
 JICA Funded Guwahati Water Supply Project

Schedule II.B: PLANT AND EQUIPMENT SUPPLIED FROM EMPLOYER'S COUNTRY

Item	Description	Unit	Quantity	Local Currency (INR)			
				Amount EXW	Amount Local transport, transit insurance, etc.	Amount all taxes and other levies payable etc.	Amount Local Currency including transport, transit insurance etc, including all taxes and other levies payable etc.
-1	-2	-3	-4	-5	-6	-7	(8)=(5)+(6)+(7)
II.B-2.3.13	EPABX systems with accessories	I.s.	1	75,737	1,902	2,753	80,392
II.B-2.3.14	CCTV monitoring system	I.s.	1	93,215	2,341	3,388	98,944
II.B-2.3.15	Walki-Talkis for local communication	I.s.	1	11,652	293	424	12,369
II.B-2.3.16	Instrumentation and control cables including trays, ducts, conduit, etc.	I.s.	1	501,028	12,583	18,208	531,819
II.B-2.3.17	Any other items not specified in the above but required to complete works (lab equipment)	I.s.	1	0	0	0	0
	Subtotal of Item II.B-2.3			12,320,630	309,409	447,748	13,077,787
							0
	Total of II.B-2			124,669,332	3,130,847	4,530,665	132,330,844
II.B-3	DISTRIBUTION RESERVOIR						
II.B-3.1	Mechanical works						
II.B-3.1	Inlet Valves or Gates (motorized) with accociated pipes, fittings and specials	I.s.	1	1,281,700	32,187	46,579	1,360,466
II.B-3.2	Outlet Valves or Gates (ND900mm BV with manual actuator) with associated pipes, filltins and specials	I.s.	1	NA	NA	NA	NA
II.B-3.3	Drain pipes, valves, fittings and specials (ND 200mm)	I.s.	1	58,260	1,464	2,118	61,842
II.B-3.4	Overflow pipes, fittings and specials	I.s.	1	58,260	1,464	2,118	61,842
II.B-3.5	Distribution main from reservoir up to WTP boundary limit (ND 1100 mm) including pipes, fittings and specials Inlet and outlet gates or valves (manual) of reservoirs	I.s.	1	NA	NA	NA	NA
II.B-3.6	Overflow / drain pipes, fittings and specials from reservoir up to WBW holding tank	I.s.	1	58,260	1,464	2,118	61,842
II.B-3.7	Metal works including air vent pipes, step irons, steel ladders, hatches/manholes, etc.	I.s.	1	58,260	1,464	2,118	61,842
II.B-3.8	Any other items not specified in the above but required to complete works	I.s.	1	0	0	0	0
	Subtotal of Item II.B-3.1			1,514,740	38,043	55,051	1,607,834

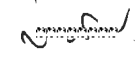



 Project Director
 Project Implementation Unit (P.I.U)
 JICA Funded Guwahati Water Supply Project

Schedule II.B: PLANT AND EQUIPMENT SUPPLIED FROM EMPLOYER'S COUNTRY

Item	Description	Unit	Quantity	Local Currency (INR)			
				Amount EXW	Amount Local transport, transit insurance, etc.	Amount all taxes and other levies payable etc.	Amount Local Currency including transport, transit insurance etc, including all taxes and other levies payable etc.
-1	-2	-3	-4	-5	-6	-7	(8)=(5)+(6)+(7)
II.B-3.2	Electrical Works						0
II.B-3.2.1	LV cables with conduit (from LV switchboard in WTP to reservoir) and an electric panel	I.s.	1	1,165,181	29,261	42,344	1,236,786
II.B-3.2.2	Indoor / Outdoor lighting including lighting fixtures, poles, cables, conduit, etc.	I.s.	1	419,466	10,534	15,244	445,244
II.B-3.2.3	Earthing / lightening protection with accessories complete	I.s.	1	664,154	16,679	24,136	704,969
II.B-3.2.4	Any other items not specified in the above but required to complete works	I.s.	1	3,145,989	79,004	114,329	3,339,322
	Subtotal of Item II.B-3.2			5,394,790	135,478	196,053	5,726,321
							0
II.B-3.3	Instrumentation and Control Works						0
II.B-3.3.1	Instrumentation panel (indoor)	I.s.	1	349,555	8,779	12,704	371,038
II.B-3.3.2	Electromagnetic flow meter (ND600mm)	I.s.	1	524,332	13,168	19,055	556,555
II.B-3.3.3	Water level meters (rayder type) with cabling	I.s.	1	69,911	1,756	2,541	74,208
II.B-3.3.4	Instrumentation and control cables including conduit	I.s.	1	116,519	2,927	4,235	123,681
II.B-3.3.5	Any other items not specified in the above but required to complete works	I.s.	1	0	0	0	0
	Subtotal of Item II.B-3.3			1,060,317	26,630	38,535	1,125,482
							0
	Total of Item II.B-3			7,969,847	200,151	289,639	8,459,637
							0
II.B-4	Mandatory Spare Parts and Tools & Tackles						0
II.B-4.1	Mandatory Spare Parts						0
II.B-4.1.1	Spare Parts for Mechanical Equipment						0
	B. Raw Water Transmission Pumping Station	I.s.	1	757,368	19,020	27,524	803,912
	b. Water Treatment Plant	I.s.	1	4,660,724	117,043	169,375	4,947,142
	c. Distribution Reservoir	I.s.	1	58,260	1,464	2,118	61,842
	Subtotal of Item II.A-4.1.1			5,476,352	137,527	199,017	5,812,896




 Project Director
 Project Implementation Unit (P.I.U)
 JICA Funded Guwahati Water Supply Project

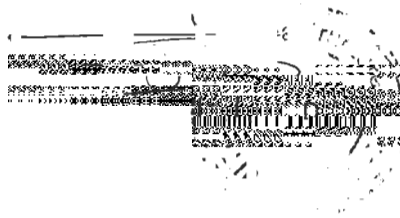
Schedule II.B: PLANT AND EQUIPMENT SUPPLIED FROM EMPLOYER'S COUNTRY


Item	Description	Unit	Quantity	Local Currency (INR)			
				Amount EXW	Amount Local transport, transit insurance, etc.	Amount all taxes and other levies payable etc.	Amount Local Currency including transport, transit insurance etc, including all taxes and other levies payable etc.
-1	-2	-3	-4	-5	-6	-7	(8)=(5)+(6)+(7)
II.B-4.1.2	Spare Parts for Electrical Equipment						0
B.	Raw Water Transmission Pumping Station	l.s.	1	2,621,658	65,837	95,274	2,782,769
b.	Water Treatment Plant	l.s.	1	4,369,429	109,728	158,789	4,637,946
c.	Distribution Reservoir	l.s.	1	1,747,649	43,761	63,412	1,854,822
	Subtotal of Item II.A-4.1.2			8,738,736	219,326	317,475	9,275,537
II.B-4.1.3	Spare Parts for Instrumentation and Control Equipment	l.s.	1	1,508,910	37,893	54,836	1,601,639
	Subtotal of Item II.B-4.1			15,723,998	394,746	571,328	16,690,072
							0
II.B-4.2	Tools and Tackles						0
II.B-4.2.1	Main Workshop	l.s.	1	58,260	1,464	2,118	61,842
II.B-4.2.2	Painting Shop	l.s.	1	58,260	1,464	2,118	61,842
II.B-4.2.3	Electronics Shop	l.s.	1	58,260	1,464	2,118	61,842
II.B-4.2.4	Handling Tools and Miscellaneous	l.s.	1	58,260	1,464	2,118	61,842
	Subtotal of Item II B 4.2			233,040	5,856	8,472	247,368
	Total of Item II.B-4			15,957,038	400,602	579,800	16,937,440
Total of Schedule II.B				285,372,161	7,166,400	10,370,677	302,909,238
(Carry over to Grand Summary, Schedule VIII)							

Notes:

(a) Currencies shall be in Indian Rupees (INR)

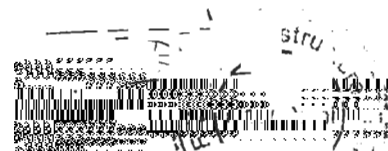
EXW: Ex Works (Term of sale signifying that the price invoiced or quoted by a seller includes charges only up to the seller's factory or premises. All charges from there on are to be borne by the buyer)




 Project Director
 Project Implementation Unit (P.I.U)
 JICA Funded Guwahati Water Supply Project

Schedule III: DESIGN, DRAWINGS AND DOCUMENTATIONS SERVICES

Item	Description	Country of Origin	Unit	Quantity	Foreign Currency (a)		Local Currency (INR)		
					Amount including personnel cost, per diem, Local transportation, etc.	Amount including personnel cost, per diem, Local transportation, etc.	Amount all taxes and other levies payable etc.	Amount Local Currency including all taxes and other levies payable etc.	
-1	-2	-3	-4	-5	-6	-7	-8	(9) = (7) + (8)	
III	Design, Drawings and Documentation Services								
III-1	Study and Surveys								
III-1.1	Hydrological Study of River including Bathymetry survey and Model Analysis for Raw Water Intake Location		I.s.	1	0	298,333	10,565	308,898	
III-1.2	Topographical Surveys								
III-1.2.1	Water Treatment Plant Site including establishment of Bench Mark		I.s.	1	0	298,333	10,565	308,898	
III-1.2.2	Interception and Diversion Drain		I.s.	1	0	59,667	2,113	61,780	
III-1.2.3	Dewatered Sludge Cake Disposal Site		I.s.	1	0	29,834	1,057	30,891	
III-1.2.4	Any other item not specified above but required to complete the design and construction		I.s.	1	0	0	0	0	
	Subtotal of Item III-1.2					387,834	13,735	401,569	
III-1.3	Geotechnical Investigations								
III-1.3.1	Raw Water Intake Site including river bay		I.s.	1	0	149,167	5,283	154,450	
III-1.3.2	Water Treatment Site including distribution reservoir		I.s.	1	0	149,167	5,283	154,450	
III-1.3.3	Dewatered Sludge Cake Disposal Site		I.s.	1	0	0	0	0	
III-1.3.4	Any other item not specified above but required to complete the design and construction		I.s.	1	0	0	0	0	
	Subtotal of Item III-1.3					298,334	10,566	308,900	
III-1.4	Raw Water Sampling survey								
III-1.4.1	Raw Water Sampling and Laboratory Tests		I.s.	1	0	29,834	1,057	30,891	
III-1.4.2	Any other testing and analysis including jar test		I.s.	1	0	0	0	0	
	Subtotal of Item III-1.4					29,834	1,057	30,891	
	Total of Item III-1					1,014,335	35,923	1,050,258	
III-2	Design and Drawings including Civil, Architectural, Mechanical, Electrical Works								
III-2.1	Basic Design including process design & flow diagram, dimensioning of facilities and equipment, plant layout, hydraulic profile, single line diagram, instrumentation diagram and SCADA configuration, etc.		I.s.	1	0	298,333	10,565	308,898	
III-2.2	Detailed Design of Process and hydraulics with other analysis and calculations		I.s.	1	0	596,665	21,129	617,794	
III-2.3	Detailed Design of civil structures, buildings, piping, mechanical and electric equipment including structural analysis and other hydraulic calculations								



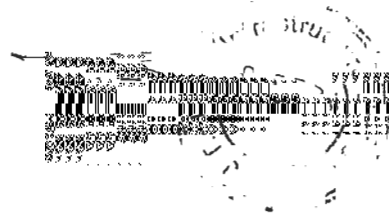
Schedule III: DESIGN, DRAWINGS AND DOCUMENTATIONS SERVICES

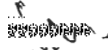
Item	Description	Country of Origin	Unit	Quantity	Foreign Currency (a)		Local Currency (INR)	
					Amount including personnel cost, per diem, Local transportation, etc.	Amount including personnel cost, per diem, Local transportation, etc.	Amount all taxes and other levies payable etc.	Amount Local Currency including all taxes and other levies payable etc.
-1	-2	-3	-4	-5	-6	-7	-8	(9) = (7) + (8)
III-2.3.1	Raw water intake and Bridge and transmission upto river bay		I.s.	1	0	298,333	10,565	308,898
III-2.3.2	Water treatment plant and Clear Water Reservoir		I.s.	1	0	1,789,994	63,386	1,853,380
	Subtotal of Item III-2.3					2,088,327	73,951	2,162,278
III-2.4	Preparation of Shop Drawings							
III-2.4.1	Raw water intake and transmission		I.s.	1	0	119,333	4,226	123,559
III-2.4.2	Water treatment plant and clear water reservoir		I.s.	1	0	119,333	4,226	123,559
	Subtotal of Item III-2.4					238,666	8,452	247,118
III-2.5	Any other item not specified above but required to complete the design and construction		I.s.	1	0		0	0
	Total of Item III-2					3,221,991	114,097	3,336,088
III-3	Other Documentations							
III-3.1	Preparation of As-built Drawings		I.s.	1	0	29,824	1,046	30,870
III-3.2	Preparation of Operation and Maintenance Manuals		I.s.	1	0	14,917	529	15,446
III-3.3	Preparation of Training Manuals		I.s.	1	0	14,917	529	15,446
III-3.4	Preparation of Safety and QA/QC Manuals		I.s.	1	0	14,917	529	15,446
III-3.5	Preparation of Environmental Management & Monitoring Plans and Monitoring Reports		I.s.	1	0	14,917	529	15,446
	Total of Item III-3					89,492	3,162	92,654
Total of Schedule III					0	4,325,818	153,182	4,479,000
(Carry over to Grand Summary, Schedule VIII)								

Note:

(a) Currencies shall be in accordance with the Instruction to Bidders. Bidder shall specify currency.

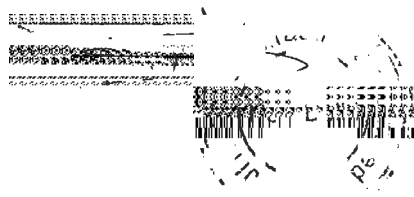
INR: Indian Rupees




 Project Director
 Project Implementation Unit (P.I.U.)
 JICA Funded Guwahati Water Supply Project

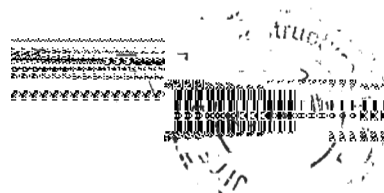
Schedule IV: INSTALLATION AND OTHER SERVICES

Item	Description	unit	Quantity	Local Currency (INR)		
				Amount	Amount	Total Amount
				including Local transport, transit insurance, etc.	all taxes and other levies payable etc.	including all taxes and other levies payable etc.
1	2	3	4	6	7	(8) = (6) + (7)
IV	Installation and Other Services					
	Installation of Equipment including, but not limited to, secure storage, protection, erection, installation, and initial testing. Items not listed and required for completing the job shall be supplied by contractor as a part of the installation without any additional payment. The Trial Run, Pre-commissioning & Commissioning testing are included under separate cost items.					
IV-1	Intake Structure and Raw Water Pump Station and Transmission Main					
IV-1.1	Mechanical Works					
IV-1.1	Vertical Turbine Pumps and Motors	l.s.	1	342,142	12,114	354,256
IV-1.2	Pump discharge pipes and header including vlves, pipes, fittings and specials	l.s.	1	78,440	2,778	81,218
IV-1.3	Intake gates with floor operators	l.s.	1	60,193	2,132	62,325
IV-1.4	Intake screens with guide frme and lifting devices	l.s.	1	76,033	2,693	78,726
IV-1.5	Lubrication water pump system with piping	l.s.	1	50,688	1,795	52,483
IV-1.6	Desilting pumps with piping	l.s.	1	95,040	3,366	98,406
IV-1.7	EOT crane	l.s.	1	152,064	5,384	157,448
IV-1.8	Surge protection system	l.s.	1	38,017	1,347	39,364
IV-1.9	Miscellaneous equipment including air conditioning system, ventilation system, fire extiguisher,	l.s.	1	3,169	113	3,282
IV-1.10	Raw Water Transmission Main including trench works, pipe installation with fittings and specials, valves with chambers, crossing works, pavement restoration and any other ancillary works to complete the pipelying works	l.s.	1	5,068,764	179,451	5,248,215
IV-1.11	Any other items not specifed in the above but required to complete works	l.s.	1	0	0	0
	Subtotal of Item IV-1.1			5,964,550	211,173	6,175,723



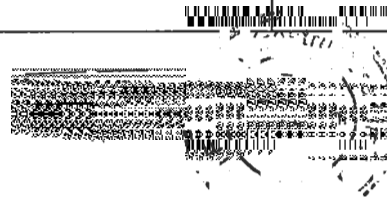
Schedule IV: INSTALLATION AND OTHER SERVICES

Item	Description	unit	Quantity	Local Currency (INR)		
				Amount	Amount	Total Amount
				including Local transport, transit insurance, etc.	all taxes and other levies payable etc.	including all taxes and other levies payable etc.
1	2	3	4	6	7	(8) = (6) + (7)
IV-1.2	Electrical Works					
IV-1.2.1	HV outdoor switchboard for power receiving including Transformers	l.s.	1	266,111	9,422	275,533
IV-1.2.2	Indoor LV Switchboard / MCC / Soft Starters / capacitors	l.s.	1	88,705	3,141	91,846
IV-1.2.3	Other miscellaneous pannels including lighting panels	l.s.	1	386,494	13,684	400,178
IV-1.2.4	Emergency Diesel Generator set including oil storage tanks, transfer pumps, silencer, ventilation, etc.	l.s.	1	243,935	8,637	252,572
IV-1.2.5	Ni-Cd butteries, buttery charger and distribution board	l.s.	1	74,322	2,632	76,954
IV-1.2.6	Indoor and outdoor lighting system with lighting fixtures, poles and cables	l.s.	1	28,703	1,017	29,720
IV-1.2.7	Cabling system with trench work, traies, ducts, any other support	l.s.	1	95,040	3,366	98,406
IV-1.2.8	Earthing / Lightening protection system	l.s.	1	65,514	2,321	67,835
IV-1.2.9	Any other items not specifed in the above but required to complete works	l.s.	1	25,345	898	26,243
	Subtotal of Item IV-1.2			1,274,169	45,118	1,319,287
IV-1.3	Instrumentation and Control Works					
IV-1.3.1	PC based local work station including instrument control pannels, PLC with ancillary equipment	l.s.	1	63,360	2,244	65,604
IV-1.3.2	24 V DC power supply system including butteries, buttery chrger, etc	l.s.	1	15,841	562	16,403
IV-1.3.3	All instrumentaation equipment with cabling	l.s.	1	68,303	2,419	70,722
IV-1.3.4	Instrumentation and control cables including trench work, ducts, conduits, etc.	l.s.	1	15,841	562	16,403
IV-1.3.5	Any other items not specifed in the above but required to complete works	l.s.	1	0	0	0
	Subtotal of Item IV-1.3			163,345	5,787	169,132
	Total of Item IV-1			7,402,064	262,078	7,664,142
IV-2	Water Treatment Plant					
IV-2.1	Mechanical Works					
IV-2.1.1	Pre-Settling Tanks					
a.	Inlet and outlet sluice gates with manual floor operator and piping	l.s.	1	34,848	1,234	36,082



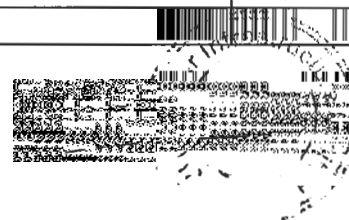
Schedule IV: INSTALLATION AND OTHER SERVICES

Item	Description	unit	Quantity	Local Currency (INR)		
				Amount	Amount	Total Amount
				including Local transport, transit insurance, etc.	all taxes and other levies payable etc.	including all taxes and other levies payable etc.
1	2	3	4	6	7	(8) = (6) + (7)
b.	Desilting system with traveling girders, trollys, sand drain pumps, discharge gutters and piping ¹	l.s.	1	190,080	6,730	196,810
c.	Utility water pipes, valves, hose valves with rubber hose for washdown and cleaning of tanks	l.s.	1	3,169	113	3,282
d.	Metal works including handrails, step irons, steel ladders, etc.	l.s.	1	3,169	113	3,282
	Subtotal of Item IV-2.1.1			231,266	8,190	239,456
IV-2.1.2	Cascade Aerator (Optional)					
a.	Slice gates or valves with manual opertors and piping	l.s.	1	0	0	0
b.	Metal works including hndrails, step irons, stell ladders, etc.	l.s.	1	3,169	113	3,282
	Subtotal of Item II.B-2.1.2			3,169	113	3,282
IV-2.1.3	Flash Mixing Tanks					
a.	Flash Mixers	l.s.	1	12,040	427	12,467
b.	Sluice gates or valves with manual opertor and piping	l.s.	1	0	0	0
c.	Metal works including handrail, step iron, steel ladders, weir plates, etc.	l.s.	1	3,169	113	3,282
	Subtotal of Item IV-2.1.3			15,209	540	15,749
IV-2.1.4	Flocculation Tanks					
a.	Flocculators	l.s.	1	NA	NA	NA
b.	Sluice gates or valves with manual opertor and piping	l.s.	1	21,543	763	22,306
c.	Drain pipes, valves, fittings and specials	l.s.	1	NA	NA	NA
d.	Utility water pipes, valves, hose valves with rubber hose for washdown and cleaning of tanks	l.s.	1	3,169	113	3,282
e.	Metal works including handrail, step iron, steel ladders, etc.	l.s.	1	3,169	113	3,282
	Subtotal of Item IV-2.1.4			27,881	989	28,870



Schedule IV: INSTALLATION AND OTHER SERVICES

Item	Description	unit	Quantity	Local Currency (INR)		
				Amount	Amount	Total Amount
				including Local transport, transit insurance, etc.	all taxes and other levies payable etc.	including all taxes and other levies payable etc.
1	2	3	4	6	7	(8) = (6) + (7)
IV-2.1.5	Plate or Tube Settling Tanks					
a.	Inclining plate/tube modules including support, clips, etc.	l.s.	1	628,917	22,267	651,184
b.	Sludge Scrapers (optional)	l.s.	1	NA	NA	NA
c.	Sludge extraction valves and piping	l.s.	1	45,620	1,616	47,236
d.	Clarified water colletters	l.s.	1	9,505	338	9,843
e.	Utility water pipes, valves, hose valves with rubber hose for washdown and cleaning of tanks	l.s.	1	15,841	562	16,403
f.	Metal works including handrail, step iron, steel ladders, etc.	l.s.	1	3,169	113	3,282
	Subtotal of Item IV-2.1.5			703,052	24,896	727,948
IV-2.1.6	Filters and Filter House					
a.	Filter Sand and supporting gravel	l.s.	1	114,048	4,039	118,087
b.	Underdrain system including casting and installation of false slab with anchoring, grouting and painting (epoxy), installation of nozzles with plunk pipes, and testing	l.s.	1	114,048	4,039	118,087
c.	Wash water trough including leveling and centering, anchoring and grouting, and testing	l.s.	1	0	0	0
d.	All gates and valves	l.s.	1	356,715	12,629	369,344
e.	All Piping including fittings and specials	l.s.	1	126,720	4,487	131,207
f.	Backwash water flow measuring and control system including, flow control valve and associate piping, but excluding flow meter	l.s.	1	31,681	1,123	32,804
g.	Air blowers with pipes, valves, fittings, specials, etc.	l.s.	1	63,073	2,234	65,307
h.	Sump drain pumps with piping	l.s.	1	6,337	225	6,562
i.	Utility water pipes, valves, hose valve with rubber hose for washdown and cleaning of filters	l.s.	1	3,169	113	3,282
j.	Air conditioning, ventilation, fire extinguisher, etc.	l.s.	1	3,169	113	3,282
k.	Metal works including handrail, step iron, steel ladders, etc.	l.s.	1	6,337	225	6,562
	Subtotal of Item IV-2.1.7			825,297	29,227	854,524



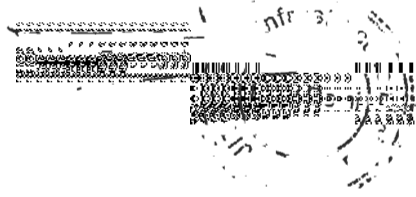
Schedule IV: INSTALLATION AND OTHER SERVICES

Item	Description	unit	Quantity	Local Currency (INR)		
				Amount	Amount	Total Amount
				including Local transport, transit insurance, etc.	all taxes and other levies payable etc.	including all taxes and other levies payable etc.
1	2	3	4	6	7	(8) = (6) + (7)
IV-2.1.7 Clear Water Reservoir and Pumping Station						
a.	Vertical Turbine Pumps and Motors	l.s.	1	209,087	7,403	216,490
b.	ll valves, pipes, fitting and specials of pump colume and discharge pipes and header up to outlet of pump room	l.s.	1	61,777	2,188	63,965
c.	valves and/or gates with associate piping of reservoirs and pump sump well	l.s.	1	91,872	3,253	95,125
d.	EOT Crane with accessories	l.s.	1	95,040	3,366	98,406
e.	Sump drain pumps with piping	l.s.	1	6,337	225	6,562
f.	Dewatering pumps with piping	l.s.	1	6,337	225	6,562
g.	Metal works including step irons, steel ladders, ventilation vents, manholes/hatches, etc.	l.s.	1	3,169	113	3,282
h.	Air conditioning, ventilation, fire extinguishers, etc.	l.s.	1	1,585	57	1,642
	Subtotl of Item IV-2.1.7	l.s.	1	475,204	16,830	492,034
IV-2.1.8 Chemical House						
a.	Mixer and dilusion trays of Alum mixing/storage tank	l.s.	1	6,337	225	6,562
b.	Alum solution transfer pumps and piping	l.s.	1	44,353	1,571	45,924
c.	Alum dosage chambers and piping	l.s.	1	12,673	450	13,123
d.	Alum dosage piping including trench works and supports from the chemical house to dosage point	l.s.	1	19,009	674	19,683
e.	Mixer and shooters of Lime mixing/storage tank	l.s.	1	10,138	360	10,498
f.	Lime solution transfer pumps and piping	l.s.	1	44,353	1,571	45,924
	Lime dosage chambers and piping	l.s.	1	12,673	450	13,123
g.	Lime dosage piping including trench works and supports from the chemical house to dosage points for pre- and post lime	l.s.	1	19,009	674	19,683
h.	Polymer solution preparation and dosage pump with piping	l.s.	1	44,353	1,571	45,924
i.	Polymer dosage piping including trench works and support from the chemical house to dosage points	l.s.	1	12,673	450	13,123



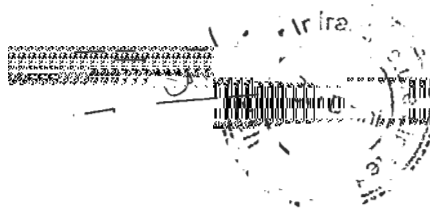
Schedule IV: INSTALLATION AND OTHER SERVICES

Item	Description	unit	Quantity	Local Currency (INR)		
				Amount	Amount	Total Amount
				including Local transport, transit insurance, etc.	all taxes and other levies payable etc.	including all taxes and other levies payable etc.
1	2	3	4	6	7	(8) = (6) + (7)
j	All other piping for utility water supply, overflow and drain in the chemical house	l.s.	1	6,337	225	6,562
k	Sump drain pumps with piping	l.s.	1	3,169	113	3,282
i	EOT monorail hoist with accessories at ground floor and 1st floor	l.s.	1	19,009	674	19,683
i	Metal works including handrails, step irons, steel ladders, hatches, etc.	l.s.	1	3,169	113	3,282
o	Air conditioning, ventilation, fire extinguishers, dust collectors/exhaust fans of lime powder feeding, etc.	l.s.	1	3,169	113	3,282
	Subtotal of Item IV-2.1.8			260,424	9,234	269,658
IV-2.1.9	Chlorine Building					
a.	Weight Scale with capacity of two 2 chlorine cylinders (1 ton)	l.s.	1	6,337	225	6,562
b.	Chlorine Cylinders	l.s.	1	44,353	1,571	45,924
c.	Vaccume type chlorinator for pre-chlorination	l.s.	1	190,080	6,730	196,810
d.	Vaccume type chlorinator for post-chlorination	l.s.	1	158,400	5,609	164,009
e.	Chlorine ejectors for pre- and post-chlorination	l.s.	1	12,673	450	13,123
f.	Utility water boosting pumps and motors with pipes, valves, fittings and specials	l.s.	1	12,673	450	13,123
g.	HTH mixing tanks with mixer and piping	l.s.	1	6,337	225	6,562
h.	metering pumps and motors for HTH solution with piping	l.s.	1	6,337	225	6,562
i.	Chlorine gas and solution pipes, valves, fitting and specials from the chlorine building up to dosage points (pre and post-chlorination)	l.s.	1	12,673	450	13,123
j.	Sump drain pumps and piping	l.s.	1	3,169	113	3,282
k.	EOT monorail hoist with accessories	l.s.	1	19,009	674	19,683
l.	Chlorine gas neutralization system including gas leakage detection system and gas collecting ducts	l.s.	1	6,337	225	6,562



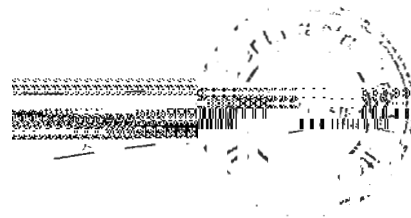
Schedule IV: INSTALLATION AND OTHER SERVICES


Item	Description	unit	Quantity	Local Currency (INR)		
				Amount	Amount	Total Amount
				including Local transport, transit insurance, etc.	all taxes and other levies payable etc.	including all taxes and other levies payable etc.
1	2	3	4	6	7	(8) = (6) + (7)
m.	Air conditioning, ventilation, fire extinguishers, dust collectors of lime powder feeding, etc.	l.s.	1	3,169	113	3,282
n.	Emergency shower and eye washer	l.s.	1	1,268	45	1,313
	Subtotal of Item IV-1.9			482,815	17,105	499,920
IV-2.1.10	Waste Backwash Water (WBW) Holding Tank					
a.	Inlet gates or valves (manual) and piping	l.s.	1	50,688	1,795	52,483
b.	submersible mixers	l.s.	1	50,688	1,795	52,483
c.	Metal works including handrail, step irons, steel ladders, weir plates, etc.	l.s.	1	3,169	113	3,282
	Subtotal of Item IV.2-1.10			104,545	3,703	108,248
IV-2.1.11	Sludge Buffer (SB) Tank					
a.	Inlet gates or valves (manual) and piping	l.s.	1	38,017	1,347	39,364
b.	submersible mixers	l.s.	1	50,688	1,795	52,483
c.	Sludge Transfer pumps and motors and piping	l.s.	1	35,483	1,257	36,740
d.	Metal works including handrail, step irons, steel ladders, weir plates, etc.	l.s.	1	3,169	113	3,282
	Subtotal of Item IV-2.1.11			127,357	4,512	131,869
IV-2.1.12	Sludge Thickener					
a.	Sludge Scrapers with drive unit, access bridge, column pipe, etc.	l.s.	1	221,760	7,852	229,612
b.	Thickened sludge extraction pipes to Thickened Sludge Extraction Pump House with valves, fittings and specials	l.s.	1	1,902	68	1,970
c.	Supernatant water drain piping	l.s.	1	6,337	225	6,562
d.	Metal works including handrail, step iron, steel ladder, weir plate, etc	l.s.	1	3,169	113	3,282
	Subtotal of Item IV-2.1.12			233,168	8,258	241,426



Schedule IV: INSTALLATION AND OTHER SERVICES

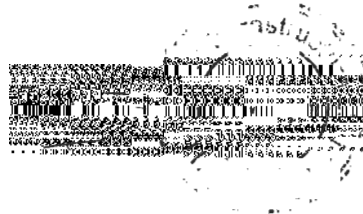
Item	Description	unit	Quantity	Local Currency (INR)		
				Amount	Amount	Total Amount
				including Local transport, transit insurance, etc.	all taxes and other levies payable etc.	including all taxes and other levies payable etc.
1	2	3	4	6	7	(8) = (6) + (7)
IV-2.1.13	Thicked Sludge Extraction Pump House					
a.	Thicken Sludge extraction pumps and motors and piping	l.s.	1	NA	NA	NA
b.	Metal works including handrail, step iron, steel ladder, hatch, etc	l.s.	1	NA	NA	NA
c.	Air conditioning, ventilation, fire extinguishers, etc.	l.s.	1	NA	NA	NA
	Subtotal of Item IV-2.1.13			0	0	0
IV-2.1.14	Sludge Dewatering Building					
a.	Sludge Dewatering Units	l.s.	1	289,871	10,263	300,134
b.	Mixer of Sludge Storage Tanks	l.s.	1	50,688	1,795	52,483
c.	Polymer solution preparation and feed system including all accessories, day tank with mixers	l.s.	1	15,841	562	16,403
d.	Sludge day tanks with mixers	l.s.	1	0	0	0
e.	Thicked Sludge Feed Pumps and motors and piping	l.s.	1	19,009	674	19,683
f.	All other piping for sludge feeding, tility water with a storage tank, centrate, etc. in the dewatering building	l.s.	1	12,673	450	13,123
g.	EOT Crane with complete accessories	l.s.	1	57,024	2,020	59,044
h.	Sump drin pumps with piping	l.s.	1	3,169	113	3,282
i.	Metal works including handrail, step iron, steel ladder, hatch, etc	l.s.	1	3,169	113	3,282
j.	Air conditioning, ventilation, fire extinguishers, etc.	l.s.	1	0	0	0
	Subtotal of Item IV-2.1.14			451,444	15,990	467,434
IV-2.1.15	Recycling Water Sump					
a.	Recycling water transfer pumps and motors and piping	l.s.	1	88,705	3,141	91,846
	Subtotal of Item IV-2.1.15			88,705	3,141	91,846




 Project Director
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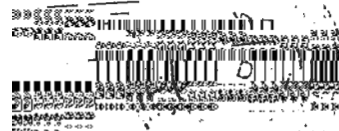
Schedule IV: INSTALLATION AND OTHER SERVICES

Item	Description	unit	Quantity	Local Currency (INR)		
				Amount	Amount	Total Amount
				including Local transport, transit insurance, etc.	all taxes and other levies payable etc.	including all taxes and other levies payable etc.
1	2	3	4	6	7	(8) = (6) + (7)
IV-2.1.16	Administration Building					
a.	All laboratory equipment, furnitures, glass wares, chemicals and piping	l.s.	1	0	0	0
b.	Water quality analyzer rack	l.s.	1	6,337	225	6,562
c.	Sampling pumps and piping from sampling points to laboratory	l.s.	1	6,337	225	6,562
d.	Drain pumps and piping	l.s.	1	3,169	113	3,282
e.	Air conditioning, ventilation and fire extibuishers in entire building	l.s.	1	3,169	113	3,282
	Subtotal of Item IV-2.1.16			19,012	676	19,688
IV-2.1.17	Maintenance Building					
a.	EOT monorail hoist	l.s.	1	19,009	674	19,683
b.	Drain pumps and piping	l.s.	1	0	0	0
c.	Air conditioning, ventilation, fire extinguishers, fire extinguishers, etc.	l.s.	1	1,585	57	1,642
	Subtotal of Item IV-2.1.17			20,594	731	21,325
IV-2.1.18	Yardpiping					
a.	Raw water transmission main with flow controller including trench works, meter/valve chamber from WTP boundary up to pre-settling tank	l.s.	1	12,673	450	13,123
b.	Interconnection piping between pre-settling tanks, a cascade erator, flash mixing tanks, flocculation tanks, filters, clear water reservoirs including trench works, flow meter/control chambers	l.s.	1	NA	NA	NA
c.	Clear water transmission main between CW pumping station to distribution reservoirs including trench work, meter/control valve chambers as equire.	l.s.	1	63,360	2,244	65,604
d.	Sludge drain and WBW drain piping including earth works, manholes	l.s.	1	3,169	113	3,282
e.	Interconnecting piping between SB tanks, sludge thickeners, sludge extraction pump house and sludge dewtering building and recycling water transfer including earth works, valve and chambers as required	l.s.	1	12,673	450	13,123



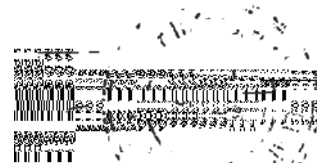
Schedule IV: INSTALLATION AND OTHER SERVICES

Item	Description	unit	Quantity	Local Currency (INR)		
				Amount	Amount	Total Amount
				including Local transport, transit insurance, etc.	all taxes and other levies payable etc.	including all taxes and other levies payable etc.
1	2	3	4	6	7	(8) = (6) + (7)
f.	Plant watersupply piping for portable water, utility water, irrigation use, etc including earth works, miscellaneous vlves and chambers as required within WTP site	l.s.	1	6,337	225	6,562
g.	Plant drain piping from WBW holding tanks to Buramaputra Rive including trench works, valves/chambers, crossing works, etc.	l.s.	1	NA	NA	NA
	Subtotal of Item IV-2.1.18			98,212	3,482	101,694
IV-2.1.19	Any other items and sub-items not specified in the above but required to complete the work	l.s.	1	0	0	0
	Subtotal of Item IV-2.1			4,167,354	147,617	4,314,971
IV-2.2	Electrical Works					
IV-2.2.1	Power substation-33 kV outdoor switchyard and Indoor switchboard	l.s.	1	316,799	11,217	328,016
IV-2.2.2	33 kV/415v Power transformers with neutral grounding	l.s.	1	158,400	5,609	164,009
IV-2.2.3	415 V indoor switchboard / MCC and Main PCC	l.s.	1	104,544	3,702	108,246
IV-2.2.4	415 V Diesel Generator set with control panel, silencer, fuel tanks, fuel transfer pumps, piping, etc.	l.s.	1	601,917	21,311	623,228
IV-2.2.5	LV PCCs and Distribution Boards / MCCs at loction proposed in WTP with capacitors	l.s.	1	142,560	5,048	147,608
IV-2.2.6	FCMA Nutral Soft Starter for CW pumps	l.s.	1	104,544	3,702	108,246
IV-2.2.7	LV cabling including trays, trenches, conduites, etc	l.s.	1	14,891	529	15,420
IV-2.2.8	Indoor lighting system in civil structures and buildings including lighting fixtures, cables, trays, ducts, conduites, etc.	l.s.	1	31,681	1,123	32,804
IV-2.2.9	Emergency lighting system in Civil structires and buildings including lighting fixtures, cables, trays, ducts, conduite, etc.	l.s.	1	5,387	192	5,579
IV-2.2.10	Outdoor lighting system including electric panels, lighting fixtures, poles, cables, trenches, conduites, etc.	l.s.	1	22,177	786	22,963
IV-2.2.11	Earthing / Lightening Protection systems at civil structures and buildings	l.s.	1	84,269	2,984	87,253
IV-2.2.12	110 V Ni-Cd butteries including buttry chargers and distribution panels	l.s.	1	98,208	3,478	101,686



Schedule IV: INSTALLATION AND OTHER SERVICES

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				Amount	Amount	Total Amount
				including Local transport, transit insurance, etc.	all taxes and other levies payable etc.	including all taxes and other levies payable etc.
1	2	3	4	6	7	(8) = (6) + (7)
IV-2.2.13	Any other items not specified in the above but required to complete works	l.s.	1	126,720	4,487	131,207
	Subtotal of IV-2.2			1,812,097	64,168	1,876,265
IV-2.3	Instrumentation and Control Works					
IV-2.3.1	PC based SCADA system for remote monitoring and control at central control room in the Administration building including three sets of Laptop computers printer, any other ancillary equipment complete and cabling	l.s.	1	380,159	13,460	393,619
IV-2.3.2	24 V DC power supply system for monitoring and control	l.s.	1	15,841	562	16,403
IV-2.3.3	Instrument control panels at specified locations including PLC/ICP with complete ancillary equipment and cabling	l.s.	1	63,360	2,244	65,604
IV-2.3.4	All instrumentation equipment with ancillary apparatus and cabling	l.s.	1	173,543	6,145	179,688
IV-2.3.5	EPABX systems with accessories	l.s.	1	4,120	147	4,267
IV-2.3.6	CCTV monitoring system	l.s.	1	5,069	180	5,249
IV-2.3.17	Instrumentation and control cables including trays, ducts, conduit, etc.	l.s.	1	27,245	966	28,211
IV-2.3.8	Any other items not specified in the above but required to complete works	l.s.	1	0	0	0
	Subtotal of Item IV-2.3			669,337	23,704	693,041
	Total of IV-2			6,648,788	235,489	6,884,277
IV-3	Distribution Reservoir					
IV-3.1	Mechanical Works					
IV-3.1	Inlet and outlet Valves or Gates (motorized) and piping	l.s.	1	76,033	2,693	78,726
IV-3.2	Drain and overflow pipes and valves	l.s.	1	NA	NA	NA
IV-3.3	Distribution main from reservoir up to WTP boundary limit (ND 1100 mm) including earth works	l.s.	1	NA	NA	NA
IV-3.4	Overflow / drain piping from reservoir up to WBW holding tank including earth works	l.s.	1	3,169	113	3,282



Schedule IV: INSTALLATION AND OTHER SERVICES

Item	Description	unit	Quantity	Local Currency (INR)		
				Amount	Amount	Total Amount
				including Local transport, transit insurance, etc.	all taxes and other levies payable etc.	including all taxes and other levies payable etc.
1	2	3	4	6	7	(8) = (6) + (7)
IV-3.5	Metal works including air vent pipes, step irons, steel ladders, hatches/manholes, etc.	l.s.	1	3,169	113	3,282
IV-3.6	Any other items not specified in the above but required to complete works	l.s.	1	0	0	0
	Subtotal of Item IV-3.1			82,371	2,919	85,290
IV-3.2	Electrical Works					
IV-3.2.1	LV cabling with conduit from LV switchboard in WTP to reservoir including trench works and an electric panel	l.s.	1	63,360	2,244	65,604
IV-3.2.2	Indoor / Outdoor lighting fixtures, poles, cabling with conduit, including trench works.	l.s.	1	22,810	808	23,618
IV-3.2.3	Earthing / lightning protection with accessories complete	l.s.	1	36,116	1,279	37,395
IV-3.2.4	Any other items not specified in the above but required to complete works	l.s.	1	171,072	6,057	177,129
	Subtotal of Item IV-3.2			293,358	10,388	303,746
IV-3.3	Instrumentation and Control Works					
IV-3.3.1	Instrumentation panel (indoor)	l.s.	1	19,009	674	19,683
IV-3.3.2	All instrumentation equipment with ancillary apparatus including trench works, cabling, a flow meter and chamber	l.s.	1	38,650	1,369	40,019
IV-3.3.3	Any other items not specified in the above but required to complete works	l.s.	1	0	0	0
	Subtotal of Item IV-3.3			57,659	2,043	59,702
	Total of Item IV-3			433,388	15,350	448,738

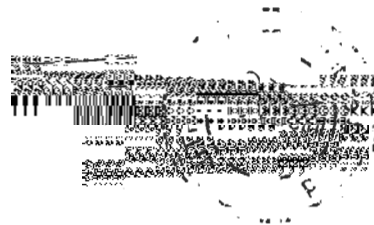




 Project Director
 Project Implementation Unit (P.I.U.)
 JICA Funded Guwahati Water Supply Project

Schedule IV: INSTALLATION AND OTHER SERVICES

Item	Description	unit	Quantity	Local Currency (INR)		
				Amount	Amount	Total Amount
				including <i>Local transport, transit insurance, etc.</i>	all taxes and other levies payable etc.	including all taxes and other levies payable etc.
1	2	3	4	6	7	(8) = (6) + (7)
IV-4	Trial Run of Components Specified and Entire System	l.s.	1	453,071	15,979	469,050
IV-5	Pre-commissioning Test of Entire System	l.s.	1	90,630	3,209	93,839
Total of Schedule IV				15,027,941	532,105	15,560,046
(Carry over to Grand Summary, Schedule VIII)						

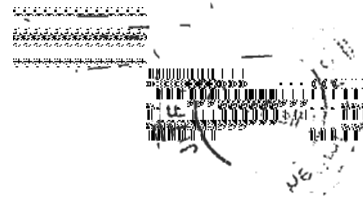
Notes: (a) Currencies shall be in Indian Rupees (INR)





 Project Director
 Implementation Unit (P.I.U)
 Guwahati Water Supply Project

Schedule V: CIVIL WORKS

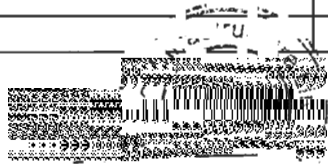
Schedule/ Item No.	Description	unit	Quantity	Local Currency (INR)		
				Amount	Amount	Amount
				including <i>Local transport, transit insurance, etc.</i>	all taxes and other levies payable etc.	Local Currency including all taxes and other levies payable etc. (7) = (5) + (6)
1	2	3	4	5	6	(7) = (5) + (6)
V	Civil Works					
V-1	Intake Structure and Raw Water Pump Station					
V-1.1	Demolishing Existing Structures and Site Embankment					
V-1.1.1	Demolishing Existing Structures	I.s.	1	2,893,641	106,359	3,000,000
V-1.1.2	Site Embankment including tripping of soil, filling and compaction, transportation of soil, disposal of unused/excess excavated materials and dewatering as required	I.s.	1	8,680,924	319,076	9,000,000
V-1.1.3	Construction of retaining walls	I.s.	1	2,893,641	106,359	3,000,000
V-1.1.4	Temporary fencing around premises of the intake site	I.s.	1	482,274	17,726	500,000
	Subtotal of Item V-1.1			14,950,480	549,520	15,500,000
V-1.2	Civil Structures and Buildings					
V-1.2.1	Construction of Intake RCC Well composing of foundation well and pump suction well including temporary works, earth work, bedding and anchoring to rock, sand filling and compaction/low strength concrete filling in void of foundation well and any other works incidental to complete	I.s.	1	31,265,507	934,493	32,200,000
V-1.2.2	Construction of Access Bridge including abutment, piers and bridge including foundation works, erection and installation of steel truss structure, painting and finishing and any other works incidental to complete	I.s.	1	17,651,212	548,788	18,200,000
V-1.2.3	Construction of RCC Raw Water Pumping Station including structural and architectural components with partition walls, finishing, doors and windows, water supply and drainage as specified, and any ancillary works to complete	I.s.	1	16,947,574	520,426	17,468,000
V-1.2.4	Construction of Switchgear House at Power Substation with finishing, doors and windows specified and any ancillary works incidental to complete	I.s.	1	3,858,188	141,812	4,000,000
V-1.2.5	Construction of Diesel Generator house with finishing, doors and windows specified and any ancillary works incidental to complete	I.s.	1	1,929,094	70,906	2,000,000




 Director
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 JICA Funded Ghatani Water Supply Project

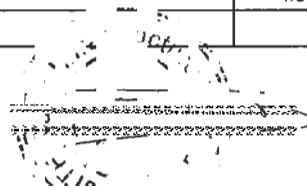
Schedule V: CIVIL WORKS

Schedule/ Item No.	Description	unit	Quantity	Local Currency (INR)		
				Amount	Amount	Amount
				including Local transport, transit insurance, etc.	all taxes and other levies payable etc.	Local Currency including all taxes and other levies payable etc. (7) = (5) + (6)
1	2	3	4	5	6	(7) = (5) + (6)
V-1.2.6	Site Works					
	a. Construction of access road (net width 3.75 m) with side curb, drain gutter, cross drains as require, parking area, walkway/access to buildings	I.s.	1	3,858,188	141,812	4,000,000
	b. Utility water supply tapping from distribution main at nearest loction	I.s.	1	482,274	17,726	500,000
	c. Construction of drainage and sanitation facilities	I.s.	1	482,274	17,726	500,000
	d. Construction of guard house	I.s.	1	964,547	35,453	1,000,000
	e. Construction of boundary wall (2.2 m height) and an entrance gate as specified	I.s.	1	2,411,368	88,632	2,500,000
	f. Landscaping including planting, grassing and slope protection with garsses	I.s.	1	964,547	35,453	1,000,000
	g. Final clean-up of all premises of the intake site	I.s.	1	964,547	35,453	1,000,000
	Subtotal of Item V-1.2.6			10,127,745	372,255	10,500,000
V-1.2.7	Any other items and sub-items not specified in the above but required to complete works	I.s.	1	0	0	0
	Subtotal of Item V-1.2			81,779,320	2,588,680	84,368,000
	Total of Item V-1			96,729,800	3,138,200	99,868,000
V-2	Water Treatment Plant					
V-2.1	Demolishing the Existing Structures and Initial Works					
V-2.1.1	Demolition of the Existing Structures	I.s.	1	2,893,641	106,359	3,000,000
V-2.1.2	Initial Works					
	a. Excavation with disposal of unused/excess excavated materials including ordinal soil, soft rock, hard rock without blasting	I.s.	1	1,929,094	70,906	2,000,000
	b. Construction of retaining walls (RCC)	I.s.	1	4,822,735	177,265	
	c. Construction of retining walls (stone masonry)	I.s.	1	3,858,188	141,812	4,000,000
	Subtotal of Item V-2.1.2			13,503,658	496,342	14,000,000
IV-2.1.3	Construction of temporary fencing surrounding premises of WTP site including the distribution reservoir	I.s.	1	3,858,188	141,812	4,000,000
IV-2.1.4	Any other items not specified in the above but required to complete works	I.s.	1	Included	Included	Included
	Subtotal of Item V-2.1			17,361,846	638,154	18,000,000



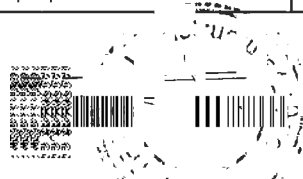
Schedule V: CIVIL WORKS

Schedule/ Item No.	Description	unit	Quantity	Local Currency (INR)		
				Amount	Amount	Amount
				including Local transport, transit insurance, etc.	all taxes and other levies payable etc.	Local Currency including all taxes and other levies payable etc. (7) = (5) + (6)
1	2	3	4	5	6	(7) = (5) + (6)
V-2.2	Construction of Civil Structures and Buildings					
V-2.2.1	Construction of Pre-settling Tanks					
a.	Structural excavation with disposal of unused/excess excavated materials including ordinal soil, soft rock and hard rock without blasting	I.s.	1	1,446,821	53,179	1,500,000
b.	Structural backfilling with selected materials and compaction	I.s.	1	1,446,821	53,179	1,500,000
c.	Foundation with granular materials and PCC concrete specified on grade	I.s.	1	2,411,368	88,632	2,500,000
d.	RCC structural concrete works including concrete placing, shuttering, jointings, water stop installation, finishing of concrete surface and any other ancillary works incidental foundation	I.s.	1	2,893,641	106,359	3,000,000
e.	Supply, erection and installation of reinforcing bars	I.s.	1	2,893,641	106,359	3,000,000
f.	Non-structural concrete (PCC) such as filling, slope, grouting, other miscellaneous purposes	I.s.	1	Included	Included	Included
	Subtotal of Item IV-2.2.1			11,092,292	407,708	11,500,000
V-2.2.2	Construction of Cascade Aerator (optional)					
a.	Structural excavation with disposal of unused/excess excavated materials including ordinal soil, soft rock and hard rock without blasting	I.s.	1	1,446,821	53,179	1,500,000
b.	Structural backfilling with selected materials and compaction	I.s.	1	1,446,821	53,179	1,500,000
c.	Foundation with granular materials and PCC concrete specified on grade	I.s.	1	1,929,094	70,906	2,000,000
d.	RCC structural concrete works including concrete placing, shuttering, jointings, water stop installation, finishing of concrete surface and any other ancillary works incidental foundation	I.s.	1	2,411,368	88,632	2,500,000
e.	Supply, erection and installation of reinforcing bars	I.s.	1	2,411,368	88,632	2,500,000
f.	Non-structural concrete (PCC) such as filling, slope, grouting, other miscellaneous purposes	I.s.	1	Included	Included	Included
	Subtotal of Item IV-2.2.2			9,645,472	354,528	10,000,000
V-2.2.3	Construction of Flash Mixing Tanks					
a.	Structural excavation with disposal of unused/excess excavated materials including ordinal soil, soft rock and hard rock without blasting	I.s.	1	1,929,094	70,906	2,000,000
b.	Structural backfilling with selected materials and compaction	I.s.	1	1,929,094	70,906	2,000,000
c.	Foundation with granular materials and PCC concrete specified on grade	I.s.	1	1,446,821	53,179	1,500,000
d.	RCC structural concrete works including concrete placing, shuttering, jointings, water stop installation, finishing of concrete surface and any other ancillary works incidental foundation	I.s.	1	2,893,641	106,359	3,000,000
e.	Supply, erection and installation of reinforcing bars	I.s.	1	2,893,641	106,359	3,000,000
f.	Non-structural concrete (PCC) such as filling, slope, grouting, other miscellaneous purposes	I.s.	1	Included	Included	Included
	Subtotal of Item IV-2.2.3			11,092,291	407,709	11,500,000



Schedule V: CIVIL WORKS

Schedule/ Item No.	Description	unit	Quantity	Local Currency (INR)		
				Amount	Amount	Amount
				including <i>Local transport, transit insurance, etc.</i>	all taxes and other levies payable etc.	Local Currency including all taxes and other levies payable etc. (7) = (5) + (6)
1	2	3	4	5	6	(7) = (5) + (6)
V-2.2.4	<i>Flocculation Tanks</i>					
a.	Structural excavation with disposal of unused/excess excavated materials including ordinal soil, soft rock and hard rock without blasting	l.s.	1	3,375,915	124,085	3,500,000
b.	Structural backfilling with selected materials and compaction	l.s.	1	2,893,641	106,359	3,000,000
c.	Foundation with granular materials and PCC concrete specified on grade	l.s.	1	2,411,368	88,632	2,500,000
d.	RCC structural concrete works including concrete placing, shuttering, jointings, water stop installation, finishing of concrete surface and any other ancillary works incidental foundation	l.s.	1	3,858,188	141,812	4,000,000
e.	Supply, erection and installation of reinforcing bars	l.s.	1	3,858,188	141,812	4,000,000
f.	Non-structural concrete (PCC) such as filling, slope, grouting, other miscellaneous purposes	l.s.	1	Included	Included	Included
	Subtotal of Item IV-2.2.4			16,397,300	602,700	17,000,000
V-2.2.5	<i>Plate or Tube Settling Tanks</i>					
a.	Structural excavation with disposal of unused/excess excavated materials including ordinal soil, soft rock and hard rock without blasting	l.s.	1	4,822,735	177,265	5,000,000
b.	Structural backfilling with selected materials and compaction	l.s.	1	4,822,735	177,265	5,000,000
c.	Foundation with granular materials and PCC concrete specified on grade	l.s.	1	5,305,009	194,991	5,500,000
d.	RCC structural concrete works including concrete placing, shuttering, jointings, water stop installation, finishing of concrete surface and any other ancillary works incidental foundation	l.s.	1	4,822,735	177,265	5,000,000
e.	Supply, erection and installation of reinforcing bars	l.s.	1	4,822,735	177,265	5,000,000
f.	Non-structural concrete (PCC) such as filling, slope, grouting, other miscellaneous purposes	l.s.	1	Included	Included	Included
	Subtotal of Item V-2.2.5			24,595,949	904,051	25,500,000
IV-2.2.6	<i>Filters and Operation Gallery</i>					
a.	Structural excavation with disposal of unused/excess excavated materials including ordinal soil, soft rock and hard rock without blasting	l.s.	1	4,822,735	177,265	5,000,000
b.	Structural backfilling with selected materials and compaction	l.s.	1	4,822,735	177,265	5,000,000
c.	Foundation with granular materials and PCC concrete specified on grade	l.s.	1	4,822,735	177,265	5,000,000
d.	RCC structural concrete works including concrete placing, shuttering, jointings, water stop installation, finishing of concrete surface and any other ancillary works incidental foundation	l.s.	1	7,234,103	265,897	7,500,000
e.	Supply, erection and installation of reinforcing bars	l.s.	1	6,751,830	248,170	7,000,000
f.	Non-structural concrete (PCC) such as filling, slope, grouting, other miscellaneous purposes	l.s.	1	Included	Included	Included



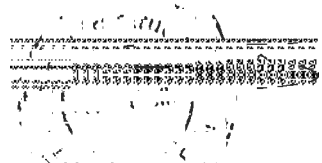
Schedule V: CIVIL WORKS

Schedule/ Item No.	Description	unit	Quantity	Local Currency (INR)		
				Amount	Amount	Amount
				including <i>Local transport, transit insurance, etc.</i>	all taxes and other levies payable etc.	Local Currency including all taxes and other levies payable etc. (7) = (5) + (6)
1	2	3	4	5	6	(7) = (5) + (6)
	g. Construction of Operation Gallery on top slab of the pipe gallery including structural and architectural components with finishing, doors and windows, drains as specified and any other ancillary works incidental to complete	I.s.	1	4,822,735	177,265	5,000,000
	Subtotal of Item V-2.2.6			33,276,873	1,223,127	34,500,000
V-2.2.7	Clear Water Reservoir and Pumping Station					
	a. Structural excavation with disposal of unused/excess excavated materials including ordinal soil, soft rock and hard rock without blasting	I.s.	1	3,858,188	141,812	4,000,000
	b. Structural backfilling with selected materials and compaction	I.s.	1	2,893,641	106,359	3,000,000
	c. Foundation with granular materials and PCC concrete specified on grade	I.s.	1	3,858,188	141,812	4,000,000
	d. RCC structural concrete works including concrete placing, shuttering, jointings, water stop installation, finishing of concrete surface and any other ancillary works incidental foundation	I.s.	1	4,822,735	177,265	5,000,000
	e. Supply, erection and installation of reinforcing bars	I.s.	1	4,822,735	177,265	5,000,000
	f. Non-structural concrete (PCC) such as filling, slope, grouting, other miscellaneous purposes	I.s.	1	Included	Included	Included
	g. Construction of pump room and electrical/control rooms on top slab of reservoir/pump suction well including structural and architectural components with partition walls, finishing, doors and windows specified and any other works incidental to complete	I.s.	1	4,822,735	177,265	5,000,000
	Subtotal of Item V-2.2.7	I.s.	1	25,078,222	921,778	26,000,000
V-2.2.8	Electrical and Control House of Settling Tanks					
	Construction of Electrical and Control House of settling tanks including all earth works, structural and architectural components with finishing, doors and windows, and drain as specified and any other works incidental to complete	I.s.	1	9,645,471	354,529	10,000,000
V-2.2.9	Filter House					
	Construction of Filter House of settling tanks including all earth works, structural and architectural components with finishing, doors and windows, and drain as specified and any other works incidental to complete	I.s.	1	Included in 2.2.7	Included in 2.2.7	Included in 2.2.7
V-2.2.10	Chemical House					
	Construction of Chemical House including all earth works, structural and architectural components with partition walls, finishing, doors and windows, water supply and drainage as specified and any other works incidental to complete	I.s.	1	14,468,206	531,794	15,000,000



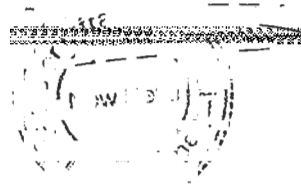
Schedule V: CIVIL WORKS

Schedule/ Item No.	Description	unit	Quantity	Local Currency (INR)		
				Amount	Amount	Amount
				including <i>Local transport, transit insurance, etc.</i>	all taxes and other levies payable etc.	Local Currency including all taxes and other levies payable etc. (7) = (5) + (6)
1	2	3	4	5	6	(7) = (5) + (6)
V-2.2.11	Chlorine Building					
	Construction of Chlorine Building including all earth works, structural and architectural components with partition walls, finishing, doors and windows, water supply and drainage as specified and any other works incidental to complete	I.s.	1	6,751,830	248,170	7,000,000
V-2.2.12	Administration Building					
a.	Construction of Administration Building including all earth works, structural and architectural components with partition walls, finishing, doors and windows, water supply and drainage as specified and any other works incidental to complete (except laboratory furnishing)	I.s.	1	7,234,103	265,897	7,500,000
b.	Installation of Laboratory Cabinately and Furnishing (except laboratory furnishing)	I.s.	1	482,274	17,726	500,000
	Subtotal of item V-2.2.12			7,716,377	283,623	8,000,000
V-2.2.13	Maintenance Building					
	Construction of Maintenance Building including all earth works, structural and architectural components with partition walls, finishing, doors and windows, water supply and drainage as specified and any other works incidental to complete (except laboratory furnishing)	I.s.	1	6,751,830	248,170	7,000,000
V-2.1.14	Switchgear House (at Power Substation)					
	Construction of Swichger House at powr substation including all earth works, structural and architectural components with partition walls, finishing, doors and windows, and any other works incidental to complete	I.s.	1	6,751,830	248,170	7,000,000
V-2.1.15	Diesel Generator House					
	Construction of Diesel Generator House including all earth works, structural and architectural components with partition walls, finishing, doors and windows, and any other works incidental to complete	I.s.	1	4,822,735	177,265	5,000,000
V-2.1.16	Waste Backwash Water (WBW) Holding Tank					
a.	Structural excavation with disposal of unused/excess excvted materials including ordinal soil, soft rock and hard rock without blasting	I.s.	1	964,547	35,453	1,000,000
b.	Structural backfilling with selected materials and compaction	I.s.	1	964,547	35,453	1,000,000
c.	Foundation with granular materials and PCC concrete specified on grade	I.s.	1	1,446,821	53,179	1,500,000



Schedule V: CIVIL WORKS

Schedule/ Item No.	Description	unit	Quantity	Local Currency (INR)		
				Amount	Amount	Amount
				including Local transport, transit insurance, etc.	all taxes and other levies payable etc.	Local Currency including all taxes and other levies payable etc. (7) = (5) + (6)
1	2	3	4	5	6	(7) = (5) + (6)
	d. RCC structural concrete works including concrete placing, shuttering, jointings, water stop installation, finishing of concrete surface and any other ancillary works incidental foundation	I.s.	1	1,929,094	70,906	2,000,000
	e. Supply, erection and installation of reinforcing bars	I.s.	1	1,929,094	70,906	2,000,000
	f. Non-structural concrete (PCC) such as filling, slope, grouting, other miscellaneous purposes	I.s.	1	Included	Included	Included
	Subtotal of Item V.2-2.14			7,234,103	265,897	7,500,000
V-2.2.17	Sludge Buffer (SB) Tank					
	a. Structural excavation with disposal of unused/excess excavated materials including ordinal soil, soft rock and hard rock without blasting	I.s.	1	964,547	35,453	1,000,000
	b. Structural backfilling with selected materials and compaction	I.s.	1	964,547	35,453	1,000,000
	c. Foundation with granular materials and PCC concrete specified on grade	I.s.	1	1,446,821	53,179	1,500,000
	d. RCC structural concrete works including concrete placing, shuttering, jointings, water stop installation, finishing of concrete surface and any other ancillary works incidental foundation	I.s.	1	2,411,368	88,632	2,500,000
	e. Supply, erection and installation of reinforcing bars	I.s.	1	2,411,368	88,632	2,500,000
	f. Non-structural concrete (PCC) such as filling, slope, grouting, other miscellaneous purposes	I.s.	1	Included	Included	Included
	Subtotal of Item V-.2.2.15			8,198,651	301,349	8,500,000
V-2.2.18	Sludge Thickener					
	a. Structural excavation with disposal of unused/excess excavated materials including ordinal soil, soft rock and hard rock without blasting	I.s.	1	1,929,094	70,906	2,000,000
	b. Structural backfilling with selected materials and compaction	I.s.	1	1,929,094	70,906	2,000,000
	c. Foundation with granular materials and PCC concrete specified on grade	I.s.	1	2,893,641	106,359	3,000,000
	d. RCC structural concrete works including concrete placing, shuttering, jointings, water stop installation, finishing of concrete surface and any other ancillary works incidental foundation	I.s.	1	2,893,641	106,359	3,000,000
	e. Supply, erection and installation of reinforcing bars	I.s.	1	2,893,641	106,359	3,000,000
	f. Non-structural concrete (PCC) such as filling, slope, grouting, other miscellaneous purposes	I.s.	1	Included	Included	Included
	Subtotal of Item V-2.2.16			12,539,111	460,889	13,000,000



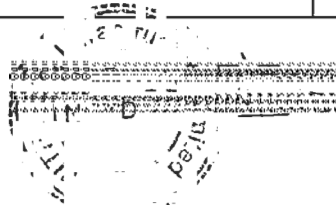
Schedule V: CIVIL WORKS

Schedule/ Item No.	Description	unit	Quantity	Local Currency (INR)		
				Amount	Amount	Amount
				including Local transport, transit insurance, etc.	all taxes and other levies payable etc.	Local Currency including all taxes and other levies payable etc. (7) = (5) + (6)
1	2	3	4	5	6	(7) = (5) + (6)
V-2.1.19	Thicked Sludge Extraction Pump House					
a.	Structural excavation with disposal of unused/excess excvted materials including ordinal soil, soft rock and hard rock without blasting	I.s.	1	964,547	35,453	1,000,000
b.	Structural backfilling with selected materials and compaction	I.s.	1	964,547	35,453	1,000,000
c.	Foundation with granular materials and PCC concrete specified on grade	I.s.	1	1,446,821	53,179	1,500,000
d.	RCC structural concrete works including cocrete placing, shuttering, jointings, water stop installtion, finishing of concrete surface and any other ancillary works incidental foundation	I.s.	1	1,929,094	70,906	2,000,000
e.	Supply, erection and installation of reinforcing bars	I.s.	1	1,929,094	70,906	2,000,000
f.	Non-structural concrete (PCC) such as filling, slope, grouting, other miscellaneous purposes	I.s.	1	Included	Included	Included
	Subtotal of Item V-2.2.17			7,234,103	265,897	7,500,000
V-2.2.20	Sludge Extraction Pump House					
	Construction of Sludge Extraction Pump House including all earth works, structural and architectural components with partition walls, finishing, doors and windows, water supply and drainage as specified and any other works incidental to complete	I.s.	1	0	0	0
V-2.2.21	Sludge Dewatering Building					
	Construction of Sludge Dewatering Building including all earth works, structural and architectural components with partition walls, finishing, doors and windows, water supply and drainage as specified and any other works incidental to complete	I.s.	1	4,822,735	177,265	5,000,000
V-2.2.22	Recycling Water Sump					
a.	Structural excavation with disposal of unused/excess excvted materials including ordinal soil, soft rock and hard rock without blasting	I.s.	1	964,547	35,453	1,000,000
b.	Structural backfilling with selected materials and compaction	I.s.	1	964,547	35,453	1,000,000
c.	Foundation with granular materials and PCC concrete specified on grade	I.s.	1	964,547	35,453	1,000,000
d.	RCC structural concrete works including cocrete placing, shuttering, jointings, water stop installtion, finishing of concrete surface and any other ancillary works incidental foundation	I.s.	1	1,929,094	70,906	2,000,000
e.	Supply, erection and installation of reinforcing bars	I.s.	1	1,929,094	70,906	2,000,000
f.	Non-structural concrete (PCC) such as filling, slope, grouting, other miscellaneous purposes	I.s.	1	Included	Included	Included
	Subtotal of Item V-2.2.20			6,751,829	248,171	7,000,000



Schedule V: CIVIL WORKS

Schedule/ Item No.	Description	unit	Quantity	Local Currency (INR)		
				Amount	Amount	Amount
				including <i>Local transport, transit insurance, etc.</i>	all taxes and other levies payable etc.	Local Currency including all taxes and other levies payable etc. (7) = (5) + (6)
1	2	3	4	5	6	(7) = (5) + (6)
V-2.2.23	Construction of Dewatered Sludge Cake Storage Yard					
	Construction of Sludge Cake Yard including earth works, foundation works, placing concrete base slab, roofing with columns and beams with approved materials, drainage and any other works incidental to complete	I.s.	1	2,893,641	106,359	3,000,000
V-2.2.24	Construction of Dewatered Sludge Cake Disposal Site					
	Construction of Sludge Cake Disposal Site including all earth works of cutting, filling, embankment and compaction, road construction (WBR), drainage, boundary fencing, an entrance gate, planting of peripheral of the site, grassing and any other works incidental to complete	I.s.	1	3,858,188	141,812	4,000,000
V-2.2.25	Site Work and Landscaping of WTP Site including Distribution Reservoir Site					
a.	Road Construction including service road with side curb and drain gutter/ cross drains, parking areas, walkway/access to civil structures and buildings, etc.	I.s.	1	3,858,188	141,812	4,000,000
b.	Plant Water Supply Network for portable water, utility water, irrigation, firefighting and miscellaneous use including tapping work, trench works, installation of pipes, valves with chambers, fittings and specials and any other works incidental to complete	I.s.	1	2,507,822	92,178	2,600,000
c.	Drainage and Sanitation Facilities including earth works, supply and installation of pipes, fittings and specials, manholes, septic tanks and any other works incidental to complete	I.s.	1	1,929,094	70,906	2,000,000
d.	Supply and installation of Boundary Walls and Entrance gates including earth works, concrete works, metal works and any other works incidental to complete	I.s.	1	3,858,188	141,812	4,000,000
e.	Construction of Guard Houses including earth works, structural and architectural components with finishing, doors and windows, water supply and drain specified and any other works incidental to complete	I.s.	1	1,929,094	70,906	2,000,000
f.	Landscaping including supply and installation of planting, grassing, slope protection with grasses, gardening and any other works incidental to complete	I.s.	1	964,547	35,453	1,000,000
g.	Final clean-up of all premises of WTP site	I.s.	1	Included	Included	Included
	Subtotal of Item V-2.2.25			15,046,933	553,067	15,600,000
V-2.2.26	Any other items and sub-items not specified in the above but required to complete works	I.s.	1	0	0	0
	Subtotal of Item IV-2.2			256,665,972	9,434,028	266,100,000
	Total of V-2			274,027,818	10,072,182	284,100,000

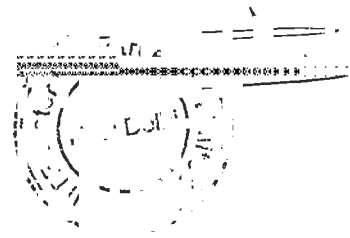


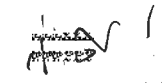
Schedule V: CIVIL WORKS

Schedule/ Item No.	Description	unit	Quantity	Local Currency (INR)		
				Amount	Amount	Amount
				including Local transport, transit insurance, etc.	all taxes and other levies payable etc.	Local Currency including all taxes and other levies payable etc. (7) = (5) + (6)
1	2	3	4	5	6	(7) = (5) + (6)
V-3	Distribution Reservoir					
V-3.1	Construction of Distribution Reservoir					
a.	Structural excavation with disposal of unused/excess excavated materials including ordinal soil, soft rock and hard rock without blasting	I.s.	1	2,906,841	9,959	2,916,800
b.	Structural backfilling with selected materials and compaction	I.s.	1	2,893,641	106,359	3,000,000
c.	Foundation with granular materials and PCC concrete specified on grade	I.s.	1	3,858,188	141,812	4,000,000
d.	RCC structural concrete works including concrete placing, shuttering, jointings, water stop installation, finishing of concrete surface and any other ancillary works incidental foundation	I.s.	1	6,848,285	251,715	7,100,000
e.	Supply, erection and installation of reinforcing bars	I.s.	1	7,234,102	265,898	7,500,000
f.	Non-structural concrete (PCC) such as filling, slope, grouting, other miscellaneous purposes	I.s.	1	Included	Included	Included
	Subtotal of Item V-3.1			23,741,057	775,743	24,516,800
V-3.2	Any other items not specified in the above but required to complete works	I.s.	1	0	0	0
	Total of Item V-3			23,741,057	775,743	24,516,800
	Total of Schedule V			394,498,675	13,986,125	408,484,800
(Carry over to Grand Summary, Schedule VIII)						

Note:

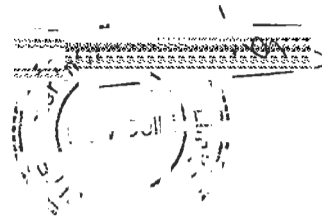
(a) Currencies shall be in Indian Rupees (INR).





 Project Director
 Project Implementation Unit (P.I.U)
 JICA Funded Guwahati Water Supply Project

Schedule VI - Days Works

Schedule/Item No	Description	Unit	Quantity	Unit rate	Local Currency (INR)				
					Amount	Rate of	Amount	Amount	
					including <i>Local transport, transit insurance, etc.</i>	all taxes and other levies payable etc.	all taxes and other levies payable etc.	Local Currency including all taxes and other levies payable etc.	
-1	-2	-3	-4	-5	(6) = (4) x (5)	-7	(8) = (4) x (7)	(9) = (6) + (8)	
VI.	Day Work								
VI-1	Labor								
VI-1.1	Skilled labour	man.day	300	150	45,000	0	0	45,000	
VI-1.2	Unskilled labour	man.day	600	120	72,000	0	0	72,000	
VI-1.3	Carpenter	man.day	100	250	25,000	0	0	25,000	
VI-1.4	Black smith	man.day	100	250	25,000	0	0	25,000	
VI-1.5	Mason	man.day	100	200	20,000	0	0	20,000	
VI-1.6	Pipe Fitter	man.day	100	200	20,000	0	0	20,000	
VI-1.7	Welder	man.day	100	250	25,000	0	0	25,000	
	Subtotal of Item VI-1				232,000	0	0	232,000	
VI-2	Materials								
VI-2.1	Cement, ordinary Portland	Bags	100	320	32,000	0	0	32,000	
VI-2.2	Tor steel reinforcing bar up to 16 mm diameter Fe - 415 for Concrete as specified in specification	MT	5	40000	200,000	0	0	200,000	
VI-2.3	Fine aggregate for Concrete as specified in specification	m ³	200	1400	280,000	0	0	280,000	
VI-2.4	Course aggregate for Concrete as specified in specification	m ³	200	1400	280,000	0	0	280,000	
VI-2.5	Epoxy paint as specified in specification	m ²	50	300	15,000	0	0	15,000	
VI-2.6	Welding rods	kg	100	200	20,000	0	0	20,000	
	Total of Item VI-2				827,000	0	0	827,000	

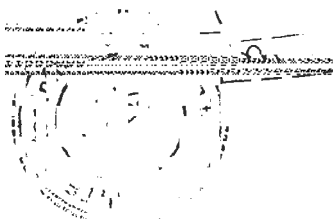



Project Director
 Station Unit (P.I.U.)
 JICA, United Chhabra

Schedule VI - Days Works

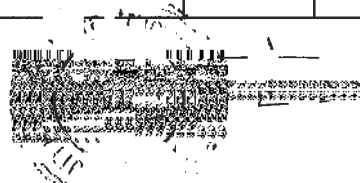
Schedule/Item No	Description	Unit	Quantity	Unit rate	Local Currency (INR)				
					Amount	Rate of	Amount	Amount	
					including <i>Local transport, transit insurance, etc.</i>	all taxes and other levies payable etc.	all taxes and other levies payable etc.	Local Currency including all taxes and other levies payable etc.	
-1	-2	-3	-4	-5	(6) = (4) x (5)	-7	(8) = (4) x (7)	(9) = (6) + (8)	
VI-3	Equipment								
VI-3.1	Tractor	day	50	2000	100,000	0	0	100,000	
VI-3.2	Water tank truck (2000 Gallons)	Km	10	1000	10,000	0	0	10,000	
VI-3.3	Mobile crane (up to 10 T)	day	100	5000	500,000	0	0	500,000	
VI-3.4	JCB Excavator / loader	day	200	3000	600,000	0	0	600,000	
VI-3.5	Compressor (more than 115 cfm)	day	100	3000	300,000	0	0	300,000	
VI-3.6	Generator (up to 15 kw)	day	50	3000	150,000	0	0	150,000	
VI-3.7	Dewatering Pump set up to 20HP	day	50	2000	100,000	0	0	100,000	
VI-3.8	Concrete Mixer (0.4 m3 capacity)	hr	250	2000	500,000	0	0	500,000	
VI-3.9	Vibrator with needle	day	50	2000	100,000	0	0	100,000	
	Total of Item VI-3				2,360,000	0	0	2,360,000	
VI-4	Earth Work								
VI-4.1	Excavation of Ordinal Soil including disposal of unused/excess excavated materials	m3	1000	200	200,000	0	0	200,000	
VI-4.2	Excavation of Soft Rock including disposal of unused/excess excavated materials	m3	1000	300	300,000	0	0	300,000	
VI-4.3	Excavation of Hard Rock without blasting including disposal of unused/excess excavated materials	m3	500	600	300,000	0	0	300,000	
	Total of Item VI-4				800,000	0	0	800,000	
	Total of Schedule VI				4,219,000	0	0	4,219,000	
(Carry over to Grand Summary, Schedule VIII)									

Note : For per day rates of above items, per hours rates will be calculated considering 8 hours working for partial payments if working is less than 8 hours. Machine to be provided with driver and fuel.



Schedule VII: OPERATION AND MAINTENANCE

Item	Description	Unit	Quantity	Local Currency (INR)				
				Basic Rate	Amount (including local transport, transit, insurance, etc).	Rate all taxes and other levies payable etc.	Amount all taxes and other levies payable etc.	Amount Local Currency including all taxes and other levies payable etc.
-1	-2	-3	-4	-5	(6) = (4) x (5)	-7	(11) = (5) x (10)	(12) = (9) + (11)
VII	Operation and Maintenance							
VII-1	For Year 1 of O & M							
	(Estimated Production Capacity for Year 1)							
VII-1.1	Preparation Work							
	Deployment of personnel, equipment for O&M activities and testing equipment, including its spare parts (Other than supplied under Design and Construction Contract)	l.s.	1	7,008,000	7,008,000	0	0	7,008,000
VII-1.2	Operation and Maintenance for Water Production							
a.	Personnel cost	month	12	100,000	1,200,000	0	0	1,200,000
b.	Consumable (other than electric power and chemicals for process requirement)	month	12	0	0	0	0	0
c.	Maintenance cost of deployed equipment including spare parts (other than supplied under Design and Construction Contract), repair and replacement	month	12	25,000	300,000	0	0	300,000
d.	Testing, recording, reporting and any other documentations (other than personnel)	month	12	25,000	300,000	0	0	300,000
e.	Vehicles including purchasing and its maintenance	month	12	10,000	120,000	0	0	120,000
	Subtotal of Item VII-1.2				1,920,000	0	0	1,920,000
VII-1.3	Operation and Maintenance for sludge handling and disposal							
a.	Personnel cost	month	12	50,000	600,000	0	0	600,000
b.	Consumable (other than electric power and chemicals for process requirement)	month	12	0	0	0	0	0
c.	Maintenance cost of deployed equipment including spare parts (other than supplied under Design and Construction Contract), repair and replacement	month	12	25,000	300,000	0	0	300,000
d.	Testing, recording, reporting and any other documentations (other than personnel)	month	12	15,000	180,000	0	0	180,000
	Subtotal Item of VII-1.3				1,080,000	0	0	1,080,000
VII-1.4	Any other items and items not specified in the above but required to fulfill O & M operational requirement	month	12	0	0	0	0	0
	Subtotal of Item VII-1				10,008,000	0	0	10,008,000



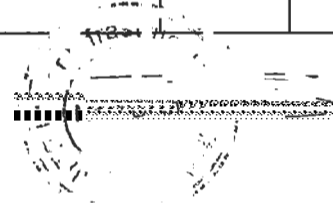
Schedule VII: OPERATION AND MAINTENANCE

Item	Description	Unit	Quantity	Local Currency (INR)				
				Basic Rate	Amount (including local transport, transit, insurance, etc).	Rate all taxes and other levies payable etc.	Amount all taxes and other levies payable etc.	Amount Local Currency including all taxes and other levies payable etc.
-1	-2	-3	-4	-5	(6) = (4) x (5)	-7	(11) = (5) x (10)	(12) = (9) + (11)
VII-2	For Year 2 of O & M							
	(Estimated Production Capacity of Year 2)							
VII-2.1	Operation and Maintenance for Water Production		1	10,656,000	10,656,000	0	0	10,656,000
a.	Personnel cost	month	12	110,000	1,320,000	0	0	1,320,000
b.	Consumable (other than electric power and chemicals for process requirement)	month	12	0	0	0	0	0
c.	Maintenance cost of deployed equipment including spare parts (other than supplied under Design and Construction Contract), repair and replacement	month	12	27,500	330,000	0	0	330,000
d.	Testing, recording, reporting and any other documentations (other than personnel)	month	12	27,500	330,000	0	0	330,000
e.	Vehicles including purchasing and its maintenance	month	12	11,000	132,000	0	0	132,000
	Subtotal of Item VII-2.1				12,768,000	0	0	12,768,000
VII-2.2	Operation and Maintenance for sludge handling and disposal							
a.	Personnel cost	month	12	55,000	660,000	0	0	660,000
b.	Consumable (other than electric power and chemicals for process requirement)	month	12	0	0	0	0	0
c.	Maintenance cost of deployed equipment including spare parts (other than supplied under Design and Construction Contract), repair and replacement	month	12	27,500	330,000	0	0	330,000
d.	Testing, recording, reporting and any other documentations (other than personnel)	month	12	16,500	198,000	0	0	198,000
	Subtotal Item of VII-2.2				1,188,000	0	0	1,188,000
VII-2.3	Other items and sub items not specified in the above but required to fulfill O & M operational requirement			0	0	0	0	0
	Subtotal of Item VII-2				13,956,000	0	0	13,956,000
VII-3	For Year 3 of O & M							
	(Estimated Production Capacity for Year 3)							
VII-3.1	Operation and Maintenance for Water Production		1	11,280,000	11,280,000	0	0	11,280,000
a.	Personnel cost	month	12	121,000	1,452,000	0	0	1,452,000
b.	Consumable (other than electric power and chemicals for process requirement)	month	12	0	0	0	0	0



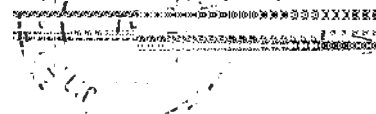
Schedule VII: OPERATION AND MAINTENANCE

Item	Description	Unit	Quantity	Local Currency (INR)				
				Basic Rate	Amount (including local transport, transit, insurance, etc).	Rate all taxes and other levies payable etc.	Amount all taxes and other levies payable etc.	Amount Local Currency including all taxes and other levies payable etc.
-1	-2	-3	-4	-5	(6) = (4) x (5)	-7	(11) = (5) x (10)	(12) = (9) + (11)
c.	Maintenance cost of deployed equipment including spare parts (other than supplied under Design and Construction Contract), repair and replacement	month	12	31,000	372,000	0	0	372,000
d.	Testing, recording, reporting and any other documentations (other than personnel)	month	12	31,000	372,000	0	0	372,000
e.	Vehicles including purchasing and its maintenance	month	12	13,000	156,000	0	0	156,000
	Subtotal of Item VII-3.1				13,632,000	0	0	13,632,000
VII-3.2	Operation and Maintenance for sludge handling and disposal							
a.	Personnel cost	month	12	61,000	732,000	0	0	732,000
b.	Consumable (other than electric power and chemicals for process requirement)	month	12	0	0	0	0	0
c.	Maintenance cost of deployed equipment including spare parts (other than supplied under Design and Construction Contract), repair and replacement	month	12	31,000	372,000	0	0	372,000
d.	Testing, recording, reporting and any other documentations (other than personnel)	month	12	19,000	228,000	0	0	228,000
	Subtotal Item of VII-3.2	month	12		1,332,000	0	0	1,332,000
VII-3.3	Other items not specified in the above but required to fulfill O & M operational requirement	month	12	0	0	0	0	0
	Subtotal of Item VII-3				14,964,000	0	0	14,964,000
VII-4	For Year 4 of O & M							
	(Estimated Production Capacity for Year 4)							
VII-4.1	Operation and Maintenance for Water Production		1	11,928,000	11,928,000	0	0	11,928,000
a.	Personnel cost	month	12	134,000	1,608,000	0	0	1,608,000
b.	Consumable (other than electric power and chemicals for process requirement)	month	12	0	0	0	0	0
c.	Maintenance cost of deployed equipment including spare parts (other than supplied under Design and Construction Contract), repair and replacement	month	12	35,000	420,000	0	0	420,000
d.	Testing, recording, reporting and any other documentations (other than personnel)	month	12	35,000	420,000	0	0	420,000
e.	Vehicles including purchasing and its maintenance	month	12	15,000	180,000	0	0	180,000
	Subtotal of Item VII-4.1				14,556,000	0	0	14,556,000



Schedule VII: OPERATION AND MAINTENANCE

Item	Description	Unit	Quantity	Local Currency (INR)				
				Basic Rate	Amount (including local transport, transit, insurance, etc).	Rate all taxes and other levies payable etc.	Amount all taxes and other levies payable etc.	Amount Local Currency including all taxes and other levies payable etc.
-1	-2	-3	-4	-5	(6) = (4) x (5)	-7	(11) = (5) x (10)	(12) = (9) + (11)
VII-4.2	Operation and Maintenance for sludge handling and disposal							
a.	Personnel cost	month	12	68,000	816,000	0	0	816,000
b.	Consumable (other than electric power and chemicals for process requirement)	month	12	0	0	0	0	0
c.	Maintenance cost of deployed equipment including spare parts (other than supplied under Design and Construction Contract), repair and replacement	month	12	35,000	420,000	0	0	420,000
d.	Testing, recording, reporting and any other documentations (other than personnel)	month	12	21,000	252,000	0	0	252,000
	Subtotal Item of VII-4.2	month	12		1,488,000	0	0	1,488,000
VII-4.3	Other items not specified in the above but required to fulfill O & M operational requirement	month	12	0	0	0	0	0
	Subtotal of Item VII-4				16,044,000	0	0	16,044,000
VII-5	For Year 5 of O & M							
	(Estimated Production Capacity for Year 5)							
VII-5.1	Operation and Maintenance for Water Production		1	12,624,000	12,624,000	0	0	12,624,000
a.	Personnel cost	month	12	148,000	1,776,000	0	0	1,776,000
b.	Consumable (other than electric power and chemicals for process requirement)	month	12	0	0	0	0	0
c.	Maintenance cost of deployed equipment including spare parts (other than supplied under Design and Construction Contract), repair and replacement	month	12	39,000	468,000	0	0	468,000
d.	Testing, recording, reporting and any other documentations (other than personnel)	month	12	39,000	468,000	0	0	468,000
e.	Vehicles including purchasing and its maintenance	month	12	17,000	204,000	0	0	204,000
	Subtotal of Item VII-5.1				15,540,000	0	0	15,540,000
VII-5.2	Operation and Maintenance for sludge handling and disposal							
a.	Personnel cost	month	12	75,000	900,000	0	0	900,000
b.	Consumable (other than electric power and chemicals for process requirement)	month	12	0	0	0	0	0
c.	Maintenance cost of deployed equipment including spare parts (other than supplied under Design and Construction Contract), repair and replacement	month	12	39,000	468,000	0	0	468,000
d.	Testing, recording, reporting and any other documentations (other than personnel)	month	12	24,000	288,000	0	0	288,000

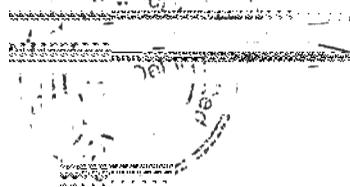


Schedule VII: OPERATION AND MAINTENANCE

Item	Description	Unit	Quantity	Local Currency (INR)				
				Basic Rate	Amount (Including local transport, transit, insurance, etc).	Rate all taxes and other levies payable etc.	Amount all taxes and other levies payable etc.	Amount Local Currency including all taxes and other levies payable etc.
-1	-2	-3	-4	-5	(6) = (4) x (5)	-7	(11) = (5) x (10)	(12) = (9) + (11)
	Subtotal Item of VII-5.2	month	12		1,656,000	0	0	1,656,000
VII-5.3	Other items not specified in the above but required to fulfill O & M operational requirement	month	12	0	0	0	0	0
	Subtotal of Item VII-5				17,196,000	0	0	17,196,000
Total of Schedule VII					72,168,000	0	0	72,168,000
(Carry over to Grand Summary, Schedule VIII)								

Note:

(a) Currencies shall be in Indian Rupees (INR).



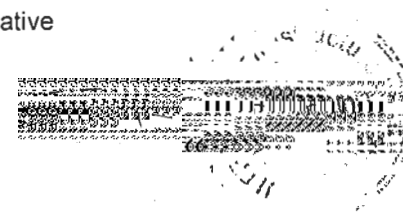

 Project Director
 JICA FT 1000 Guwahati
 Project (P.I.U)


Schedule VIII: GRAND SUMMARY

Schedule	Description	Local Currency (INR) ^(d)			Total Cost including Local transport, transit insurance, all taxes and other levies payable etc.
		Basic Amount	Amount Local transport, transit insurance, etc.	Amount all taxes and other levies payable etc.	
-1	-2	-4	-5	(6) = (4) + (5)	
I	Preparation Works	1,082,126	0	37,624	1,119,750
II.A	Plant and Equipment supplied from Abroad	0	0	0	0
II.B	Plant and Equipment supplied from the Employer's Country	285,372,161	7,166,400	10,370,677	302,909,238
III	Design Drawing and Documentation	4,325,818	0	153,182	4,479,000
IV	Installation and Other Services	15,027,941	0	532,105	15,560,046
V	Civil Works	394,498,675	0	13,986,125	408,484,800
VI	Day works	4,219,000	0	0	4,219,000
Total Amount (Schedules I - VI)		704,525,721	7,166,400	25,079,713	736,771,834
VII	Operation and Maintenance Services	72,168,000	0	0	72,168,000
Grand Total (Schedules I-VII)		776,693,721	7,166,400	25,079,713	808,939,834

Notes:

- (a) Currencies shall be in accordance with the Instruction to Bidders.
- (b) Duties and taxes shall be included in column 4 and 5
- (c) The cost for O&M Services (Schedule VII) will be borne by the GMDA. A separate contract for O&M Services will be signed with the Contractor by the (
- (d) INR: Indian Rupees
- (e) Provisional sum should be used as per instruction of Employer's Representative




 Project Director
 JICA

Schedule IX.A: RECOMMENDED SPARE PARTS SUPPLIED FROM ABROAD

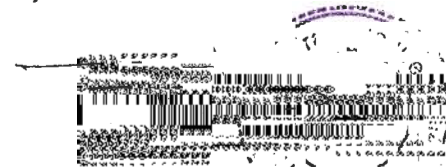
Item	Description	Country of Origin	Unit	Quantity	Foreign Currency		Local Currency (INR)				
					Unit Rate CIF ^(a)	Amount CIF ^(a)	Unit Rate including Local transport, transit insurance, etc.	Amount including Local transport, transit insurance, etc.	Unit Rate all taxes and other levies payable etc.	Amount all taxes and other levies payable etc.	Amount Local Currency including all taxes and other levies payable etc.
-1	-2	-3	-4	-5	-6	(7) = (5) x (6)	-8	(9) = (5) x (8)	-10	(11) = (5) x (10)	(12) = (9) + (11)
1	NOT APPLICABLE										
2											
3											
4											
5											
Total, Schedule IXA											


Notes:

(a) Currencies shall be in accordance with the Instruction to Bidders. Bidder shall specify currency.

INR: Indian Rupees

CIF: Cost, Insurance, Freight (Term of sale signifying that the price invoiced or quoted by a seller includes insurance and all other charges including delivery to the Project Site)




 Project Director
 Project Implementation Unit (P.I.U.)
 JICA

Schedule IX. B: RECOMMENDED SPARE PARTS SUPPLIED FROM THE EMPLOYER'S COUNTRY

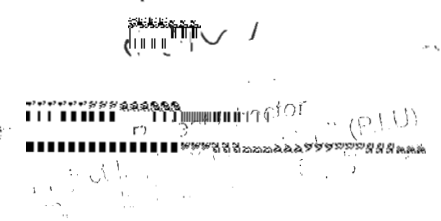
Item	Description	Unit	Quantity	Local Currency (INR)						
				Unit Rate EXW ^(a)	Unit Rate including Local transport, transit insurance, etc.	Unit Rate including local transportation, transit insurance, etc.	Amount including local transportation, transit insurance, etc. (Excluding taxes and other levies etc.)	Unit Rate all taxes and other levies payable etc.	Amount all taxes and other levies payable etc.	Total Amount (Including local transportation, transit insurance, etc., all taxes and other levies payable etc.)
-1	-2	-3	-4	-5	-6	(7) = (5) + (6)	(8) = (4) x (7)	-9	(10) = (4) x (9)	(11) = (8) + (10)
1	Recommended spares for electromechanical items	Lot	1	11,730,000	Included	Included	Included	Included	Included	11,730,000
2										
3										
4										
5										
Total, Schedule IXB				11,730,000	Included	Included	Included	Included	Included	11,730,000

Notes:

(a) Currencies shall be in Indian Rupees (INR)

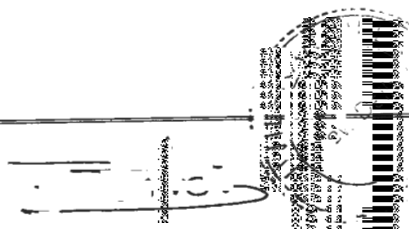
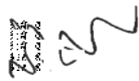
INR: Indian Rupees

EXW: Ex Works (Term of sale signifying that the price invoiced or quoted by a seller includes charges only up to the seller's factory or premises. All charges from there on are to be borne by the buyer)



Addendum to Bid Document

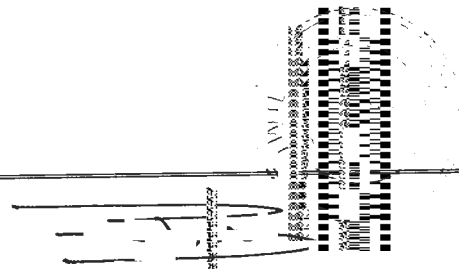
Project Director
Project Implementation Unit (P.I.U)
JICA Funded Guwahati Water Supply Project



Addendum No.1

Project Director
Project Implementation Unit (P.I.U)
JICA Funded Guwahati Water Supply Project

M



JICA Assisted Guwahati Water Supply Project - Addendum No. 1 to the Bidding Documents for Contract#01 (dated 31/10/2011)

Sl. No.	Volume / Section / Sub-section	Clause No. / Page No.	As per Original Bidding Document (Ref. – IFB # GMDA/JICA/24/2011/22 dt. 28.09.11)	Revised Version (to be read as)
1	Invitation for Bids		Invitation for Bid is as advertised in the newspaper. The copy of IFB is attached herewith.	



Project Director
 JICA Funded Guwahati Water Supply Project

**Office of the Chief Executive Officer,
Guwahati Metropolitan Development Authority,
STATFED Building, GMCH Road, Bhangagarh,
Guwahati-781005, Assam, India.**

Invitation for Bids
[International Competitive Bidding]

IFB No.: GMDA/JICA/24/2011/22

Date: 28/09/2011.

Loan No. and Title: JICA ODA Loan No. ID-P201, Guwahati Water Supply Project.

Name of the Work: Procurement of Turnkey Contract - Design, Supply, Installation and Commissioning of Intake Facilities, Transmission Mains, Water Treatment Plant and Reservoir for the North Zone (Contract Package No. C-01).

Deadline for Submission of Bids: 15:00 hrs on 30/11/2011

1. The Government of India has received a loan from the Japan International Cooperation Agency (JICA) towards the cost of Guwahati Water Supply Project, and it intends to apply part of the proceeds of this loan to payments under the contract for Procurement of Turnkey Contract Design, Supply, Installation and Commissioning of Intake Facilities, Transmission Mains, Water Treatment Plant and Reservoir for the North Zone. Disbursement of an ODA Loan by JICA will be subject, in all respects, to the terms and conditions of the Loan Agreement, including the disbursement procedures and the "Guidelines for Procurement under JICA ODA Loans".
2. The Chief Executive Officer, Guwahati Metropolitan Development Authority, JICA ODA Loan Project, Loan No. ID-P201, Government of Assam, Guwahati, Assam, India now invites sealed bids from eligible bidders for the design, construction and completion of the work packages as detailed below:

Package No.	Name of work package	Amount of bid security	Main qualification requirement		Completion Period
			Should have Average annual construction turnover as prime contractor for last 5 years	Should have successful experiences of similar water supply projects within last 10 years	
(1)	(2)	(3)	(4)	(5)	(6)
GWSP / C-01	Procurement of Turnkey Contract - Design, Supply, Installation and Commissioning of Intake Facilities, Transmission Mains, Water Treatment Plant and Reservoir for the North Zone including 5 years Operation & Maintenance.	Indian Rupees 10 million	Indian Rupees 500 million	(a) Participation as prime contractor in at least One contract of any similar water supply project of value not less than Indian Rupees 340 Million OR Two contracts of any similar water supply projects of value not less than Indian Rupees 225 Million each.	28 months for commissioning & 5 years for O&M

For complete eligibility and qualification requirements, Bidding Documents should be referred.

3. Bidding will be conducted through the International Competitive Bidding procedures specified in the Guidelines for Procurement under JICA ODA Loans and are open to the bidders from eligible source countries as defined in the loan agreement. Single-Stage, Two-Envelope, International Competitive Bidding (ICB) with Initial Filter procedure will be adopted. Bidders are to submit simultaneously two sealed envelopes, one containing the technical proposal including Initial Filter & Bid Security, and other one containing the price proposal. Initially the envelope containing technical bid will be opened. Initial Filter will be evaluated first to determine eligible Bidders. Technical bids of the eligible bidders will be further evaluated to determine technically responsive bidders.
4. Interested eligible bidders may obtain further information from the Project Director of PIU and inspect the bidding documents at the address from working time 10 AM to 5 PM by calling, writing, faxing on the numbers given below:

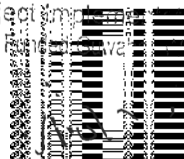
Project Director
Project Implementation Unit (PIU)
JICA Funded Guwahati Water Supply Project

**Project Director,
Project Implementation Unit, JICA Assisted GWSP
Saikia Commercial Complex 4th Floor, Christian Basti, GS Road
Guwahati - 781005, Assam, India
Ph. No. +91 361 2346211
Fax No. +91 361 2346213**

5. A complete set of bidding documents, in English language, may be purchased by interested bidders on the submission of a written application to the above office, and upon payment of a non-refundable fee of **INR 25,000/-** (Twenty five thousand only) or equivalent in Japanese Yen up to **26/10/2011**. Those bidders, who desire to receive the document by courier shall have to pay an additional **INR 2,000/-** (Two thousand only) or equivalent in Japanese Yen for delivery within India, or **INR 6,000/-** (Six Thousand only) or equivalent in Japanese Yen for delivery to countries outside India. The method of payment will be through demand draft in favor of "**The Chief Executive Officer, Guwahati Metropolitan Development Authority**" payable at Guwahati, Assam (India). The document will be sent by registered air mail or courier but under no circumstances will The Chief Executive Officer, GMDA be held responsible for late delivery or loss of document so mailed.
6. All bids must be accompanied by a bid security of **INR 10,000,000** (Ten million only) or equivalent in Japanese Yen, and sealed bids must be delivered to the address given in para 4 above on or before **15:00 hrs** on **30/11/2011**. Bid security shall be in the form of a banker's cheque, Demand draft or unconditional bank guarantee from a reputable bank in favor of "**The Chief Executive Officer, Guwahati Metropolitan Development Authority, Guwahati, Assam, (India)**". The bid security must be included with Technical Bid envelope.
7. Technical bids including Initial Filter will be opened on the same day in the presence of the Bidders' representatives who choose to attend at **15:30 hrs**. In the event of the specified date of the bid opening being declared a holiday for the Employer, the bids shall be received and opened at the same time and place on the next working day.
8. Bids delivered after the time and date noted above will be declared "LATE" and Late Bids shall be rejected.
9. The Employer will not be responsible for any costs or expenses incurred by Bidders in connection with the preparation or delivery of Bids.
10. The Employer reserves the right to accept any bid, or reject any or all bids, without assigning any reason thereof and without thereby incurring any liability to the Bidder or Bidders.
11. Pre-bid meeting with the interested bidders shall be held at the address mentioned in para 4 above at **11:00 hrs** on **14/10/2011**. Bidders Interested in participating are advised to attend the pre-bid meeting before submission of bid.
12. This Invitation for Bids is also available at the website of www.gmda.co.in. Tender document is available only as hard copy in the address given above.

**Chief Executive Office
Guwahati Metropolitan Development Authority,
STATFED Building, GMCH Road, Bhangagarh,
Guwahati-781005, Assam, India.**

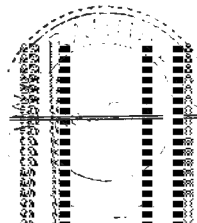
Project Director
Project Implementation Unit (P.I.U)
JICA Assisted Guwahati Water Supply Project



Addendum No.2

Project Director
Project Implementation Unit (P.I.U)
JICA Financed Guwahati Water Supply Project

12/2014



Addendum No. 2 to the Bidding Documents for Contract C#01

Sl. No.	Volume / Section / Sub-section	Clause No. / Page No.	As per Original Bidding Document (Ref. – IFB # GMDA/JICA/24/2011/22 dt. 28.09.11)	Revised Version (to be read as)
1	Part 1 Section III	Clause 2.4.2, b) i) . No. 8 of 11		Add the following sentence at the last sentence, In case the Bidder has not enough experience for sludge treatment (sludge thickening and dewatering), it will be allowed that the Bidder proposes in his bid proposal specialized sub-contractor for the same with his past experience which shall cover the requirements stated above for sludge treatment.
2	Part 3, ection IV A	Clause D.1.9 Pg. No. 57 of 76		Diesel Generator Set; additional item 5 Backup operation time
3	Part 3, Section IV B	Schedule/item No. V-2.2.19 Pg. No. 77 of 94		This Sub-schedule shall be deleted
4	Part 3 Section VIII PCC	Clause 17.1.1 Pg. No.5 of 9		Add 1 st sentence as: 'The Team Leader of Project Management Consultant (PMC)' shall be the 'Project Manager' and act as the Employer's Representative.
5	Part 2 Section VI Subsection 1	Clause 1.3.2 Pg. No. 4 of 15	Table 1.2 CONSTRUCTION – Intake structure : Under this Contract corresponding to requirement of Phase 1	Table 1.2 CONSTRUCTION – Intake structure : Under this Contract corresponding to requirement of Phase 2
6	Part 2 Section VI Subsection 01	Clause 1.7 Pg. No. 5 of 15		Additional last paragraph : "Cost of the Contractor's personnel, maintenance, chemicals, consumables and electricity, shall be borne by the Contractor."
	Part 2 Section VI Subsection 1	Clause 1.17.8.1 Pg. No. 12 of 15		Additional item in table Accident Prevention Officer- BE equivalent- 10 years – 05 years – 03 years
	Part 2 Section VI Subsection 1	Clause 1.17.9 Pg. No. 14 of 15	Table 1.4, first item : Ready Mix concrete (RMC) plant – 40 m3/d min	Table 1.4, first item : Ready Mix concrete (RMC) plant – 50 m3/d
	Part 2 Section VI Subsection 2	Clause 2.2.1 Pg. No. 2 of 8		Correction: Item No. XI shall be change to xv Additional item : xvi. Method statement for construction and installation of each unit activity

Project Director

Sl. No.	Volume / Section / Sub-section	Clause No. / Page No.	As per Original Bidding Document (Ref. – IFB # GMDA/JICA/24/2011/22 dt. 28.09.11)	Revised Version (to be read as)
				wise.
10	Part 2 Section VI Subsection 03	Clause 3.4.2 Pg. No. 7 of 42		First paragraph, Add to last line : "Higher grade of TMT bar of Fe500, having yield stress of the bars shall be 500 N/mm ² , may be used where adequate, subject to the approval of the Employer's Representative."
11	Part 2 Section VI Subsection 03	Clause 3.4.2, i. Pg. No. 7 of 42	I. Building plinth shall be a minimum of 300 mm above the average finished ground level around the building and shall be not be less than the plinth level of any existing buildings.	Erase the following sentence : i. and shall be not be less than the plinth level of any existing buildings.
12	Part 2 Section VI Subsection 3	Clause 3.8.2 Pg. No. 22 of 42	First line : "The Contractor shall construct a boundary wall (height of 2.20 meters above the ground level which shall...."	First line : "The Contractor shall construct a boundary wall (height of 2.60 meters above the finished ground level which shall...."
13	Part 2 Section VI Subsection 3	Clause 3.8.2 Pg. No. 22 of 42	Last paragraph : "The service bridge to the intake structure shall have chain link type fencing of a height of 2.20 m along each side of the roadway. The fencing shall be mounted on the bridge structure."	Last paragraph : "The service bridge to the intake structure shall have chain link type fencing of a height of 1.60 m along each side of the roadway. The fencing shall be mounted on the bridge structure."
14	Part 2 Section VI Subsection 4	Clause 4.3.23.1 Pg. No. 26 of 38	1 st Para 1 st bullet : Raw Water Main-62 MLD 1 st Para 5 th bullet : Discount rate (interest rate)- 10%	1 st bullet : Raw Water Main-(62 + water loss)MLD 1 st para 5 th bullet : Discount rate (interest rate)- 8%
	Part 2 Section VI Subsection 5	Clause 5.3.1.1 Pg. No. 6 of 17	Last paragraph, third line : ".... Rubber, seats as per IS 1309 and"	Last paragraph, third line : ".... Rubber, seats as per IS 13095 and"
	Part 2 Section VI Subsection 06	Clause 6.2 Pg. No. 2 of 63	2nd paragraph : "There is a wide variation in the intake (river) water level (from approximately EL 41 to EL 51)."	2nd paragraph : "There is a wide variation in the intake (river) water level (from approximately EL 42 to EL 52)."
	Part 2	Clause 6.2.1	Second and third line under	Second and third line under 'Component'-'Value':

Project Director
 Project Implementation Unit (P.I.U)
 JICA-Funded Guwahati Water Supply Project

Contract Package NO. C-01

Date: November 14, 2011

Sl. No.	Volume / Section / Sub-section	Clause No. / Page No.	As per Original Bidding Document (Ref. – IFB # GMDA/JICA/24/2011/22 dt. 28.09.11)	Revised Version (to be read as)
18	Section VI Subsection 6	Pg. No. 2 of 63	'Component'-'Value': "Average seasonal high water level"- approx.51m "Average seasonal low water level"- approx. 41m	"High water level (since July 2002)"-approx. 52m "Low water level (since July 2002)"-approx. 42m
19	Part 2 Section VI Subsection 06	Clause 6.2.1 Pg. No. 3 of 63	13 th line: under 'Value': 140	13 th line: under 'Value': 130
20	Part 2 Section VI Subsection 08	Clause 7.9 Pg. No. 48 of 79		1 st paragraph : add following sentence "HV and MV cables shall be earthed cables."
21	Part 2 Section VI Subsection 08	Clause 7.15 Pg. No. 70 of 79		Add following sentence at last Para (4 th Para): "backup operation time shall be not less than one (1) hour."
22	Part 2 Section VI Subsection 08	Clause 8.9 Pg. No. 14 of 52		Add following sentence at last Para (3 rd Para): "OFC link shall be provided for PLC between WTP, RWPS and CWPS."
23	Part 2 Section VI Subsection 08	Clause 8.9.1 Pg. No. 14 of 52	1 st Para, item d. i : A 2 kVA UPS system	1 st Para, item d. i : Adequate rating of UPS at each zone shall be designed to provide sufficient power to maintain the SCADA system functioning for a minimum period of 2 hours, in case of power failure.
24	Part 2 Section VI Subsection 09	Clause 9.1 Pg. No. 1 of 9	4 th Para 2 nd line : It is proposed to construct Two (2) elevations : i) a below low water level (approximately EL 39.0 m mean sea level) and ii) upper level (approximately 45.0 msl).	4 th Para 2 nd line : It is proposed to construct Two (2) elevations : i) a below low water level (LWL is approximately 42.0 m msl.) and ii) upper level (between HWL +52.0 and LWL +42.0 msl.)
25	Part 2 Section VI Subsection 09	Clause 9.1.1 Pg. No. 1 of 9	1 st Para, 3 rd line : The Flood level is preliminary estimated at +52.0 msl.	1 st Para, 3 rd line : The Flood level is preliminary estimated at +53.0 msl.
25	Part 2 Section VI	Clause 9.1.3 Pg. No. 3 of 9		Additional paragraphs : "Outdoor lighting shall be provided along the bridge at adequate intervals

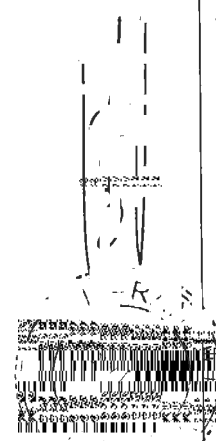
Contract Package NO. C-01

Date: November 14, 2011

Sl. No.	Volume / Section / Sub-section	Clause No. / Page No.	As per Original Bidding Document (Ref. – IFB # GMDA/JICA/24/2011/22 dt. 28.09.11)	Revised Version (to be read as)
	Subsection 9			and height on one side of the bridge.” “For bidding purpose the length of bridge may be estimated from the drawing. This is approximate and will be superseded by the result of hydrological study.”
26	Part 2 Section VI Subsection 9	Clause 9.7.2 Pg. No. 9 of 9		Add following sentence at the last Para (3 rd Para): The Contractor shall conduct the study on corrosion protection for the transmission main. And if required, the Contractor shall provide necessary measures suitable for pipe material proposed. 4 th Para : For bidding purpose, the length of the Raw water 27Transmission Main as 4.3 km is used between the Intake Well up to the boundary of WTP.
27	Part 2 Section VI Subsection 10	Clause 10.1.3 Pg. No. 2 of 84	Table 10-2, row no. 12 & 13 Fecal coliform – 0 Total coliform organism - 0	Table 10-2, row no. 12 & 13 Fecal coliform – Not detectable Total coliform organism - Not detectable
28	Part 2 Section VI Subsection 10	Clause 10.3.7.2 Pg. No. 11 of 84	Point no. ‘s’ , first sentence: “All sludge extraction piping under the water level and wall pipes passing through concrete walls shall be flanged schedule 20S stainless steel pipe type 304.”	Point no. ‘s’ , first sentence: “All sludge extraction piping under the water level and wall pipes passing through concrete walls shall be as per piping schedule Table 10.21.”
29	Part 2 Section VI Subsection 10	Clause 10.3.7.3 Pg. No. 12 of 84	Table 10-7, 4 th line Column-Value : 60	Table 10-7, 4 th line Column-Value : 55
30	Part 2 Section VI Subsection 10	Clause 10.6.1 Pg. No. 29 of 84	Item no. d, second line: “...The doors and frame shall be made of steel and epoxy coated, with 2 coats at a DFT of 450 micron each....”	Item no. d, second line: “...The doors and frame shall be made of steel and epoxy coated, with 2 coats at a DFT of 90 micron each....”
31	Part 2 Section VI Subsection 10	Clause 10.7.3.1 Pg. No. 38 of 84	First paragraph, first sentence: “The sludge from the sludge buffer tank shall be conveyed through DI piping to a RCC sludge thickener designed to achieve a minimum solids concentration of 4%	First paragraph, first sentence: “The sludge from the sludge buffer tank shall be conveyed through DI piping to a RCC sludge thickener designed to achieve a minimum solids concentration of 4% and supernatant turbidity of not more than 500 NTU.”

Sl. No.	Volume / Section / Sub-section	Clause No. / Page No.	As per Original Bidding Document (Ref. – IFB # GMDA/JICA/24/2011/22 dt. 28.09.11)	Revised Version (to be read as)
			and supernatant turbidity of not more than 100 NTU.”	
32	Part 2 Section VI Subsection 10	Clause 10.7.4 Pg. No. 41 of 84	Second paragraph, last sentence: “The capacity of the dehydrator units shall be determined by the continuous operation with full capacity (excluding standby units) at no more than 10 hours per day, 7 days per week.”	Second paragraph, last sentence: “The capacity of the dehydrator units shall be determined by the continuous operation with full capacity (excluding standby units) at no more than 16 hours of operation per day for maximum turbidity of 400NTU of sludge treatment.”
33	Part 2 Section VI Subsection 10	Clause 10.7.4.2 Pg. No. 42 of 84	Item h, first sentence: “The centrifuge station shall be in operation no more than 10 hours per day in normal operation”	Item h, first sentence: “The centrifuge station shall be in operation no more than 10hours per day in normal operation at average turbidity as 200 NTU
34	Part 2 Section VI Subsection 13	Clause 13.8.3 Pg. No. 19 of 22	Finished water measured at the outlet of clear water reservoir : “Total iron as Fe – not exceed 1.0 mg/l”	Finished water measured at the outlet of clear water reservoir : “Total iron as Fe – not exceed 0.1 mg/l” Additional item “Turbidity – not exceed 1.0 NTU”
35	Part 2 Section VI Subsection 14	Clause 14.8 Pg. No. 17 of 28		Insert additional paragraph between 1 st and 2 nd Para : If the Contractor does not meet the daily production (supply) quantity and/or quality as directed by the Employer’s Representative due to his operational limitations, liquidated damages (LD) shall be imposed on a daily basis taking into account the following parameters: i No LD will be imposed for failure to supply treated water due to the non-availability ii The limit of LD shall not exceed 5% of total short supply and quality of treated water as specified hereunder excluding LD for electric power and chemical consumption.
36	Part 2 Section VI Subsection 14	Clause 14.8.1 Pg. No. 18 of 28		Delete 3 rd , 4 th , and 5 th Para and insert the following paragraph : In case the daily treated water supply is below the requirement (a shortfall condition), liquidated damages shall be imposed as follows: a. More than a 5% up to a 10% shortfall: LD shall be applied at the rate of 1% of the monthly O & M charges, per percentage of total shortfall per day of shortfall. b. More than a 10% and up to a 15% shortfall: LD shall be applied at the

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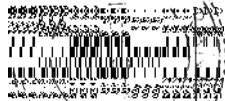


Contract Package NO. C-01

Date: November 14, 2011

Sl. No.	Volume / Section / Sub-section	Clause No. / Page No.	As per Original Bidding Document (Ref. – IFB # GMDA/JICA/24/2011/22 dt. 28.09.11)	Revised Version (to be read as)
				rate of 2% of the monthly O & M charges, per percentage of total shortfall per day of shortfall. c. More than a 15% and up to 20% shortfall: LD shall be applied at the rate of 5% of the monthly O & M charges, per percentage of total shortfall per day of shortfall. d. More than a 20% shortfall: The Employer may consider the termination of Contract pursuant to GC Sub-clause 42.2.2 of Work Contract.
37	Part 2 Section VI Subsection 14	Clause 14.8.3 Pg. No. 18 of 28	2 nd Para : In case of permissible water quality limits are not achieved: i. In case of lapses on more than two occasions in a calendar month, liquidated damages will be applied at the rate of 0.5% of the Contractor's monthly charges for O & M for each day for each day of lapsing. ii. In case there are lapses on two consecutive days, liquidated damages will be applied at the rate of 1.5% of the Contractor's monthly charges for O & M for each day for each day of lapsing. iii. In case the Contractor has continuous lapses beyond two days, liquidate damages will be applied at the rate of 5% of the Contractor's monthly charges for O & M for each day of lapse. This will supersede the LD of items (i) and (ii) above. In such case, the Contractor will be notified by the Employer's Representative and the Employer will have the option of making the necessary inputs to the control of WTP to impose the treated water supply. All costs for	2 nd Para : In case of permissible water quality limits are not achieved: i. In case of lapses on more than two occasions in a calendar month, liquidated damages shall be applied at the rate of 1% of the Contractor's monthly charges for O & M for each day for each day of lapsing. ii. In case there are lapses on two consecutive days, liquidated damages shall be applied at the rate of 2% of the Contractor's monthly charges for O & M for each day for each day of lapsing. iii. In case there are lapses on three consecutive days, liquidated damages shall be applied at the rate of 3% of the Contractor's monthly charges for O & M for each day for each day of lapsing. iv. In case there are lapses on three consecutive days, liquidated damages shall be applied at the rate of 4% of the Contractor's monthly charges for O & M for each day for each day of lapsing. v. In case there are lapses on four consecutive days, liquidated damages shall be applied at the rate of 5% of the Contractor's monthly charges for O & M for each day for each day of lapsing. vi. In case there are lapses on five consecutive days, liquidated damages of 5% of the Contractor's monthly charges for O & M for each day of lapsing. Vi. In case there are lapses on six consecutive days, the Employer may consider termination of contract pursuant to GC Sub-clause 42.2.2 of Work Contract.

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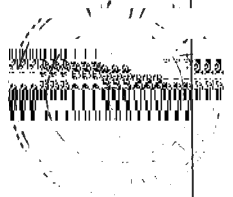


Sl. No.	Volume / Section / Sub-section	Clause No. / Page No.	As per Original Bidding Document (Ref. – IFB # GMDA/JICA/24/2011/22 dt. 28.09.11)	Revised Version (to be read as)
			implementing such improvements, including a 10% charge for overhead and administration, will be charged to the Contractor, along with the penalty for the lapses. iii In case there are lapses on two consecutive days, liquidated damages will be applied at the rate of 1.5% of the Contractor's monthly charges for O & M for each day for each day of lapsing.	
38	Part 2 Section VI Subsection 14	Clause 14.8.3 Pg. No. 18 of 28		Add following Subsection of 14.8.4 Chemical Consumption (for Process) : The estimated chemical consumption for the treatment process shall be calculated on the basis of the raw water quality and submitted by the Contractor. The actual chemical consumption shall be more than 5% higher than the estimated consumption, liquidated damages shall be recovered from the Contractor at the rate 20% more than the cost of extra chemicals consumed.
39	Part 2 Section VI Subsection 14	Clause 14.9 Pg. No. 19 of 28	Point no. 'b' : "The cost of the chemical consumables used in the water treatment plant processes (for process only), which will be either be supplied by the Employer, or reimbursed to the Contractor, on a monthly basis, at the actual cost paid by him plus a 5% handling fee."	Point no. 'b' : "The cost of the chemical consumables used in the water treatment plant processes (for process only), which will be either supplied by the Employer or reimbursed to the Contractor, as determined by employer, on a monthly basis, at the actual cost paid by him plus a 5% handling fee."
40	Part 3 Section IX Contact Form	Appendix 8 Clause 4.1 Pg. No. 18 of 32	If the production capacity of the facilities attained in the guarantee test, pursuant to GC Sub-Clause 25.2, is less than the guaranteed figure specified in para. 3.1 above, but the actual production capacity attained in the guarantee test is not less than the minimum level specified in para. 4.3 below, and the Contractor elects to	If the production capacity of the facilities attained in the guarantee test, pursuant to GC Sub-Clause 25.2, is less than the guaranteed figure specified in para. 3.1 above, but the actual production capacity attained in the guarantee test is not less than the minimum level specified in para. 4.3 below, and the Contractor elects to pay liquidate damages to the Employer in lieu of making changes, modifications and/or additions to the Facilities, pursuant to GC Sub-Clause 28.3, then the Contractor shall pay liquidated damages at the rate of : Quantity – 2% of Contract Price, for every complete one percent (1%) of the

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			pay liquidate damages to the Employer in lieu of making changes, modifications and/or additions to the Facilities, pursuant to GC Sub-Clause 28.3, then the Contractor shall pay liquidated damages at the rate of 1.0% (One percent) of Contract Price (excluding & M cost) for each MLD shortfall.	deficiency in the production capacity of the facilities, or at the proportionally reduced rate for any deficiency, or part thereof for less than a complete one percent (1%). Quality – 3% of Contract Price, for every complete ten percent (10%) of the deficiency in achieving quality of treated water, or at the proportionally reduced rate for any deficiency, or part thereof for less than a complete ten percent (10%).
41	Part 3 Section IX Contact Form	Appendix 8 Clause 4.2 Pg. No. 19 of 32	If the actual measure figure of specified para. materials and utilities consumed per unit (or their average total cost of consumption) exceed the guaranteed figure specified in para. 3.2 above (or their specified average total cost of consumption), but the actual consumption attained in the guarantee test, pursuant to GC Sub-Clause 25.2, is not more than the maximum level specified in para. 4.3 below, and the Contractor elects to pay liquidated damages to the Employer in lieu of making changes, modifications and/or additions to the Facilities pursuant to GC Sub-Clause 28.3, then the Contractor shall pay liquidated damages at the rate of <i>[insert amount in the contract currency]</i> for every complete one percent (1%) of the excess consumption of the Facilities, or part thereof, of less than a complete one percent (1%) <i>[The rate of liquidated damages specified in para. 4.1 and 4.2 above shall be at</i>	If the actual measured figure of specified raw materials and utilities consumed per unit (or their average total cost of consumption) exceed the guaranteed figure specified in para. 3.2 above (or their specified average total cost of consumption), but the actual consumption attained in the guarantee test, pursuant to GC Sub-Clause 25.2, is not more than the maximum level specified in para. 4.3 below, and the Contractor elects to pay liquidated damages to the Employer in lieu of compensation attained in the guarantee test, pursuant to GC Sub-Clause 25.2, is not more than the maximum level specified in para. 4.3 below. And the Contractor elect to pay liquidated damages to the Employer in lieu of compensation of excess operational cost due to excess consumption of the above materials pursuant to GC Sub-Clause 28.3, then the Contractor shall pay liquidated damages at the rate of : Power: Liquidated damages shall be the charges for extra power consumed and billed by the local power supply utility in accordance with the following formula: LDp = Cp1 + Cp2 + Cp3 + + Cp15 Where; LDp is liquidated damage to be paid by the Contractor for extra power consumption Cpn is the LDp of the respective years calculated as Cp = P x Q x F Where; P: Excess power cost per 1 m3/day of production by raw water and clear water pumps. Q: Annual production capacity by year as specified in Sub-Section 6.1

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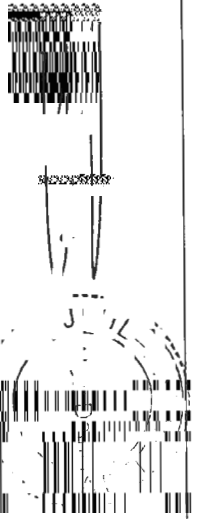



Sl. No.	Volume / Section / Sub-section	Clause No. / Page No.	As per Original Bidding Document (Ref. – IFB # GMDA/JICA/24/2011/22 dt. 28.09.11)	Revised Version (to be read as)
			<p><i>least equivalent to the rate specified in Section III, Evaluation and Qualification Criteria for the comparison of functional guarantees provided by the Bidders]</i></p> <p>Power – Liquidated damages shall be at the rate of two (2) times the charges for extra power consumed and billed by the local power utility.</p> <p>Chemical – Liquidated damages shall be at the rate of 20% more than the extra chemical consumed.</p>	<p>F: Inflation factor calculated from the date of completion (issuance of Operational Acceptance Certificate) $F = 1 / (1 + r)^n$ r: Inflation rate at 8% per annum n: Number of years from the date of Operational Acceptance</p> <p>Chemicals: Liquidated damages shall be charged for extra chemical cost due to extra consumption of chemicals, including Alum, Polymer and Chlorine, in accordance with the following formula.</p> <p>$LDC = Cc1 + Cc2 + Cc3 + \dots + Cc15$ Where; LDC is liquidated damage to be paid by the Contractor for extra chemical consumption Ccn is the LDC of the respective years calculated as $Cc = C \times Q \times F$ Where; C: Excess chemical cost per 1 m³/day of production. Q: Annual production capacity by year as specified in Sub-Section 6.1 F: Inflation factor calculated from the date of completion (issuance of Operational Acceptance Certificate) $F = 1 / (1 + r)^n$ r: Inflation rate at 8% per annum n: Number of years from the date of Operational Acceptance</p> <p>For every complete one percent (1%) of the deficiency in the production capacity of the facilities, or at the proportionally reduced rate for any deficiency, or part thereof, of less than a complete one percent (1%).</p>
42	Part 3 Section IV B Bidding Form	Clause 3 Sub-clause 3.1 2.7 Third Party Inspection		<p>Following sub-clause shall be added under 2.6 : 2.7 Third Party Inspection The Employer requires the third party inspection on the major materials and equipment to be carried out. The bidder shall include in his proposed price for materials and equipment under Schedule II A and II B in accordance with the following conditions:</p>



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				<p>The materials and equipment will include:</p> <ul style="list-style-type: none"> Pipes, valves include lined and coated MS pipes, DI Pipes (large size), large size of gates and valves, special valve like flow control valve, special couplings and joints, Major pumps & Motors such as raw water and clear water pumps, and special pumps like sludge pumps, de-silting pumps, and chemical pumps, Treatment process units such as inclining plates/tubes, underdrain system and air blowers, Sludge treatment such as sludge scrapers, sludge pumps, centrifuges Electric equipment such as HV / MV switchgear, Transformers, other electric panels, flow meters, soft starters and cables, Other items as required <p>The items for third party inspection:</p> <p>15 items of third party inspection is estimated from the above Items. The inspection for exact items will be determined after award of contract depending on the bidder's proposed materials and equipment.</p> <p>The cost for third party inspection shall be estimated as follows:</p> <ul style="list-style-type: none"> Number of persons attend the inspection other than contractor: One from third party inspector <ul style="list-style-type: none"> One form the Employer One from the PMC Fee for third party inspector Period of inspection: 2 days for each items Direct cost of transportation, accommodation, perdiem, etc.

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Particular Conditions (PC)

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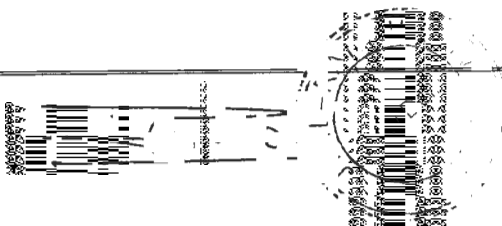

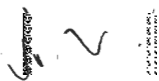
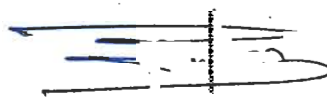


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Particular Conditions

Input of Information to be completed by Bidder (**bold**) or Employer (*italic*)

1.	<p>Definitions</p> <p>“Contract”:</p> <p>Add paragraph at the end of first paragraph as follows:</p> <p>For the purposes of defining the different activities and obligations under the Contract, the Contract will be comprised of a “Works Contract” and an “O&M Contract”, as defined in the following Subparas. Such definitions are for convenience only and shall not affect the rights or obligations of the Employer or the Contractor under the Contract.</p> <p>“Works Contract” means that portion of the Contract that refers to the design, execution, completion, trial run and commissioning of the Works and the remedying of any defects, but excluding Operation and Maintenance of the facilities for the Operation and Maintenance Period, in accordance with the provisions of the Contract.</p> <p>O&M Contract means that portion of the Contract that refers to the Operation and Maintenance of the facilities for the Operation and Maintenance Period, as defined in the Form of Contract Agreement for Operations and Maintenance, but excluding the costs of design, execution, completion, trial run and commissioning of the Works and the remedying of any defects, in accordance with the provisions of the Contract.</p> <p>The Employer is: Guwahati Metropolitan Development Authority, Guwahati, Assam, (India)</p> <p>Address: The Chief Executive Officer, JICA ODA Loan Project, Guwahati Metropolitan Development Authority (GMDA), 3rd Floor, STATFED Building, GMCH Road, Bhangagarh Guwahati-781005, Assam, India Ph. No. - +91 361 2529650 Fax No. - +91 361 2529991</p> <p>The Project Manager is: Project Management Consultant</p> <p>Address : H/O Ganesh Kalita, 1st Bylane, Lichubari, Near Ganesh Mandir Higher Secondary School, Six Mile, Khanapar, Guwahati, 781022, Assam, India</p> <p>Contract Price:</p> <p>Add paragraph at the end of first paragraph as follows:</p> <p>For the purposes of determining payments under the Contract and, where applicable, other obligations, the Contract Price will be subdivided into a “Works Contract Price” and an “O&M Contract Price”, as defined in the following Subparas (i) and (ii).</p> <p>The total “Contract Price” will be the sum of the Works Contract Price and the O&M Contract Price.</p> <p>(i) “Works Contract Price” means that portion of the sum stated in the Notification of Award to Commence as payable to the Contractor for the design, execution, completion, trial run and commissioning of the Works and the remedying of any defects, but excluding the costs for Operation and Maintenance of the facilities for the Operation and Maintenance Period, in accordance with the provisions of the Contract. The Works Contract Price will be the total of the amounts (as corrected for errors in accordance with Clause 32 of Section II) for carrying out the Works, as set out in Section IVB, Schedule of Prices, under:</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 15%;">Schedule No. I</td> <td>Preparatory Works</td> </tr> <tr> <td>Schedule No.IIA</td> <td>Plant and Equipment supplied from Abroad</td> </tr> <tr> <td>Schedule No.IIB</td> <td>Plant and Equipment supplied from the Employer's Country</td> </tr> <tr> <td>Schedule No.III</td> <td>Design, Drawings and Documentation Services</td> </tr> <tr> <td>Schedule No. IV</td> <td>Installation and Other Services</td> </tr> <tr> <td>Schedule No. V</td> <td>Civil Works</td> </tr> <tr> <td>Schedule No. VI</td> <td>Day Works</td> </tr> <tr> <td>Schedule No. VIII</td> <td>Grand Summary (Schedule Nos. I to VIII)</td> </tr> <tr> <td>Schedule No.IXA</td> <td>Recommended Spare Parts supplied from Abroad.</td> </tr> <tr> <td>Schedule No.IXB</td> <td>Recommended Spare Parts. Supplied from the Employer's Country,</td> </tr> </table>	Schedule No. I	Preparatory Works	Schedule No.IIA	Plant and Equipment supplied from Abroad	Schedule No.IIB	Plant and Equipment supplied from the Employer's Country	Schedule No.III	Design, Drawings and Documentation Services	Schedule No. IV	Installation and Other Services	Schedule No. V	Civil Works	Schedule No. VI	Day Works	Schedule No. VIII	Grand Summary (Schedule Nos. I to VIII)	Schedule No.IXA	Recommended Spare Parts supplied from Abroad.	Schedule No.IXB	Recommended Spare Parts. Supplied from the Employer's Country,
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and

any agreed amounts for optional spare parts and tools ordered by the Employer, as set out in Price Schedule for Recommended Spare Parts and Tools, including the "CIF" or "EXW" cost as applicable plus "Taxes" and "Local Transport", but excluding the cost of any Customs "Duty" or "Excise Duty".

(ii) "O&M Contract Price" means that portion of the sum stated in the Notification of Award as payable to the Contractor for the costs for Operation and Maintenance of the facilities for the Operation and Maintenance Period, but excluding the costs of design, execution, completion, trial run and commissioning of the Works and the remedying of any defects, in accordance with the provisions of the Contract. The O&M Contract Price will be the total amount (as corrected for errors in accordance with Clause 32 of Section II) for operations and maintenance during the O&M period, as set out in Section IVB, Schedule of Prices, under Schedule VII, Operation and Maintenance

Country of Origin:

All countries and territories as indicated in Section V, List of Eligible Countries of Japanese ODA Loans.

Time for Completion:

The Contractor shall commence work on the Facilities immediately on the Effective Date for determining Time for Completion as specified in the Contract Agreement.

The Time for Completion of the whole of the Facilities shall be **28 (Twenty Eight) months** from the Effective Date as described in the Contract Agreement. The whole of the Works, including testing, Trial Run, Pre-commissioning and Commissioning and performance guarantee test shall be completed within the period specified above. The Taking-Over Certificate / Completion Certificate / Operational Acceptance Certificate will be issued upon successful completion of the Performance guarantee test and rectification of any defects observed during this period.

The Contractor shall commence the Operation and Maintenance services immediately after successful commissioning and guarantee tests of the Treatment Plant and Taking over by the Employer. The Works will be handed over back to the Contractor for the purpose of Operation and Maintenance. After completion, commissioning and guarantee tests, the contractor shall under take Operation and Maintenance for a period of **60 (sixty) months**. This period includes defect liability period.

"Works Contract Period", means the period from the Commencement Date to the date 365 days after the date on which the whole of the Works shall have been completed as certified by the Project Manager.

"Operation and Maintenance Period" means the period for operating and maintaining the constructed facilities, starting from the date upon which the Works have been completed as certified by the Project Manager (as evidenced through issue of the Taking Over Certificate) up to the date as stated in the document .

"Taking-Over Certificate" means a certificate issued by the Project Manager when the Works have been completed in accordance with the Contract, in accordance with the provisions of General Conditions of Contract.

"Works" means the Permanent Works and the Temporary Works or either of them as appropriate, including trial run and commissioning of the constructed facilities and remedying of any defects, but excluding operation and maintenance of the facilities after completion of the Works.

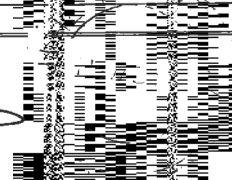
"Operations and Maintenance" means the supply of all labor, equipment, materials, fuel, consumables and all other things necessary, except electricity and chemical consumables (alum, lime and chlorine), so as to properly operate and maintain the constructed facilities at their rated capacity for the period of time as specified in the as specified in the Form of Contract Agreement for Operations and Maintenance after completion of the Works, all in accordance with the conditions of the Contract.

"Initial Completion Certificate" means the certificate issued by the Project Manager, after receiving notice from the Contractor, upon satisfactory completion of precommissioning as mentioned in GC Sub-clause 24.4. The Initial Certificate shall be issued stating that the facilities or that part thereof have reached Initial Completion for stating commissioning.

"Completion Certificate" means the certificate issued by the Project Manager upon successful completion of Guarantee Test during Commissioning of the Facilities or the relevant part thereof as per GC sub-clause 25.2.

Completion Certification (Work Contract Completion Certificate) means the certificate issued by the Project Manager upon satisfactory completion of Contractor's obligations under the works contract and remedying off any defects in accordance with the provisions of Clause of Defect Liability period.

"Final Contract Completion Certificate" means the certificate issued by the Project Manager upon satisfactory completion of the Operation and Maintenance responsibilities under Sub-



	Clause Completion of Operations and Maintenance Services of this Section V, Special Conditions of Contract.
5.	Law and Language
5.1	The Contract shall be interpreted in accordance with the laws of: India
5.2	The ruling language is: English
5.3	The language for communications is: English
7.	Scope of Facilities
7.3	<p>The Contractor agrees to supply spare parts for a period of years: 2 (two) years after completion of operation and maintenance.</p> <p>The Prices of such Spare parts given in Price Schedule – 6 shall not be considered in bid evaluation.</p> <p>The Contractor shall carry sufficient inventories to ensure an ex-stock supply of consumable spares for the Plant. Other spare parts and components shall be supplied as promptly as possible, but at the most within six (6) months of placing the order and opening the letter of credit. In addition, in the event of termination of the production of spare parts, advance notification will be made to the Employer of the pending termination, with sufficient time to permit the Employer to procure the needed requirement. Following such termination, the Contractor will furnish to the extent possible and at no cost to the Employer the blueprints, drawings and specifications of the spare parts, if requested.</p>
8.	Time for Commencement and Completion
8.1	The Contractor shall commence work on the Facilities within 14 (fourteen) days from the Effective Date for determining Time for Completion as specified in the Contract Agreement.
8.2	<p>The Time for Completion of the whole of the Facilities shall be 28 (Twenty Eight) months from the Effective Date as described in the Contract Agreement. The whole of the Works, including Testing, Trial Run, Pre-commissioning and Commissioning and Performance Guarantee Test shall be complete within the period specified above. The Taking-Over Certificate will be issued upon successful completion of the Performance Guarantee Test and rectification of any defects observed during this period.</p> <p>The Contractor shall commence the Operation and Maintenance services immediately after successful commissioning and guarantee tests of the Treatment Plant and Taking over by the Employer. The Works will be handed over back to the Contractor for the purpose of Operation and Maintenance. After completion, commissioning and guarantee tests, the contractor shall under take Operation and Maintenance for a period of 60 (sixty) months. This period includes defect liability period.</p>
11.	Contract Price
11.2	The Contract Price shall be adjusted in accordance with the provisions of the Appendix 2 (Price Adjustment) to the Contract Agreement.
13.	Securities
13.3.1	The amount of Performance Security, as a percentage of the Contract Price for the Facility or for the part of the Facility for which a separate Time for Completion is provided, shall be: Ten percent (10%) which should be furnished in two separate Forms for work contract and for O&M, each for 10% of the respective amount.
13.3.2	The Performance Security shall be in the form of the Unconditioned Bank Guarantee as per form included in Section IX, Contract Forms, issued by Nationalized or Scheduled Bank located in India or a foreign bank through a correspondent bank located in India and acceptable to the Employer. The issuing branch of such bank shall be located in India, and the bank guarantee shall, if invoked, be encashable when presented in the branch office of such bank located in Guwahati, Assam, India. When providing such security to the Employer, the Contractor shall notify the Employer's Representative of so doing.
13.3.3	The Performance Security shall be reduced to ten percent (10%) of the value of the component covered by the extended defect liability to cover the Contractor's extended defect liability in accordance with the provision in the PC, pursuant to GC Sub-Clause 27.10

14.	<p>Taxes and Duties</p> <p>14.2(a) Schedule-I to be read as Schedule IIA</p> <p>14.2(b) Schedule-I and Schedule-II to be read as Schedule IIA and Schedule IIB, respectively.</p> <p>14.2 Add the following para at the end</p> <p>On application from the contractor in stipulated format, "Guwahati Metropolitan Development Authority, Government of Assam will issue essentiality certificate under GOI notification No. 108/95 and 84/97 which will assist the Contractor to obtain any lawful exemptions from payment of Excise Duty or Import Duty on Plant and Materials, which are to be incorporated as a part of the Permanent Works. The Certificate will be issued in a prescribed format, which certifies the estimated quantities of materials that are to be incorporated into the permanent works. The responsibility for obtaining any such exemptions from Competent Authority will remain with the supplier / Contractor and the GMDA, Government of Assam, India shall not in any way be responsible for admissibility of the claims or eligibility of the supplier / Contractor."</p>
17	<p>Representatives</p> <p><u>Add the following text at the end of Sub-Clause 17.1:</u></p> <p>17.1.1 Project Manager's Duties and Authority</p> <p>The Project Manager shall carry out the duties specified in the Contract. The Project Manager shall have no authority to amend the Contract.</p> <p>The Project Manager may exercise the authority specified in or necessarily to be implied from the Contract. If the Employer's Representative is required, under the terms of his appointment by the Employer, to obtain the specific approval of the Employer before exercising such authority, such requirements shall be as stated in subsequent paragraph. Any requisite approval shall be deemed to have been given by the Employer for any such authority exercised by the Project Manager.</p> <p>Except as expressly stated in the Conditions of Contract, the Project Manager shall have no authority to relieve the Contractor of any of his duties, obligations or responsibilities under the Contract. Any proposal, inspection, examination, testing, consent, approval or similar act by the Project Manager (including absence of disapproval) shall not relieve the Contractor from any responsibility, including responsibility for his errors, omissions, discrepancies, and noncompliance with Sub-Clauses of Contractor's Undertaking and Technical Standards and Regulations.</p> <p>The Project Manager shall copy to the Employer all communications given or received by him in accordance with the Contract.</p> <p>"The Project Manager shall obtain the specific approval of the Employer before taking action under the following clauses of the Conditions of Contract.</p> <p>(a) approving Sub-contracting of any part of the Works under Sub-Clause 19.</p> <p>(b) certifying additional cost to the Contract if such a certification would adjust the Contract Price by more than 5% (five percent) of the Contract Price.</p> <p>(c) granting an extension of the time for completion under Sub-Clause 40.</p> <p>(d) suspending progress of part or all of the Works under Sub-Clause 41.</p> <p>(e) issuing a Taking-Over Certificate for the whole of the Works.</p> <p>(f) issuing a Completion Certificate (Works Contract Completion Certificate) for completion of the Works.</p> <p>(g) issuing a Final Contract Completion Certificate for completion of the Operations and Maintenance Services.</p> <p>(h) issuing a variation, if such a variation would increase the Contract Price by more than 5% (five percent).</p> <p>Notwithstanding the obligation to obtain approval as set out in the preceding paragraph if, in the opinion of the Project Manager, an emergency occurs affecting the safety of life or of the Works or of adjoining property, it may, without relieving the Contractor of any of its duties and responsibilities under the Contract, instruct the Contractor to execute all such Work or to do all such things as may, in the opinion of the Project Manager, be necessary to abate or reduce the risk. The Contractor shall forthwith comply with the instructions of the Project Manager despite the absence of approval of the Employer. The Project Manager shall determine the extra cost to the Contractor for carrying out of such instruction and obtain the Employer's approval for an addition to the Contract Price."</p>

20	<p>Design and Engineering</p> <p>Add the following sub clause at the end of existing sub clause 20.1:</p> <p>20.1.3 The Contractor shall carry out, and be responsible for, the design of the Works, including any site surveys, subsoil investigations, materials testing, and all other things necessary for proper planning and design.</p> <p>20.1.4 The Contractor will be fully responsible to ensure that its designs, drawings and construction documents satisfy the requirements for constructing Works that are complete and sufficient in all respects, and satisfy the objectives of providing completed facilities that can be operated efficiently and economically. No approval of, or failure to object to, the Contractor's designs, drawings or Construction Documents by the Project Manager will relieve the Contractor of its responsibility."</p>
22.	<p>Installation</p> <p>22.2 Labor</p> <p>22.2.5 Working Hours</p> <p>Normal working hours are: 8 AM to 6 PM. Night working with the permission of Engineer during construction phase.</p> <p>The Operation Maintenance work shall be carried out 24 hours a day, 7 days a week, for all the days of the year including national holidays.</p> <p>22.2.7 No separate payment for preparation and implementation of Health & Safety program shall be made and the cost of the same is deemed to be incidental to the work.</p>
24	<p>Initial Completion of the Facilities</p> <p>24.2: replace the existing sub-clause with the following:</p> <p>The Contractor shall arrange the operating and maintenance personnel and all raw materials, utilities, lubricants, chemicals, catalysts, facilities, services and other matters required for Commissioning.</p> <p>24.3: replace the existing sub-clause with the following:</p> <p>As soon as reasonably practicable, the Contractor shall commence Pre-commissioning of the Facilities or the relevant part thereof in preparation for Commissioning, subject to GC Sub-Clause 25.5.</p> <p>24.5: replace the existing sub-clause with the following:</p> <p>The Project Manager shall, within fourteen (14) days after receipt of the Contractor's notice under GC Sub-Clause 24.4, either issue an Initial Completion Certificate in the form specified in the Employer's Requirements (Forms and Procedures), stating that the Facilities or that part thereof have reached Initial Completion for starting commissioning, as of the date of the Contractor's notice under GC Sub-Clause 24.4, or notify the Contractor in writing of any defects and/or deficiencies.</p> <p>If the Project Manager notifies the Contractor of any defects and/or deficiencies, the Contractor shall then correct such defects and/or deficiencies, and shall repeat the procedure described in GC Sub-Clause 24.4.</p> <p>If the Project Manager is satisfied that the Facilities or that part thereof have reached Initial Completion, the Project Manager shall, within seven (7) days after receipt of the Contractor's repeated notice, issue an Initial Completion Certificate stating that the Facilities or that part thereof have reached Initial Completion for starting commissioning, as of the date of the Contractor's repeated notice.</p> <p>If the Project Manager is not so satisfied, then it shall notify the Contractor in writing of any defects and/or deficiencies within seven (7) days after receipt of the Contractor's repeated notice, and the above procedure shall be repeated.</p> <p>24.6: replace the existing sub-clause with the following:</p> <p>If the Project Manager fails to issue the Initial Completion Certificate and fails to inform the Contractor of any defects and/or deficiencies within fourteen (14) days after receipt of the Contractor's notice under GC Sub-Clause 24.4 or within seven (7) days after receipt of the Contractor's repeated notice under GC Sub-Clause 24.5, or if the Employer makes use of the Facilities or part thereof, then the Facilities or that part thereof shall be deemed to have reached Initial Completion as of the date of the Contractor's notice or repeated notice, or as of the Employer's use of the Facilities, as the case may be.</p> <p>24.7: replace the existing sub-clause with the following:</p> <p>As soon as possible after Initial Completion, the Contractor shall complete all outstanding minor</p>

	<p>items so that the Facilities are fully in accordance with the requirements of the Contract, failing which the Employer will undertake such completion and deduct the costs thereof from any monies owing to the Contractor.</p> <p>24.8: replace the existing sub-clause with the following:</p> <p>The Contractor shall be responsible for the care and custody of the Facilities or the relevant part thereof, together with the risk of loss or damage thereto, until, taken over by the Employer upon successful completion of commissioning and until Completion Certificate / Operational Acceptance Certificate is issued by the Employer, and shall thereafter take over the Facilities or the relevant part thereof.</p>
25.	Commissioning and Operational Acceptance
	<p>Replace the entire text of Sub-Clause 25.1 with the following:</p> <p>25.1 Commissioning</p> <p>25.1.1 Commissioning of the Facilities or any part thereof shall be commenced by the Contractor immediately after issue of the Initial Completion Certificate by the Project Manager, pursuant to GCC Sub-Clause 24.5, or immediately after the date of the deemed Completion, under GCC Sub-Clause 24.6.</p> <p>25.1.2 The Contractor shall arrange the operating and maintenance personnel and all raw materials, utilities, lubricants, chemicals, catalysts, facilities, services and other matters required for Commissioning.</p> <p>25.1.3 In accordance with the requirements of the Contract, the Contractor's and Project Manager's advisory personnel shall attend the Commissioning, including the Guarantee Test, and shall advise and assist the Contractor.</p> <p>25.2.2 The Guarantee Test of the Facilities shall be successfully completed within 1 (One) month from the date of Initial Completion.</p>
26.	Completion Time Guarantee
	<p>26.2 Applicable rate for liquidated damages: 0.05% of Contract price per day</p> <p>Maximum deduction for liquidated damages: 10% of Contract price.</p>
	<p>26.3 Applicable (amount or rate) for the bonus for early Completion: No bonus will be given for earlier Completion of the Facilities or part thereof.</p>
27.	Defect Liability
	Sub-Clause 27.10 : Not Applicable
30.	Limitation of Liability
	30.1 (b) The multiplier of the Contract Price is: 1.0
34	Insurance
	<p>Add following new sub-clause at the end of sub-clause 34.1:</p> <p>34.1(h) Covering physical loss or damage to the Facilities at the Site, occurring during period of Operation and Maintenance of the facilities with an extended maintenance coverage for Contractor's liability in respect of any loss or damage occurring during the Operation and Maintenance period.</p>
45.	Disputes and Arbitration
	<p>45.1 The DB shall be appointed within 28 days after the Effective Date.</p> <p>The DB shall be Three Members.</p> <p>List of potential DB members is: None</p>
	45.2 Appointment (if not agreed) to be made by: The Commissioner & Secretary, Guwahati Development Department.
	<p>45.5 Arbitration:</p> <p>Any dispute not settled amicably and in respect of which the DB's decision (if any) has not become final and binding shall be finally settled by arbitration. The aggrieved party may approach the Indian Council of Arbitration, within 30 days of the date of the decision by</p>

DR, for settlement of dispute or difference by the sole arbitrator to be appointed by the appropriate authority of the said council. The settlement of dispute by arbitration shall be in accordance with the following provisions:

1. **Selection of Arbitrators:** Each dispute submitted by a Party to arbitration shall be heard by a sole arbitrator or an arbitration panel composed of three arbitrators, in accordance with the following provisions:
 - a. Where the Parties agree that the dispute concerns a technical matter, they may agree to appoint a sole arbitrator.
 - b. Where the Parties do not agree that the dispute concerns a technical matter, the Employer and the Contractor shall each appoint one arbitrator, and these two arbitrators shall jointly appoint a third arbitrator, who shall chair the arbitration panel.
2. **Rules of Procedures:** All rules will be based on The Indian Arbitration & Conciliation Act, 1996.
3. **Substitute Arbitrators:** If for any reason an arbitrator is unable to perform his function, a substitute shall be appointed in the same manner as the original arbitrator.
4. **Qualifications of Arbitrators:** The sole arbitrator or the third arbitrator appointed pursuant to paragraphs (a) and (b) above shall be an internationally recognized legal or technical expert with extensive experience in relation to the matter in dispute.
5. **Miscellaneous:** In any arbitration proceeding hereunder:
 - a. Proceedings shall, unless otherwise agreed by the Parties, be held in Guwahati;
 - b. The English language shall be the official language for all purposes; and

The decision of the sole arbitrator or of a majority of the arbitrators (or of the third arbitrator if there is no such majority) shall be final and binding and shall be enforceable in any court of competent jurisdiction, and the Parties hereby waive any objections to or claims of immunity in respect of such enforcement.

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Add this additional Clause**Final Contract Completion Certificate on Completion of the Operation and Maintenance Period**

On completion of the Operation and Maintenance Services of the Contractor, as certified by the Employer, the Contractor will hand over the Works and the Site back to the Employer, subject to the condition that all equipment shall be in good operating condition (fair wear and tear excepted), any necessary repairs to the civil, mechanical or electrical installations have been properly carried out, and any and all defects or damages arising from the design, workmanship, materials or operating and maintenance conditions have been remedied. Upon successful completion of the Contractor's obligations, the Employer shall take back the Works and the facilities and issue a Final Contract Completion Certificate accordingly."

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Completion of Operations and Maintenance Services

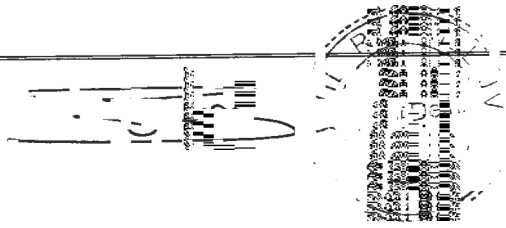
In order that the Works shall be in the condition required by the Contract upon expiry of the Operation and Maintenance Period and can be handed over to the Employer in good operating condition (fair wear and tear excepted), the Contractor shall:

- (a) ensure that all mechanical and electrical Plant and Equipment are fully functional and in good operating condition, suitable for the purposes for which they were intended;
- (b) ensure that all defects or damages which may have arisen from the design, workmanship, materials, or improper operating conditions or maintenance practices, have been identified and remedied;
- (c) provide replacements for all spare parts that were used/consumed during the Operations and Maintenance Period; all such replacements shall be new manufacturer's original equipment only; and
- (d) execute all required work of amendment, reconstruction, repair and remedying defects or damage as may be instructed by the Employer.

All such work shall be executed by the Contractor at his own cost before handing over the facilities. In the event that the Contractor fails to carry out the necessary remedial works, the Employer shall notify the Contractor accordingly, and proceed in accordance with the provisions. Any costs incurred by the Employer in so doing shall be recoverable from the Contractor and will become a debt due and payable by the Contractor to the Employer and the Employer may, at his sole discretion, recover such amount by invoking the Contractor's bank guarantee provided as a performance security

	<p>The Contract shall not be considered to be completed until the Final Contract Completion Certificate has been signed by the Employer and delivered to the Contractor, stating the date upon which the Contractor has completed his operation and maintenance obligations to the Employer's satisfaction. The Final Contract Completion Certificate shall be given by the Employer's by the date 28 days after expiry of the Operation and Maintenance Period, or as soon after such date as the Contractor has completed his obligations.</p> <p>Only the Final Contract Completion Certificate shall be deemed to constitute final certification that the Contractor has satisfactorily fulfilled all of his obligations under the Contract.”</p>
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General Conditions (GC)



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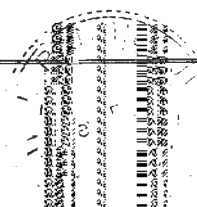
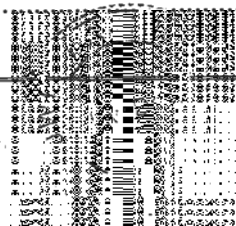


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General Conditions

A. Contract and Interpretation

1. Definitions

1.1 The following words and expressions shall have the meanings hereby assigned to them:

“Contract” means the Contract Agreement entered into between the Employer and the Contractor, together with the Contract Documents referred to therein; they shall constitute the Contract, and the term “the Contract” shall in all such documents be construed accordingly.

“Contract Documents” means the documents listed in Article 1.1 (Contract Documents) of the Contract Agreement (including any amendments thereto).

“GC” means the General Conditions hereof.

“PC” means the Particular Conditions.

“day” means calendar day .

“year” means 365 days.

“month” means calendar month.

“Party” means the Employer or the Contractor, as the context requires, and “Parties” means both of them.

“Employer” means the person **named as such in the PC** and includes the legal successors or permitted assigns of the Employer.

“Project Manager” means the person appointed by the Employer in the manner provided in GC Sub-Clause 17.1 (Project Manager) hereof and **named as such in the PC** to perform the duties delegated by the Employer.

“Contractor” means the person(s) whose bid to perform the Contract has been accepted by the Employer and is named as Contractor in the Contract Agreement, and includes the legal successors or permitted assigns of the Contractor.

“Contractor’s Representative” means any person nominated by the Contractor and approved by the Employer in the manner provided in GC Sub-Clause 17.2 (Contractor’s Representative and Construction Manager) hereof to perform the duties delegated by the Contractor.

“Construction Manager” means the person appointed by the Contractor’s Representative in the manner provided in GC Sub-Clause 17.2.4.

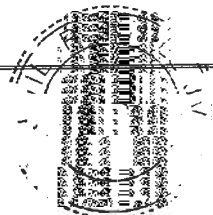
“Subcontractor,” including manufacturers, means any person to whom execution of any part of the Facilities, including preparation of any design or supply of any Plant, is sub-contracted directly or indirectly by the Contractor, and includes its legal successors or permitted assigns.

“Dispute Board” (DB) means the person or persons named as such in the PC appointed by agreement between the Employer and the Contractor to make a decision with respect to any dispute or difference between the Employer and the Contractor referred to him or her by the Parties pursuant to GC Sub-Clause 45.1 (Dispute Board) hereof.

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“JICA” means Japan International Cooperation Agency.

“Contract Price” means the sum specified in Article 2.1 (Contract Price) of the Contract Agreement, subject to such additions and adjustments thereto or deductions therefrom, as may be made pursuant to the Contract.

“Facilities” means the Plant to be supplied and installed, as well as all the Installation Services to be carried out by the Contractor under the Contract.

“Plant” means permanent plant, equipment, machinery, apparatus, materials, articles and things of all kinds to be provided and incorporated in the Facilities by the Contractor under the Contract (including the spare parts to be supplied by the Contractor under GC Sub-Clause 7.3 hereof), but does not include Contractor’s Equipment.

“Installation Services” means all those services ancillary to the supply of the Plant for the Facilities, to be provided by the Contractor under the Contract, such as transportation and provision of marine or other similar insurance, inspection, expediting, site preparation works (including the provision and use of Contractor’s Equipment and the supply of all construction materials required), installation, testing, precommissioning, commissioning, operations, maintenance, the provision of operations and maintenance manuals, training, etc... as the case may require.

“Works” means the Permanent Works and the Temporary Works, or either of them as appropriate.

“Contractor’s Equipment” means all facilities, equipment, machinery, tools, apparatus, appliances or things of every kind required in or for installation, completion and maintenance of Facilities that are to be provided by the Contractor, but does not include Plant, or other things intended to form or forming part of the Facilities.

“Country of Origin” means the countries and territories eligible under the rules of JICA as further **elaborated in the PC.**

“Site” means the land and other places upon which the Facilities are to be installed, and such other land or places as may be specified in the Contract as forming part of the Site.

“Effective Date” means the date of fulfillment of all conditions stated in Article 3 (Effective Date) of the Contract Agreement, from which the Time for Completion shall be counted.

“Time for Completion” means the time within which Completion of the Facilities as a whole (or of a part of the Facilities where a separate Time for Completion of such part has been prescribed) is to be attained, as referred to in GC Clause 8 and in accordance with the relevant provisions of the Contract.

“Completion” means that the Facilities (or a specific part thereof where specific parts are specified in the Contract) have been completed operationally and structurally and put in a tight and clean condition, that all work in respect of Precommissioning of the Facilities or such specific part thereof has been completed, and that the Facilities or specific part thereof are ready for Commissioning as provided in GC Clause 24 (Completion of the Facilities) hereof.

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“Precommissioning” means the testing, checking and other requirements specified in the Employer’s Requirements that are to be carried out by the Contractor in preparation for Commissioning as provided in GC Clause 24 (Completion of the Facilities) hereof.

“Commissioning” means operation of the Facilities or any part thereof by the Contractor following Completion, which operation is to be carried out by the Contractor as provided in GC Sub-Clause 25.1 (Commissioning) hereof, for the purpose of carrying out Guarantee Test(s).

“Guarantee Test(s)” means the test(s) specified in the Employer’s Requirements to be carried out to ascertain whether the Facilities or a specified part thereof is able to attain the Functional Guarantees specified in the Appendix to the Contract Agreement titled Functional Guarantees, in accordance with the provisions of GC Sub-Clause 25.2 (Guarantee Test) hereof.

“Operational Acceptance” means the acceptance by the Employer of the Facilities (or any part of the Facilities where the Contract provides for acceptance of the Facilities in parts), which certifies the Contractor’s fulfillment of the Contract in respect of Functional Guarantees of the Facilities (or the relevant part thereof) in accordance with the provisions of GC Clause 28 (Functional Guarantees) hereof and shall include deemed acceptance in accordance with GC Clause 25 (Commissioning and Operational Acceptance) hereof.

“Defect Liability Period” means the period of validity of the warranties given by the Contractor commencing at Completion of the Facilities or a part thereof, during which the Contractor is responsible for defects with respect to the Facilities (or the relevant part thereof) as provided in GC Clause 27 (Defect Liability) hereof.

- 2. Contract Documents** 2.1 Subject to Article 1.2 (Order of Precedence) of the Contract Agreement, all documents forming part of the Contract (and all parts thereof) are intended to be correlative, complementary and mutually explanatory. The Contract shall be read as a whole.
- 3. Interpretation** 3.1 In the Contract, except where the context requires otherwise:
- (a) words indicating one gender include all genders;
 - (b) words indicating the singular also include the plural and words indicating the plural also include the singular;
 - (c) provisions including the word “agree,” “agreed,” or “agreement” require the agreement to be recorded in writing;
 - (d) the word “tender” is synonymous with “bid,” “tenderer,” with “bidder,” and “tender documents” with “bidding documents,” and
 - (e) “written” or “in writing” means hand-written, type-written, printed or electronically made, and resulting in a permanent record.

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The marginal words and other headings shall not be taken into consideration in the interpretation of these Conditions.

3.2 Incoterms

Unless inconsistent with any provision of the Contract, the

meaning of any trade term and the rights and obligations of Parties thereunder shall be as prescribed by *Incoterms*.

Incoterms means international rules for interpreting trade terms published by the International Chamber of Commerce (latest edition), 38 Cours Albert 1^{er}, 75008 Paris, France.

3.4 Entire Agreement

Subject to GC Sub-Clause 16.4 hereof, the Contract constitutes the entire agreement between the Employer and Contractor with respect to the subject matter of Contract and supersedes all communications, negotiations and agreements (whether written or oral) of Parties with respect thereto made prior to the date of Contract.

3.5 Amendment

No amendment or other variation of the Contract shall be effective unless it is in writing, is dated, expressly refers to the Contract, and is signed by a duly authorized representative of each Party hereto.

3.6 Independent Contractor

The Contractor shall be an independent contractor performing the Contract. The Contract does not create any agency, partnership, joint venture or other joint relationship between the Parties hereto. Subject to the provisions of the Contract, the Contractor shall be solely responsible for the manner in which the Contract is performed. All employees, representatives or Subcontractors engaged by the Contractor in connection with the performance of the Contract shall be under the complete control of the Contractor and shall not be deemed to be employees of the Employer, and nothing contained in the Contract or in any subcontract awarded by the Contractor shall be construed to create any contractual relationship between any such employees, representatives or Subcontractors and the Employer.

3.7 Non-Waiver

3.7.1 Subject to GC Sub-Clause 3.7.2 below, no relaxation, forbearance, delay or indulgence by either Party in enforcing any of the terms and conditions of the Contract or the granting of time by either Party to the other shall prejudice, affect or restrict the rights of that Party under the Contract, nor shall any waiver by either Party of any breach of Contract operate as waiver of any subsequent or continuing breach of Contract.

3.7.2 Any waiver of a Party's rights, powers or remedies under the Contract must be in writing, must be dated and signed by an authorized representative of the Party granting such waiver, and must specify the right and the extent to which it is being waived.



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3.8 Severability

If any provision or condition of the Contract is prohibited or rendered invalid or unenforceable, such prohibition, invalidity or unenforceability shall not affect the validity or enforceability of any other provisions and conditions of the Contract.

3.9 Country of Origin

"Origin" means the place where the plant and component parts

thereof are mined, grown, produced or manufactured, and from which the services are provided. Plant components are produced when, through manufacturing, processing, or substantial or major assembling of components, a commercially recognized product results that is substantially in its basic characteristics or in purpose or utility from its components.

- 4. Communications**
- 4.1 Wherever these Conditions provide for the giving or issuing of approvals, certificates, consents, determinations, notices, requests and discharges, these communications shall be:
- in writing and delivered against receipt; and
 - delivered, sent or transmitted to the address for the recipient's communications as stated in the Contract Agreement.

When a certificate is issued to a Party, the certifier shall send a copy to the other Party. When a notice is issued to a Party, by the other Party or the Project Manager, a copy shall be sent to the Project Manager or the other Party, as the case may be.

- 5. Law and Language**
- 5.1 The Contract shall be governed by and interpreted in accordance with laws of the country **specified in the PC.**
- 5.2 The ruling language of the Contract shall be that **stated in the PC.**
- 5.3 The language for communications shall be the ruling language unless otherwise **stated in the PC.**
- 6. Fraud and Corruption**
- 6.1 If the Employer determines that the Contractor and/or its subcontractors has engaged in corrupt, fraudulent, collusive coercive or obstructive practices, in competing for or in executing the Contract, then the Employer may, after giving fourteen (14) days notice to the Contractor, terminate the Contractor's employment under the Contract and expel him from the Site, and the provisions of Clause 42 shall apply as if such expulsion had been made under Sub-Clause 42.2.1 (c).
- 6.2 Should any employee of the Contractor be determined to have engaged in corrupt, fraudulent, collusive, coercive or obstructive practice during the execution of the Works, then that employee shall be removed in accordance with GC Sub-Clause 17.2.5 and 17.2.6.

B. Subject Matter of Contract

- 7. Scope of Facilities**
- 7.1 Unless otherwise expressly limited in the Employer's Requirements, the Contractor's obligations cover the provision of all Plant and the performance of all Installation Services required for the design, and the manufacture (including procurement, quality assurance, construction, installation, associated civil works, Precommissioning and delivery) of the Plant, and the installation, completion and commissioning of the Facilities in accordance with the plans, procedures, specifications, drawings, codes and any other documents as specified in the Section, Employer's Requirements. Such specifications include, but are not limited to, the provision of supervision and engineering services; the supply of labor, materials, equipment, spare parts (as specified in GC Sub-Clause 7.3 below) and accessories; Contractor's Equipment; construction utilities and supplies; temporary materials, structures and facilities; transportation (including, without limitation, unloading and hauling to, from and at the Site); and

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storage, except for those supplies, Works and services that will be provided or performed by the Employer, as set forth in the Appendix to the Contract Agreement titled Scope of Works and Supply by the Employer.

7.2 The Contractor shall, unless specifically excluded in the Contract, perform all such work and/or supply all such items and materials not specifically mentioned in the Contract but that can be reasonably inferred from the Contract as being required for attaining Completion of the Facilities as if such work and/or items and materials were expressly mentioned in the Contract.

7.3 In addition to the supply of Mandatory Spare Parts included in the Contract, the Contractor agrees to supply spare parts required for the operation and maintenance of the Facilities for the period **specified in the PC** and the provisions, if any, **specified in the PC**. However, the identity, specifications and quantities of such spare parts and the terms and conditions relating to the supply thereof are to be agreed between the Employer and the Contractor, and the price of such spare parts shall be that given in Price Schedule No. 6, which shall be added to the Contract Price. The price of such spare parts shall include the purchase price therefor and other costs and expenses (including the Contractor's fees) relating to the supply of spare parts.

8. Time for Commencement and Completion

8.1 The Contractor shall commence work on the Facilities within the period **specified in the PC** and without prejudice to GC Sub-Clause 26.2 hereof, the Contractor shall thereafter proceed with the Facilities in accordance with the time schedule specified in the Appendix to the Contract Agreement titled Time Schedule.

8.2 The Contractor shall attain Completion of the Facilities or of a part where a separate time for Completion of such part is specified in the Contract, within the time **stated in the PC** or within such extended time to which the Contractor shall be entitled under GC Clause 40 hereof.

9. Contractor's Responsibilities

9.1 The Contractor shall design, manufacture including associated purchases and/or subcontracting, install and complete the Facilities in accordance with the Contract. When completed, the Facilities should be fit for the purposes for which they are intended as defined in the Contract.

9.2 The Contractor confirms that it has entered into this Contract on the basis of a proper examination of the data relating to the Facilities including any data as to boring tests provided by the Employer, and on the basis of information that the Contractor could have obtained from a visual inspection of the Site if access thereto was available and of other data readily available to it relating to the Facilities as of the date twenty-eight (28) days prior to bid submission. The Contractor acknowledges that any failure to acquaint itself with all such data and information shall not relieve its responsibility for properly estimating the difficulty or cost of successfully performing the Facilities.

9.3 The Contractor shall acquire and pay for all permits, approvals and/or licenses from all local, state or national government authorities or public service undertakings in the country where the Site is located which such authorities or undertakings require the Contractor to obtain in its name and which are

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necessary for the performance of the Contract, including, without limitation, visas for the Contractor's and Subcontractor's personnel and entry permits for all imported Contractor's Equipment. The Contractor shall acquire all other permits, approvals and/or licenses that are not the responsibility of the Employer under GC Sub-Clause 10.3 hereof and that are necessary for the performance of the Contract.

- 9.4 The Contractor shall comply with all laws in force in the country where the Facilities are to be implemented. The laws will include all local, state, national or other laws that affect the performance of the Contract and bind upon the Contractor. The Contractor shall indemnify and hold harmless the Employer from and against any and all liabilities, damages, claims, fines, penalties and expenses of whatever nature arising or resulting from the violation of such laws by the Contractor or its personnel, including the Subcontractors and their personnel, but without prejudice to GC Sub-Clause 10.1 hereof.
- 9.5 Any Plant and Installation Services that will be incorporated in or be required for the Facilities and other supplies shall have their origin as specified under GC Clause 1 (Country of Origin). Any subcontractors retained by the Contractor shall be from a country as specified in GC Clause 1 (Country of Origin).
- 9.6 If the Contractor is a joint venture, or association (JVA) of two or more persons, all such persons shall be jointly and severally bound to the Employer for the fulfillment of the provisions of the Contract, and shall designate one of such persons to act as a leader with authority to bind the JVA. The composition or the constitution of the JVA shall not be altered without the prior consent of the Employer.

10. Employer's Responsibilities

- 10.1 All information and/or data to be supplied by the Employer as described in the Appendix to the Contract Agreement titled Scope of Works and Supply by the Employer, shall be deemed to be accurate, except when the Employer expressly states otherwise.
- 10.2 The Employer shall be responsible for acquiring and providing legal and physical possession of the Site and access thereto, and for providing possession of and access to all other areas reasonably required for the proper execution of the Contract, including all requisite rights of way, as specified in the Appendix to the Contract Agreement titled Scope of Works and Supply by the Employer. The Employer shall give full possession of and accord all rights of access thereto on or before the date(s) specified in that Appendix.

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The Employer shall acquire and pay for all permits, approvals and/or licenses from all local, state or national government authorities or public service undertakings in the country where the Site is located which (a) such authorities or undertakings require the Employer to obtain in the Employer's name, (b) are necessary for the execution of the Contract, including those required for the performance by both the Contractor and the Employer of their respective obligations under the Contract, and (c) are specified in the Appendix (Scope of Works and Supply by the Employer).

- 10.4 If requested by the Contractor, the Employer shall use its best endeavors to assist the Contractor in obtaining in a timely and expeditious manner all permits, approvals and/or licenses

necessary for the execution of the Contract from all local, state or national government authorities or public service undertakings that such authorities or undertakings require the Contractor or Subcontractors or the personnel of the Contractor or Subcontractors, as the case may be, to obtain.

- 10.5 Unless otherwise specified in the Contract or agreed upon by the Employer and the Contractor, the Employer shall provide sufficient, properly qualified operating and maintenance personnel; shall supply and make available all raw materials, utilities, lubricants, chemicals, catalysts, other materials and facilities; and shall perform all work and services of whatsoever nature, including those required by the Contractor to properly carry out Precommissioning, Commissioning and Guarantee Tests, all in accordance with the provisions of the Appendix to the Contract Agreement titled Scope of Works and Supply by the Employer, at or before the time specified in the program furnished by the Contractor under GC Sub-Clause 18.2 hereof and in the manner thereupon specified or as otherwise agreed upon by the Employer and the Contractor.
- 10.6 The Employer shall be responsible for the continued operation of the Facilities after Completion, in accordance with GC Sub-Clause 24.8, and shall be responsible for facilitating the Guarantee Test(s) for the Facilities, in accordance with GC Sub-Clause 25.2.
- 10.7 All costs and expenses involved in the performance of the obligations under this GC Clause 10 shall be the responsibility of the Employer, save those to be incurred by the Contractor with respect to the performance of Guarantee Tests, in accordance with GC Sub-Clause 25.2.
- 10.8 In the event that the Employer shall be in breach of any of his obligations under this Clause, the additional cost incurred by the Contractor in consequence thereof shall be determined by the Project Manager and added to the Contract Price.

C. Payment

11. Contract Price

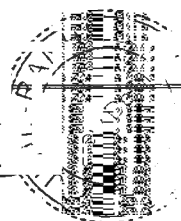
- 11.1 The Contract Price shall be as specified in Article 2 (Contract Price and Terms of Payment) of the Contract Agreement.
- 11.2 Unless an adjustment clause is **provided for in the PC**, the Contract Price shall be a firm lump sum not subject to any alteration, except in the event of a Change in the Facilities or as otherwise provided in the Contract.
- 11.3 Subject to GC Sub-Clauses 9.2, 10.1 and 35 hereof, the Contractor shall be deemed to have satisfied itself as to the correctness and sufficiency of the Contract Price, which shall, except as otherwise provided for in the Contract, cover all its obligations under the Contract.

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12. Terms of Payment

- 12.1 The Contract Price shall be paid as specified in Article 2 (Contract Price and Terms of Payment) of the Contract Agreement and in the Appendix to the Contract Agreement titled Terms and Procedures of Payment, which also outlines the procedures to be followed in making application for and processing payments.
- 12.2 No payment made by the Employer herein shall be deemed to constitute acceptance by the Employer of the Facilities or any

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part(s) thereof.

- 12.3 In the event that the Employer fails to make any payment by its respective due date or within the period set forth in the Contract, the Employer shall pay to the Contractor interest on the amount of such delayed payment at the rate(s) shown in the Appendix to the Contract Agreement titled Terms and Procedures of Payment, for the period of delay until payment has been made in full, whether before or after judgment or arbitration award.
- 12.4 The currency or currencies in which payments are made to the Contractor under this Contract shall be specified in the Appendix to the Contract Agreement titled Terms and Procedures of Payment, subject to the general principle that payments will be made in the currency or currencies in which the Contract Price has been stated in the Contractor's bid.

13. Securities

13.1 Issuance of Securities

The Contractor shall provide the securities specified below in favor of the Employer at the times, and in the amount, manner and form specified below.

13.2 Advance Payment Security

13.2.1 The Contractor shall, within twenty-eight (28) days of the notification of contract award, provide a security in an amount equal to the advance payment calculated in accordance with the Appendix to the Contract Agreement titled Terms and Procedures of Payment, and in the same currency or currencies.

13.2.2 The security shall be in the form provided in the Bidding Documents or in another form acceptable to the Employer. The amount of the security shall be reduced in proportion to the value of the Facilities executed by and paid to the Contractor from time to time, and shall automatically become null and void when the full amount of the advance payment has been recovered by the Employer. The security shall be returned to the Contractor immediately after its expiration.

13.3 Performance Security

13.3.1 The Contractor shall, within twenty-eight (28) days of the notification of contract award, provide a security for the due performance of the Contract in the amount **specified in the PC.**

13.3.2 The Performance Security shall be denominated in the currency or currencies of the Contract, or in a freely convertible currency acceptable to the Employer, and shall be in the form provided in Section IX, Contract Forms, corresponding to the type of bank guarantee stipulated by the Employer in the PC, or in another form acceptable to the Employer.

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13.3.3 **Unless otherwise specified in the PC,** the security shall be reduced by half on the date of the Operational Acceptance. The Security shall become null and void, or shall be reduced pro rata to the Contract Price of a part of the Facilities for which a separate Time for Completion is provided, five hundred and forty (540) days after Completion of the Facilities or three hundred and sixty

five (365) days after Operational Acceptance of the Facilities, whichever occurs first; provided, however, that if the Defects Liability Period has been extended on any part of the Facilities pursuant to GC Sub-Clause 27.8 hereof, the Contractor shall issue an additional security in an amount proportionate to the Contract Price of that part. The security shall be returned to the Contractor immediately after its expiration, provided, however, that if the Contractor, pursuant to GC Sub-Clause 27.10, is liable for an extended defect liability obligation, the Performance Security shall be extended for the period specified in the PC pursuant to GC Sub-Clause 27.10 and up to the amount specified in the PC.

13.3.4 The Employer shall not make a claim under the Performance Security, except for amounts to which the Employer is entitled under the Contract. The Employer shall indemnify and hold the Contractor harmless against and from all damages, losses and expenses (including legal fees and expenses) resulting from a claim under the Performance Security to the extent to which the Employer was not entitled to make the claim.

14. Taxes and Duties

14.1 Except as otherwise specifically provided in the Contract, the Contractor shall bear and pay all taxes, duties, levies and charges assessed on the Contractor, its Subcontractors or their employees by all municipal, state or national government authorities in connection with the Facilities in and outside of the country where the Site is located.

14.2 Notwithstanding GC Sub-Clause 14.1 above, the Employer shall bear and promptly pay:

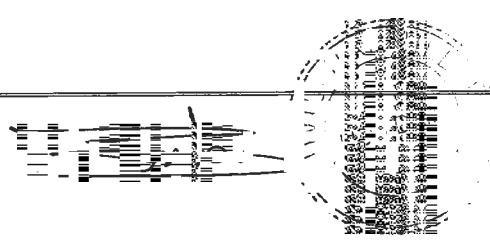
- (a) all customs and import duties for the Plant specified in Price Schedule No. 1; and
- (b) other domestic taxes such as, sales tax and value added tax (VAT) on the Plant specified in Price Schedules No. 1 and No. 2 and that are to be incorporated into the Facilities, and on the finished goods, imposed by the law of the country where the Site is located.

14.3. If any tax exemptions, reductions, allowances or privileges may be available to the Contractor in the country where the Site is located, the Employer shall use its best endeavors to enable the Contractor to benefit from any such tax savings to the maximum allowable extent.

14.4 For the purpose of the Contract, it is agreed that the Contract Price specified in Article 2 (Contract Price and Terms of Payment) of the Contract Agreement is based on the taxes, duties, levies and charges prevailing at the date twenty-eight (28) days prior to the date of bid submission in the country where the Site is located (hereinafter called "Tax" in this GC Sub-Clause 14.4). If any rates of Tax are increased or decreased, a new Tax is introduced, an existing Tax is abolished, or any change in interpretation or application of any Tax occurs in the course of the performance of Contract, which was or will be assessed on the Contractor, Subcontractors or their employees in connection with performance of the Contract, an equitable adjustment of the Contract Price shall be made to fully take into account any such change by addition to the Contract Price or deduction therefrom, as the case may be,

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in accordance with GC Clause 36 hereof.

D. Intellectual Property

15. License/Use of Technical Information

- 15.1 For the operation and maintenance of the Plant, the Contractor hereby grants a non-exclusive and non-transferable license (without the right to sub-license) to the Employer under the patents, utility models or other industrial property rights owned by the Contractor or by a third Party from whom the Contractor has received the right to grant licenses thereunder, and shall also grant to the Employer a non-exclusive and non-transferable right (without the right to sub-license) to use the know-how and other technical information disclosed to the Employer under the Contract. Nothing contained herein shall be construed as transferring ownership of any patent, utility model, trademark, design, copyright, know-how or other intellectual property right from the Contractor or any third Party to the Employer.
- 15.2 The copyright in all drawings, documents and other materials containing data and information furnished to the Employer by the Contractor herein shall remain vested in the Contractor or, if they are furnished to the Employer directly or through the Contractor by any third Party, including suppliers of materials, the copyright in such materials shall remain vested in such third Party.

16. Confidential Information

- 16.1 The Employer and the Contractor shall keep confidential and shall not, without the written consent of the other Party hereto, divulge to any third Party any documents, data or other information furnished directly or indirectly by the other Party hereto in connection with the Contract, whether such information has been furnished prior to, during or following termination of the Contract. Notwithstanding the above, the Contractor may furnish to its Subcontractor(s) such documents, data and other information it receives from the Employer to the extent required for the Subcontractor(s) to perform its work under the Contract, in which event the Contractor shall obtain from such Subcontractor(s) an undertaking of confidentiality similar to that imposed on the Contractor under this GC Clause 16.
- 16.2 The Employer shall not use such documents, data and other information received from the Contractor for any purpose other than the operation and maintenance of the Facilities. Similarly, the Contractor shall not use such documents, data and other information received from the Employer for any purpose other than the design, procurement of Plant, construction or such other work and services as are required for the performance of the Contract.

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- 16.3 The obligation of a Party under GC Sub-Clauses 16.1 and 16.2 above, however, shall not apply to that information which
 - (a) now or hereafter enters the public domain through no fault of that Party
 - (b) can be proven to have been possessed by that Party at the time of disclosure and which was not previously obtained, directly or indirectly, from the other Party hereto
 - (c) otherwise lawfully becomes available to that Party from a third Party that has no obligation of confidentiality.

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- 16.4 The above provisions of this GC Clause 16 shall not in any way modify any undertaking of confidentiality given by either of the Parties hereto prior to the date of the Contract in respect of the Facilities or any part thereof.
- 16.5 The provisions of this GC Clause 16 shall survive termination, for whatever reason, of the Contract.

E. Execution of the Facilities

17. Representatives 17.1 Project Manager

If the Project Manager is not named in the Contract, then within fourteen (14) days of the Effective Date, the Employer shall appoint and notify the Contractor in writing of the name of the Project Manager. The Employer may from time to time appoint some other person as the Project Manager in place of the person previously so appointed, and shall give a notice of the name of such other person to the Contractor without delay. No such appointment shall be made at such a time or in such a manner as to impede the progress of work on the Facilities. Such appointment shall only take effect upon receipt of such notice by the Contractor. The Project Manager shall represent and act for the Employer at all times during the performance of the Contract. All notices, instructions, orders, certificates, approvals and all other communications under the Contract shall be given by the Project Manager, except as herein otherwise provided.

All notices, instructions, information and other communications given by the Contractor to the Employer under the Contract shall be given to the Project Manager, except as herein otherwise provided.

17.2 Contractor's Representative & Construction Manager

17.2.1 If the Contractor's Representative is not named in the Contract, then within fourteen (14) days of the Effective Date, the Contractor shall appoint the Contractor's Representative and shall request the Employer in writing to approve the person so appointed. If the Employer makes no objection to the appointment within fourteen (14) days, the Contractor's Representative shall be deemed to have been approved. If the Employer objects to the appointment within fourteen (14) days giving the reason therefor, then the Contractor shall appoint a replacement within fourteen (14) days of such objection, and the foregoing provisions of this GC Sub-Clause 17.2.1 shall apply thereto.

17.2.2 The Contractor's Representative shall represent and act for the Contractor at all times during the performance of the Contract and shall give to the Project Manager all the Contractor's notices, instructions, information and all other communications under the Contract.

All notices, instructions, information and all other communications given by the Employer or the Project Manager to the Contractor under the Contract shall be given to the Contractor's Representative or, in its absence, its deputy, except as herein otherwise provided.

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The Contractor shall not revoke the appointment of the Contractor's Representative without the Employer's prior written consent, which shall not be unreasonably withheld. If the Employer consents thereto, the Contractor shall appoint some other person as the Contractor's Representative, pursuant to the procedure set out in GC Sub-Clause 17.2.1.

17.2.3 The Contractor's Representative may, subject to the approval of the Employer which shall not be unreasonably withheld, at any time delegate to any person any of the powers, functions and authorities vested in him or her. Any such delegation may be revoked at any time. Any such delegation or revocation shall be subject to a prior notice signed by the Contractor's Representative, and shall specify the powers, functions and authorities thereby delegated or revoked. No such delegation or revocation shall take effect unless and until a copy thereof has been delivered to the Employer and the Project Manager.

Any act or exercise by any person of powers, functions and authorities so delegated to him or her in accordance with this GC Sub-Clause 17.2.3 shall be deemed to be an act or exercise by the Contractor's Representative.

17.2.4 From the commencement of installation of the Facilities at the Site until Completion, the Contractor's Representative shall appoint a suitable person as the Construction Manager. The Construction Manager shall supervise all work done at the Site by the Contractor and shall be present at the Site throughout normal working hours except when on leave, sick or absent for reasons connected with the proper performance of the Contract. Whenever the Construction Manager is absent from the Site, a suitable person shall be appointed to act as the Construction Manager's deputy.

17.2.5 The Employer may by notice to the Contractor object to any representative or person employed by the Contractor in the execution of the Contract who, in the reasonable opinion of the Employer, may behave inappropriately, may be incompetent or negligent, or may commit a serious breach of the Site regulations provided under GC Sub-Clause 22.4. The Employer shall provide evidence of the same, whereupon the Contractor shall remove such person from the Facilities.

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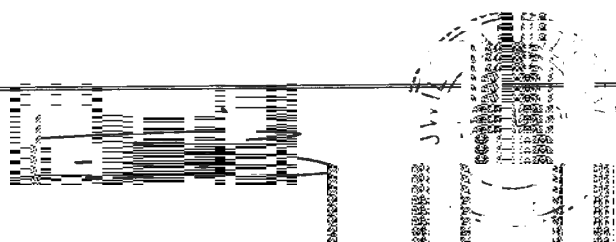
17.2.6 If any representative or person employed by the Contractor is removed in accordance with GC Sub-Clause 17.2.5, the Contractor shall, where required, promptly appoint a replacement.

18. Work Program

18.1 Contractor's Organization

The Contractor shall supply to the Employer and the Project Manager a chart showing the proposed organization to be established by the Contractor for carrying out work on the Facilities within twenty-one (21) days of the Effective Date. The chart shall include the identities of the key personnel and the curricula vitae of such key personnel to be employed shall be supplied together with the chart. The Contractor shall promptly inform the Employer and the Project Manager in writing of any revision or alteration of such an organization chart.

18.2 Program of Performance



Within twenty-eight (28) days after the Effective Date, the Contractor shall submit to the Project Manager a detailed program of performance of the Contract, made in a form acceptable to the Project Manager and showing the sequence in which it proposes to design, manufacture, transport, assemble, install and precommission the Facilities, as well as the date by which the Contractor reasonably requires that the Employer shall have fulfilled its obligations under the Contract so as to enable the Contractor to execute the Contract in accordance with the program and to achieve Completion, Commissioning and Acceptance of the Facilities in accordance with the Contract. The program so submitted by the Contractor shall accord with the Time Schedule included in the Appendix to the Contract Agreement titled Time Schedule, and any other dates and periods specified in the Contract. The Contractor shall update and revise the program as and when appropriate or when required by the Project Manager, but without modification in the Time for Completion specified in the PC pursuant to Sub-Clause 8.2 and any extension granted in accordance with GC Clause 40, and shall submit all such revisions to the Project Manager.

18.3 Progress Report

The Contractor shall monitor progress of all the activities specified in the program referred to in GC Sub-Clause 18.2 above, and supply a progress report to the Project Manager every month.

The progress report shall be in a form acceptable to the Project Manager and shall indicate: (a) percentage completion achieved compared with the planned percentage completion for each activity; and (b) where any activity is behind the program, giving comments and likely consequences and stating the corrective action being taken.

18.4 Progress of Performance

If at any time the Contractor's actual progress falls behind the program referred to in GC Sub-Clause 18.2, or it becomes apparent that it will so fall behind, the Contractor shall, at the request of the Employer or the Project Manager, prepare and submit to the Project Manager a revised program, taking into account the prevailing circumstances, and shall notify the Project Manager of the steps being taken to expedite progress so as to attain Completion of the Facilities within the Time for Completion under GC Sub-Clause 8.2, any extension thereof entitled under GC Sub-Clause 40.1, or any extended period as may otherwise be agreed upon between the Employer and the Contractor.

18.5 Procedures

The Contract shall be executed in accordance with the Contract Documents including the procedures given in the Forms and Procedures of the Employer's Requirements.

The Contractor may execute the Contract in accordance with its own standard project execution plans and procedures to the extent that they do not conflict with the provisions contained in the Contract.

19. Subcontracting

19.1 The Appendix to the Contract Agreement titled List of Major Items of Plant and Installation Services and List of Approved

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Subcontractors, specifies major items of supply or services and a list of approved Subcontractors against each item, including manufacturers. Insofar as no Subcontractors are listed against any such item, the Contractor shall prepare a list of Subcontractors for such item for inclusion in such list. The Contractor may from time to time propose any addition to or deletion from any such list. The Contractor shall submit any such list or any modification thereto to the Employer for its approval in sufficient time so as not to impede the progress of work on the Facilities. Such approval by the Employer for any of the Subcontractors shall not relieve the Contractor from any of its obligations, duties or responsibilities under the Contract.

- 19.2 The Contractor shall select and employ its Subcontractors for such major items from those listed in the lists referred to in GC Sub-Clause 19.1.
- 19.3 For items or parts of the Facilities not specified in the Appendix to the Contract Agreement titled List of Major Items of Plant and Installation Services and List of Approved Subcontractors, the Contractor may employ such Subcontractors as it may select, at its discretion.
- 19.4 Each sub-contract shall include provisions which would entitle the Employer to require the sub-contract to be assigned to the Employer under GC 19.5 (if and when applicable), or in event of termination by the Employer under GC 42.2.
- 19.5 If a sub-contractor's obligations extend beyond the expiry date of the relevant Defects Liability Period and the Project Manager, prior to that date, instructs the Contractor to assign the benefits of such obligations to the Employer, then the Contractor shall do so.

20. Design and Engineering

20.1 Specifications and Drawings

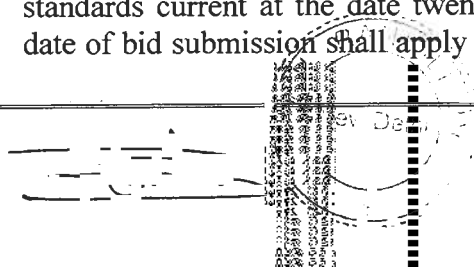
- 20.1.1 The Contractor shall execute the basic and detailed design and the engineering work in compliance with the provisions of the Contract, or where not so specified, in accordance with good engineering practice.

The Contractor shall be responsible for any discrepancies, errors or omissions in the specifications, drawings and other technical documents that it has prepared, whether such specifications, drawings and other documents have been approved by the Project Manager or not, provided that such discrepancies, errors or omissions are not because of inaccurate information furnished in writing to the Contractor by or on behalf of the Employer.

- 20.1.2 The Contractor shall be entitled to disclaim responsibility for any design, data, drawing, specification or other document, or any modification thereof provided or designated by or on behalf of the Employer, by giving a notice of such disclaimer to the Project Manager.

20.2 Codes and Standards

Wherever references are made in the Contract to codes and standards in accordance with which the Contract shall be executed, the edition or the revised version of such codes and standards current at the date twenty-eight (28) days prior to date of bid submission shall apply unless otherwise specified.



During Contract execution, any changes in such codes and standards shall be applied subject to approval by the Employer and shall be treated in accordance with GC Clause 39.

20.3 Approval/Review of Technical Documents by Project Manager

20.3.1 The Contractor shall prepare or cause its Subcontractors to prepare, and furnish to the Project Manager the documents listed in the Appendix to the Contract Agreement titled List of Documents for Approval or Review, for its approval or review as specified and in accordance with the requirements of GC Sub-Clause 18.2 (Program of Performance).

Any part of the Facilities covered by or related to the documents to be approved by the Project Manager shall be executed only after the Project Manager's approval thereof.

GC Sub-Clauses 20.3.2 through 20.3.7 shall apply to those documents requiring the Project Manager's approval, but not to those furnished to the Project Manager for its review only.

20.3.2 Within fourteen (14) days after receipt by the Project Manager of any document requiring the Project Manager's approval in accordance with GC Sub-Clause 20.3.1, the Project Manager shall either return one copy thereof to the Contractor with its approval endorsed thereon or shall notify the Contractor in writing of its disapproval thereof and the reasons therefor and the modifications that the Project Manager proposes.

If the Project Manager fails to take such action within the said fourteen (14) days, then the said document shall be deemed to have been approved by the Project Manager.

20.3.3 The Project Manager shall not disapprove any document, except on the grounds that the document does not comply with the Contract or that it is contrary to good engineering practice.

20.3.4 If the Project Manager disapproves the document, the Contractor shall modify the document and resubmit it for the Project Manager's approval in accordance with GC Sub-Clause 20.3.2. If the Project Manager approves the document subject to modification(s), the Contractor shall make the required modification(s), whereupon the document shall be deemed to have been approved.

20.3.5 If any dispute or difference occurs between the Employer and the Contractor in connection with or arising out of the disapproval by the Project Manager of any document and/or any modification(s) thereto that cannot be settled between the Parties within a reasonable period, then such dispute or difference may be referred to a Dispute Board for determination in accordance with GC Sub-Clause 45.1 hereof. If such dispute or difference is referred to a Dispute Board, the Project Manager shall give instructions as to

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whether and if so, how, performance of the Contract is to proceed. The Contractor shall proceed with the Contract in accordance with the Project Manager's instructions, provided that if the Dispute Board upholds the Contractor's view on the dispute and if the Employer has not given notice under GC Sub-Clause 45.3 hereof, then the Contractor shall be reimbursed by the Employer for any additional costs incurred by reason of such instructions and shall be relieved of such responsibility or liability in connection with the dispute and the execution of the instructions as the Dispute Board shall decide, and the Time for Completion shall be extended accordingly.

20.3.6 The Project Manager's approval, with or without modification of the document furnished by the Contractor, shall not relieve the Contractor of any responsibility or liability imposed upon it by any provisions of the Contract except to the extent that any subsequent failure results from modifications required by the Project Manager.

20.3.7 The Contractor shall not depart from any approved document unless the Contractor has first submitted to the Project Manager an amended document and obtained the Project Manager's approval thereof, pursuant to the provisions of this GC Sub-Clause 20.3.

If the Project Manager requests any change in any already approved document and/or in any document based thereon, the provisions of GC Clause 39 shall apply to such request.

21. Procurement

21.1 Plant

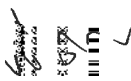
Subject to GC Sub-Clause 14.2, the Contractor shall procure and transport all Plant in an expeditious and orderly manner to the Site.

21.2 Employer-Supplied Plant

If the Appendix to the Contract Agreement titled Scope of Works and Supply by the Employer provides that the Employer shall furnish any specific items to the Contractor, the following provisions shall apply:

21.2.1 The Employer shall, at its own risk and expense, transport each item to the place on or near the Site as agreed upon by the Parties and make such item available to the Contractor at the time specified in the program furnished by the Contractor, pursuant to GC Sub-Clause 18.2, unless otherwise mutually agreed.

21.2.2 Upon receipt of such item, the Contractor shall inspect the same visually and notify the Project Manager of any detected shortage, defect or default. The Employer shall immediately remedy any shortage, defect or default, or the Contractor shall, if practicable and possible, at the request of the Employer, remedy such shortage, defect or default at the Employer's cost and expense. After inspection, such item shall fall under the care, custody and control of the Contractor. The provision of this GC Sub-Clause 21.2.2 shall apply to any item supplied to remedy any such shortage or default or to substitute for any defective item, or shall apply



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to defective items that have been repaired.

21.2.3 The foregoing responsibilities of the Contractor and its obligations of care, custody and control shall not relieve the Employer of liability for any undetected shortage, defect or default, nor place the Contractor under any liability for any such shortage, defect or default whether under GC Clause 27 or under any other provision of Contract.

21.3 Transportation

21.3.1 The Contractor shall at its own risk and expense transport all the materials and the Contractor's Equipment to the Site by the mode of transport that the Contractor judges most suitable under all the circumstances.

21.3.2 Unless otherwise provided in the Contract, the Contractor shall be entitled to select any safe mode of transport operated by any person to carry the materials and the Contractor's Equipment.

21.3.3 Upon dispatch of each shipment of materials and the Contractor's Equipment, the Contractor shall notify the Employer by telex, cable, facsimile or electronic means, of the description of the materials and of the Contractor's Equipment, the point and means of dispatch, and the estimated time and point of arrival in the country where the Site is located, if applicable, and at the Site. The Contractor shall furnish the Employer with relevant shipping documents to be agreed upon between the Parties.

21.3.4 The Contractor shall be responsible for obtaining, if necessary, approvals from the authorities for transportation of the materials and the Contractor's Equipment to the Site. The Employer shall use its best endeavors in a timely and expeditious manner to assist the Contractor in obtaining such approvals, if requested by the Contractor. The Contractor shall indemnify and hold harmless the Employer from and against any claim for damage to roads, bridges or any other traffic facilities that may be caused by the transport of the materials and the Contractor's Equipment to the Site.

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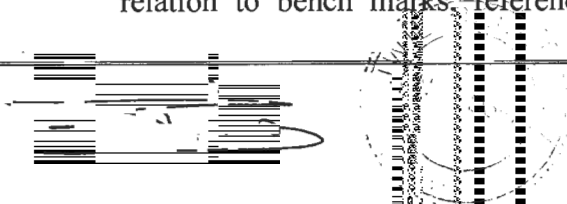
21.4 Customs Clearance

The Contractor shall, at its own expense, handle all imported materials and Contractor's Equipment at the point(s) of import and shall handle any formalities for customs clearance, subject to the Employer's obligations under GC Sub-Clause 14.2, provided that if applicable laws or regulations require any application or act to be made by or in the name of the Employer, the Employer shall take all necessary steps to comply with such laws or regulations. In the event of delays in customs clearance that are not the fault of the Contractor, the Contractor shall be entitled to an extension in the Time for Completion, pursuant to GC Clause 40.

22. Installation

22.1 Setting Out/Supervision

22.1.1 Bench Mark: The Contractor shall be responsible for the true and proper setting-out of the Facilities in relation to bench marks, reference marks and lines



provided to it in writing by or on behalf of the Employer.

If, at any time during the progress of installation of the Facilities, any error shall appear in the position, level or alignment of the Facilities, the Contractor shall forthwith notify the Project Manager of such error and, at its own expense, immediately rectify such error to the reasonable satisfaction of the Project Manager. If such error is based on incorrect data provided in writing by or on behalf of the Employer, the expense of rectifying the same shall be borne by the Employer.

22.1.2 Contractor’s Supervision: The Contractor shall give or provide all necessary superintendence during the installation of the Facilities, and the Construction Manager or its deputy shall be constantly on the Site to provide full-time superintendence of the installation. The Contractor shall provide and employ only technical personnel who are skilled and experienced in their respective callings and supervisory staff who are competent to adequately supervise the work at hand.

22.2 Labor:

22.2.1 Engagement of Staff and Labor

Except as otherwise stated in the Specification, the Contractor shall make arrangements for the engagement of all staff and labor, local or otherwise, and for their payment, housing, feeding and transport.

The Contractor shall provide and employ on the Site in the installation of the Facilities such skilled, semi-skilled and unskilled labor as is necessary for the proper and timely execution of the Contract. The Contractor is encouraged to use local labor that has the necessary skills.

The Contractor shall be responsible for obtaining all necessary permit(s) and/or visa(s) from the appropriate authorities for the entry of all labor and personnel to be employed on the Site into the country where the Site is located. The Employer will, if requested by the Contractor, use his best endeavors in a timely and expeditious manner to assist the Contractor in obtaining any local, state, national or government permission required for bringing in the Contractor’s personnel.

The Contractor shall at its own expense provide the means of repatriation to all of its and its Subcontractor’s personnel employed on the Contract at the Site to the place where they were recruited or to their domicile. It shall also provide suitable temporary maintenance of all such persons from the cessation of their employment on the Contract to the date programmed for their departure. In the event that the Contractor defaults in providing such means of transportation and temporary maintenance, the Employer may provide the same to such personnel and recover the cost of doing so from the Contractor.

22.2.2 Persons in the Service of Employer

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The Contractor shall not recruit, or attempt to recruit, staff and labor from amongst the Employer's Personnel.

22.2.3 Labor Laws

The Contractor shall comply with all the relevant labor Laws applicable to the Contractor's Personnel, including Laws relating to their employment, health, safety, welfare, immigration and emigration, and shall allow them all their legal rights.

The Contractor shall at all times during the progress of the Contract use its best endeavors to prevent any unlawful, riotous or disorderly conduct or behavior by or amongst its employees and the labor of its Subcontractors.

The Contractor shall, in all dealings with its labor and the labor of its Subcontractors currently employed on or connected with the Contract, pay due regard to all recognized festivals, official holidays, religious or other customs and all local laws and regulations pertaining to the employment of labor.

22.2.4 Rates of Wages and Conditions of Labor

The Contractor shall pay rates of wages, and observe conditions of labor, which are not lower than those established for the trade or industry where the work is carried out. If no established rates or conditions are applicable, the Contractor shall pay rates of wages and observe conditions which are not lower than the general level of wages and conditions observed locally by employers whose trade or industry is similar to that of the Contractor.

The Contractor shall inform the Contractor's Personnel about their liability to pay personal income taxes in the Country in respect of such of their salaries, wages and allowances as are chargeable under the Laws for the time being in force, and the Contractor shall perform such duties in regard to such deductions thereof as may be imposed on him by such Laws.

22.2.5 Working Hours

No Works shall be carried out on the Site on locally recognized days of rest, or outside the normal working hours **stated in the PC**, unless:

- (a) otherwise stated in the Contract,
- (b) the Project Manager gives consent, or
- (c) the work is unavoidable, or necessary for the protection of life or property or for the safety of the Works, in which case the Contractor shall immediately advise the Project Manager.

If and when the Contractor considers it necessary to carry out work at night or on public holidays so as to meet the Time for Completion and requests the Project Manager's consent thereto, the Project Manager shall not unreasonably withhold such consent.

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This Sub-Clause shall not apply to any work which is customarily carried out by rotary or double-shifts.

22.2.6 Facilities for Staff and Labor

Except as otherwise stated in the Specification, the Contractor shall provide and maintain all necessary accommodation and welfare facilities for the Contractor's Personnel. The Contractor shall also provide facilities for the Employer's Personnel as stated in the Specification.

The Contractor shall not permit any of the Contractor's Personnel to maintain any temporary or permanent living quarters within the structures forming part of the Permanent Works.

22.2.7 Health and Safety

The Contractor shall at all times take all reasonable precautions to maintain the health and safety of the Contractor's Personnel. In collaboration with local health authorities, the Contractor shall ensure that medical staff, first aid facilities, sick bay and ambulance service are available at all times at the Site and at any accommodation for Contractor's and Employer's Personnel, and that suitable arrangements are made for all necessary welfare and hygiene requirements and for the prevention of epidemics.

The Contractor shall appoint an accident prevention officer at the Site, responsible for maintaining safety and protection against accidents. This person shall be qualified for this responsibility, and shall have the authority to issue instructions and take protective measures to prevent accidents. Throughout the performance of the Contract, the Contractor shall provide whatever is required by this person to exercise this responsibility and authority.

The Contractor shall send to the Project Manager, details of any accident as soon as practicable after its occurrence. The Contractor shall maintain records and make reports concerning health, safety and welfare of persons, and damage to property, as the Engineer may reasonably require.

The Contractor shall throughout the contract (including the Defects Notification Period): (i) conduct Information, Education and Consultation Communication (IEC) campaigns, at least every other month, addressed to all the Site staff and labor (including all the Contractor's employees, all Sub-Contractors and Employer's and Project Manager's employees, and all truck drivers and crew making deliveries to Site for construction activities) and to the immediate local communities, concerning the risks, dangers and impact, and appropriate avoidance behavior with respect to Sexually Transmitted Diseases (STD)—or Sexually Transmitted Infections (STI) in general and HIV/AIDS in particular; (ii) provide male or female condoms for all Site staff and labor as appropriate; and (iii) provide for STI and HIV/AIDS screening, diagnosis, counseling and referral to a

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dedicated national STI and HIV/AIDS program, (unless otherwise agreed) of all Site staff and labor.

The Contractor shall include in the program to be submitted for the execution of the Facilities under Sub-Clause 18.2 an alleviation program for Site staff and labor and their families in respect of Sexually Transmitted Infections (STI) and Sexually Transmitted Diseases (STD) including HIV/AIDS. The STI, STD and HIV/AIDS alleviation program shall indicate when, how and at what cost the Contractor plans to satisfy the requirements of this Sub-Clause and the related specification. For each component, the program shall detail the resources to be provided or utilized and any related sub-contracting proposed. The program shall also include provision of a detailed cost estimate with supporting documentation. Payment to the Contractor for preparation and implementation of this program shall not exceed the Provisional Sum dedicated for this purpose.

22.2.8 Funeral Arrangements

In the event of the death of any of the Contractor's personnel or accompanying members of their families, the Contractor shall be responsible for making the appropriate arrangements for their return or burial, unless otherwise **specified in the PC**.

22.2.9 Records of Contractor's Personnel

The Contractor shall keep accurate records of the Contractor's personnel, including the number of each class of Contractor's Personnel on the Site and the names, ages, genders, hours worked and wages paid to all workers. These records shall be summarized on a monthly basis in a form approved by the Project Manager and shall be available for inspection by the Project Manager until the Contractor has completed all work.

22.2.10 Supply of Foodstuffs

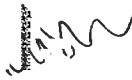
The Contractor shall arrange for the provision of a sufficient supply of suitable food as may be stated in the Specification at reasonable prices for the Contractor's Personnel for the purposes of or in connection with the Contract.

22.2.11 Supply of Water

The Contractor shall, having regard to local conditions, provide on the Site an adequate supply of drinking and other water for the use of the Contractor's Personnel.

22.2.12 Measures against Insect and Pest Nuisance

The Contractor shall at all times take the necessary precautions to protect the Contractor's Personnel employed on the Site from insect and pest nuisance, and to reduce their danger to health. The Contractor shall comply with all the regulations of the local health authorities, including use of appropriate insecticide.


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22.2.13 Alcoholic Liquor or Drugs

The Contractor shall not, otherwise than in accordance with the Laws of the Country, import, sell, give barter or otherwise dispose of any alcoholic liquor or drugs, or permit or allow importation, sale, gift barter or disposal by Contractor's Personnel.

22.2.14 Arms and Ammunition

The Contractor shall not give, barter, or otherwise dispose of, to any person, any arms or ammunition of any kind, or allow Contractor's Personnel to do so.

22.2.15 Prohibition of All Forms of Forced or Compulsory Labor

The contractor shall not employ "forced or compulsory labor" in any form. "Forced or compulsory labor" consists of all work or service, not voluntarily performed, that is extracted from an individual under threat of force or penalty.

22.2.16 Prohibition of Harmful Child Labor

The Contractor shall not employ any child to perform any work that is economically exploitative, or is likely to be hazardous to, or to interfere with, the child's education, or to be harmful to the child's health or physical, mental, spiritual, moral, or social development.

22.3 Contractor's Equipment

22.3.1 All Contractor's Equipment brought by the Contractor onto the Site shall be deemed to be intended to be used exclusively for the execution of the Contract. The Contractor shall not remove the same from the Site without the Project Manager's consent that such Contractor's Equipment is no longer required for the execution of the Contract.

22.3.2 Unless otherwise specified in the Contract, upon completion of the Facilities, the Contractor shall remove from the Site all Equipment brought by the Contractor onto the Site and any surplus materials remaining thereon.

22.3.3 The Employer will, if requested, use its best endeavors to assist the Contractor in obtaining any local, state or national government permission required by the Contractor for the export of the Contractor's Equipment imported by the Contractor for use in the execution of the Contract that is no longer required for the execution of the Contract.

22.4 Site Regulations and Safety

The Employer and the Contractor shall establish Site regulations setting out the rules to be observed in the execution of the Contract at the Site and shall comply therewith. The Contractor shall prepare and submit to the Employer, with a copy to the Project Manager, proposed Site regulations for the Employer's approval, which shall not be unreasonably withheld.

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Such Site regulations shall include, but shall not be limited to, rules in respect of security, safety of the Facilities, gate control, sanitation, medical care, and fire prevention.

22.5 Opportunities for Other Contractors

22.5.1 The Contractor shall, upon written request from the Employer or the Project Manager, give all reasonable opportunities for carrying out the work to any other contractors employed by the Employer on or near the Site.

22.5.2 If the Contractor, upon written request from the Employer or the Project Manager, makes available to other contractors any roads or ways the maintenance for which the Contractor is responsible, permits the use by such other contractors of the Contractor's Equipment, or provides any other service of whatsoever nature for such other contractors, the Employer shall fully compensate the Contractor for any loss or damage caused or occasioned by such other contractors in respect of any such use or service, and shall pay to the Contractor reasonable remuneration for the use of such equipment or the provision of such services.

22.5.3 The Contractor shall also so arrange to perform its work as to minimize, to the extent possible, interference with the work of other contractors. The Project Manager shall determine the resolution of any difference or conflict that may arise between the Contractor and other contractors and the workers of the Employer in regard to their work.

22.5.4 The Contractor shall notify the Project Manager promptly of any defects in the other contractors' work that come to its notice, and that could affect the Contractor's work. The Project Manager shall determine the corrective measures, if any, required to rectify the situation after inspection of the Facilities. Decisions made by the Project Manager shall be binding on the Contractor.

22.6 Emergency Work

If, by reason of an emergency arising in connection with and during the execution of the Contract, any protective or remedial work is necessary as a matter of urgency to prevent damage to the Facilities, the Contractor shall immediately carry out such work.

If the Contractor is unable or unwilling to do such work immediately, the Employer may do or cause such work to be done as the Employer may determine is necessary in order to prevent damage to the Facilities. In such event the Employer shall, as soon as practicable after the occurrence of any such emergency, notify the Contractor in writing of such emergency, the work done and the reasons therefor. If the work done or caused to be done by the Employer is work that the Contractor was liable to do at its own expense under the Contract, the reasonable costs incurred by the Employer in connection therewith shall be paid by the Contractor to the Employer. Otherwise, the cost of such remedial work shall be

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borne by the Employer.

22.7 Site Clearance

22.7.1 Site Clearance in Course of Performance: In the course of carrying out the Contract, the Contractor shall keep the Site reasonably free from all unnecessary obstruction, store or remove any surplus materials, clear away any wreckage, rubbish or temporary Works from the Site, and remove any Contractor's Equipment no longer required for execution of the Contract.

22.7.2 Clearance of Site after Completion: After Completion of all parts of the Facilities, the Contractor shall clear away and remove all wreckage, rubbish and debris of any kind from the Site, and shall leave the Site and Facilities in a clean and safe condition.

22.8 Watching and Lighting

The Contractor shall provide and maintain at its own expense all lighting, fencing, and watching when and where necessary for the proper execution and the protection of the Facilities, or for the safety of the owners and occupiers of adjacent property and for the safety of the public.

23. **Test and Inspection**

23.1 The Contractor shall at its own expense carry out at the place of manufacture and/or on the Site all such tests and/or inspections of the Plant and any part of the Facilities as are specified in the Contract.


23.2 The Employer and the Project Manager or their designated representatives shall be entitled to attend the aforesaid test and/or inspection, provided that the Employer shall bear all costs and expenses incurred in connection with such attendance including, but not limited to, all traveling and board and lodging expenses.

23.3 Whenever the Contractor is ready to carry out any such test and/or inspection, the Contractor shall give a reasonable advance notice of such test and/or inspection and of the place and time thereof to the Project Manager. The Contractor shall obtain from any relevant third Party or manufacturer any necessary permission or consent to enable the Employer and the Project Manager or their designated representatives to attend the test and/or inspection.

23.4 The Contractor shall provide the Project Manager with a certified report of the results of any such test and/or inspection.

If the Employer or Project Manager or their designated representatives fails to attend the test and/or inspection, or if it is agreed between the Parties that such persons shall not do so, then the Contractor may proceed with the test and/or inspection in the absence of such persons, and may provide the Project Manager with a certified report of the results thereof.

23.5 The Project Manager may require the Contractor to carry out any test and/or inspection not required by the Contract, provided that the Contractor's reasonable costs and expenses incurred in the carrying out of such test and/or inspection shall be added to the Contract Price. Further, if such test


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and/or inspection impede the progress of work on the Facilities and/or the Contractor's performance of its other obligations under the Contract, due allowance will be made in respect of the Time for Completion and the other obligations so affected.

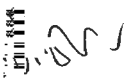
- 23.6 If any Plant or any part of the Facilities fails to pass any test and/or inspection, the Contractor shall either rectify or replace such Plant or part of the Facilities and shall repeat the test and/or inspection upon giving a notice under GC Sub-Clause 23.3.
- 23.7 If any dispute or difference of opinion shall arise between the Parties in connection with or arising out of the test and/or inspection of the Plant or part of the Facilities that cannot be settled between the Parties within a reasonable period of time, it may be referred to an Dispute Board for determination in accordance with GC Sub-Clause 45.1.
- 23.8 The Contractor shall afford the Employer and the Project Manager, at the Employer's expense, access at any reasonable time to any place where the Plant are being manufactured or the Facilities are being installed, in order to inspect the progress and the manner of manufacture or installation, provided that the Project Manager shall give the Contractor a reasonable prior notice.
- 23.9 The Contractor agrees that neither the execution of a test and/or inspection of Plant or any part of the Facilities, nor the attendance by the Employer or the Project Manager, nor the issue of any test certificate pursuant to GC Sub-Clause 23.4, shall release the Contractor from any other responsibilities under the Contract.
- 23.10 No part of the Facilities or foundations shall be covered up on the Site without the Contractor carrying out any test and/or inspection required under the Contract. The Contractor shall give a reasonable notice to the Project Manager whenever any such parts of the Facilities or foundations are ready or about to be ready for test and/or inspection; such test and/or inspection and notice thereof shall be subject to the requirements of the Contract.

- 23.11 The Contractor shall uncover any part of the Facilities or foundations, or shall make openings in or through the same as the Project Manager may from time to time require at the Site, and shall reinstate and make good such part or parts.

If any parts of the Facilities or foundations have been covered up at the Site after compliance with the requirement of GC Sub-Clause 23.10 and are found to be executed in accordance with the Contract, the expenses of uncovering, making openings in or through, reinstating, and making good the same shall be borne by the Employer, and the Time for Completion shall be reasonably adjusted to the extent that the Contractor has thereby been delayed or impeded in the performance of any of its obligations under the Contract.

24. Completion of the Facilities

- 24.1 As soon as the Facilities or any part thereof has, in the opinion of the Contractor, been completed operationally and structurally and put in a tight and clean condition as specified in the Employer's Requirements, excluding minor items not materially affecting the operation or safety of the Facilities,



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the Contractor shall so notify the Employer in writing.

- 24.2 Within seven (7) days after receipt of the notice from the Contractor under GC Sub-Clause 24.1, the Employer shall supply the operating and maintenance personnel specified in the Appendix to the Contract Agreement titled Scope of Works and Supply by the Employer for Precommissioning of the Facilities or any part thereof.

Pursuant to the Appendix to the Contract Agreement titled Scope of Works and Supply by the Employer, the Employer shall also provide, within the said seven (7) day period, the raw materials, utilities, lubricants, chemicals, catalysts, facilities, services and other matters required for Precommissioning of the Facilities or any part thereof.

- 24.3 As soon as reasonably practicable after the operating and maintenance personnel have been supplied by the Employer and the raw materials, utilities, lubricants, chemicals, catalysts, facilities, services and other matters have been provided by the Employer in accordance with GC Sub-Clause 24.2, the Contractor shall commence Precommissioning of the Facilities or the relevant part thereof in preparation for Commissioning, subject to GC Sub-Clause 25.5.

- 24.4 As soon as all works in respect of Precommissioning are completed and, in the opinion of the Contractor, the Facilities or any part thereof is ready for Commissioning, the Contractor shall so notify the Project Manager in writing.

- 24.5 The Project Manager shall, within fourteen (14) days after receipt of the Contractor's notice under GC Sub-Clause 24.4, either issue a Completion Certificate in the form specified in the Employer's Requirements (Forms and Procedures), stating that the Facilities or that part thereof have reached Completion as of the date of the Contractor's notice under GC Sub-Clause 24.4, or notify the Contractor in writing of any defects and/or deficiencies.

If the Project Manager notifies the Contractor of any defects and/or deficiencies, the Contractor shall then correct such defects and/or deficiencies, and shall repeat the procedure described in GC Sub-Clause 24.4.

If the Project Manager is satisfied that the Facilities or that part thereof have reached Completion, the Project Manager shall, within seven (7) days after receipt of the Contractor's repeated notice, issue a Completion Certificate stating that the Facilities or that part thereof have reached Completion as of the date of the Contractor's repeated notice.

If the Project Manager is not so satisfied, then it shall notify the Contractor in writing of any defects and/or deficiencies within seven (7) days after receipt of the Contractor's repeated notice, and the above procedure shall be repeated.

- 24.6 If the Project Manager fails to issue the Completion Certificate and fails to inform the Contractor of any defects and/or deficiencies within fourteen (14) days after receipt of the Contractor's notice under GC Sub-Clause 24.4 or within seven (7) days after receipt of the Contractor's repeated notice under GC Sub-Clause 24.5, or if the Employer makes use of the Facilities or part thereof, then the Facilities or that part thereof shall be deemed to have reached Completion as of the

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date of the Contractor's notice or repeated notice, or as of the Employer's use of the Facilities, as the case may be.

24.7 As soon as possible after Completion, the Contractor shall complete all outstanding minor items so that the Facilities are fully in accordance with the requirements of the Contract, failing which the Employer will undertake such completion and deduct the costs thereof from any monies owing to the Contractor.

24.8 Upon Completion, the Employer shall be responsible for the care and custody of the Facilities or the relevant part thereof, together with the risk of loss or damage thereto, and shall thereafter take over the Facilities or the relevant part thereof.

25. Commissioning and Operational Acceptance

25.1 Commissioning

25.1.1 Commissioning of the Facilities or any part thereof shall be commenced by the Contractor immediately after issue of the Completion Certificate by the Project Manager, pursuant to GC Sub-Clause 24.5, or immediately after the date of the deemed Completion, under GC Sub-Clause 24.6.

25.1.2 The Employer shall supply the operating and maintenance personnel and all raw materials, utilities, lubricants, chemicals, catalysts, facilities, services and other matters required for Commissioning.

25.1.3 In accordance with the requirements of the Contract, the Contractor's and Project Manager's advisory personnel shall attend the Commissioning, including the Guarantee Test, and shall advise and assist the Employer.

25.2 Guarantee Test

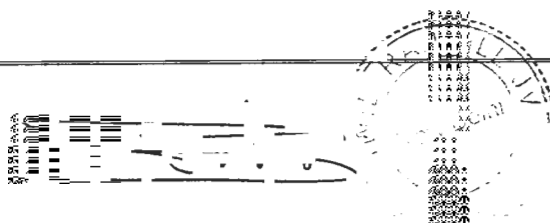
25.2.1 Subject to GC Sub-Clause 25.5, the Guarantee Test and repeats thereof shall be conducted by the Contractor during Commissioning of the Facilities or the relevant part thereof to ascertain whether the Facilities or the relevant part can attain the Functional Guarantees specified in the Appendix to the Contract Agreement titled Functional Guarantees. The Employer shall promptly provide the Contractor with such information as the Contractor may reasonably require in relation to the conduct and results of the Guarantee Test and any repeats thereof.

25.2.2 If for reasons not attributable to the Contractor, the Guarantee Test of the Facilities or the relevant part thereof cannot be successfully completed within the period from the date of Completion **specified in the PC** or any other period agreed upon by the Employer and the Contractor, the Contractor shall be deemed to have fulfilled its obligations with respect to the Functional Guarantees, and GC Sub-Clauses 28.2 and 28.3 shall not apply.

25.3 Operational Acceptance

25.3.1 Subject to GC Sub-Clause 25.4 below, Operational Acceptance shall occur in respect of the Facilities or any part thereof when:

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- (a) the Guarantee Test has been successfully completed and the Functional Guarantees are met; or
- (b) the Guarantee Test has not been successfully completed or has not been carried out for reasons not attributable to the Contractor within the period from the date of Completion specified in the PC pursuant to GC Sub-Clause 25.2.2 above or any other period agreed upon by the Employer and the Contractor; or
- (c) the Contractor has paid the liquidated damages specified in GC Sub-Clause 28.3 hereof; and
- (d) any minor items mentioned in GC Sub-Clause 24.7 hereof relevant to the Facilities or that part thereof have been completed.

25.3.2 At any time after any of the events set out in GC Sub-Clause 25.3.1 have occurred, the Contractor may give a notice to the Project Manager requesting the issue of an Operational Acceptance Certificate in the form provided in the Employer's Requirements (Forms and Procedures) in respect of the Facilities or the part thereof specified in such notice as of the date of such notice.

25.3.3 The Project Manager shall, after consultation with the Employer, and within seven (7) days after receipt of the Contractor's notice, issue an Operational Acceptance Certificate.

25.3.4 If within seven (7) days after receipt of the Contractor's notice, the Project Manager fails to issue the Operational Acceptance Certificate or fails to inform the Contractor in writing of the justifiable reasons why the Project Manager has not issued the Operational Acceptance Certificate, the Facilities or the relevant part thereof shall be deemed to have been accepted as of the date of the Contractor's said notice.

25.4 Partial Acceptance

25.4.1 If the Contract specifies that Completion and Commissioning shall be carried out in respect of parts of the Facilities, the provisions relating to Completion and Commissioning including the Guarantee Test shall apply to each such part of the Facilities individually, and the Operational Acceptance Certificate shall be issued accordingly for each such part of the Facilities.

25.4.2 If a part of the Facilities comprises facilities such as buildings, for which no Commissioning or Guarantee Test is required, then the Project Manager shall issue the Operational Acceptance Certificate for such facility when it attains Completion, provided that the Contractor shall thereafter complete any outstanding minor items that are listed in the Operational Acceptance Certificate.

25.5 Delayed Precommissioning and/or Guarantee Test

25.5.1 In the event that the Contractor is unable to proceed with the Precommissioning of the Facilities pursuant to Sub-Clause 24.3, or with the Guarantee Test pursuant to Sub-Clause 25.2, for reasons attributable to

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the Employer either on account of non availability of other facilities under the responsibilities of other contractor(s), or for reasons beyond the Contractor's control, the provisions leading to "deemed" completion of activities such as Completion, pursuant to GC Sub-Clause 24.6, and Operational Acceptance, pursuant to GC Sub-Clause 25.3.4, and Contractor's obligations regarding Defect Liability Period, pursuant to GC Sub-Clause 27.2, Functional Guarantee, pursuant to GC Clause 28, and Care of Facilities, pursuant to GC Clause 32, and GC Clause 41.1, Suspension, shall not apply. In this case, the following provisions shall apply.

25.5.2 When the Contractor is notified by the Project Manager that he will be unable to proceed with the activities and obligations pursuant to above Sub-Clause 13.1, the Contractor shall be entitled to the following:

- (a) the Time of Completion shall be extended for the period of suspension without imposition of liquidated damages pursuant to GC Sub-Clause 26.2;
- (b) payments due to the Contractor in accordance with the provision specified in the Appendix to the Contract Agreement titled Terms and Procedures of Payment, which would not have been payable in normal circumstances due to non-completion of the subject activities, shall be released to the Contractor against submission of a security in the form of a bank guarantee of equivalent amount acceptable to the Employer, and which shall become null and void when the Contractor will have complied with its obligations regarding those payments, subject to the provision of Sub-Clause 25.5.3 below;
- (c) the expenses towards the above security and extension of other securities under the contract, of which validity needs to be extended, shall be reimbursed to the Contractor by the Employer;
- (d) the additional charges towards the care of the Facilities pursuant to GC Sub-Clause 32.1 shall be reimbursed to the Contractor by the Employer for the period between the notification mentioned above and the notification mentioned in Sub-Clause 25.5.4 below. The provision of GC Sub-Clause 33.2 shall apply to the Facilities during the same period.

25.5.3 In the event that the period of suspension under above Sub-Clause 25.5.1 actually exceeds one hundred eighty (180) days, the Employer and Contractor shall mutually agree to any additional compensation payable to the Contractor.

25.5.4 When the Contractor is notified by the Project Manager that the plant is ready for Precommissioning, the Contractor shall proceed without delay in performing Precommissioning in accordance with

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Clause 24.

F. Guarantees and Liabilities**26. Completion Time Guarantee**

26.1 The Contractor guarantees that it shall attain Completion of the Facilities (or a part for which a separate time for completion is specified) within the Time for Completion specified in the PC pursuant to GC Sub-Clause 8.2, or within such extended time to which the Contractor shall be entitled under GC Clause 40 hereof.

26.2 If the Contractor fails to attain Completion of the Facilities or any part thereof within the Time for Completion or any extension thereof under GC Clause 40, the Contractor shall pay to the Employer liquidated damages in the amount **specified in the PC** as a percentage rate of the Contract Price or the relevant part thereof. The aggregate amount of such liquidated damages shall in no event exceed the amount **specified as "Maximum" in the PC** as a percentage rate of the Contract Price. Once the "Maximum" is reached, the Employer may consider termination of the Contract, pursuant to GC Sub-Clause 42.2.2.

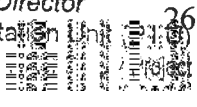
Such payment shall completely satisfy the Contractor's obligation to attain Completion of the Facilities or the relevant part thereof within the Time for Completion or any extension thereof under GC Clause 40. The Contractor shall have no further liability whatsoever to the Employer in respect thereof.

However, the payment of liquidated damages shall not in any way relieve the Contractor from any of its obligations to complete the Facilities or from any other obligations and liabilities of the Contractor under the Contract.

Save for liquidated damages payable under this GC Sub-Clause 26.2, the failure by the Contractor to attain any milestone or other act, matter or thing by any date specified in the Appendix to the Contract Agreement titled Time Schedule, and/or other program of work prepared pursuant to GC Sub-Clause 18.2 shall not render the Contractor liable for any loss or damage thereby suffered by the Employer.

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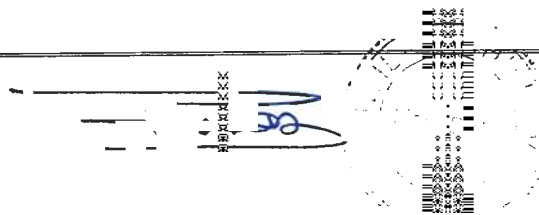
26.3 If the Contractor attains Completion of the Facilities or any part thereof before the Time for Completion or any extension thereof under GC Clause 40, the Employer shall pay to the Contractor a bonus in the amount **specified in the PC**. The aggregate amount of such bonus shall in no event exceed the amount **specified as "Maximum" in the PC**.

27. Defect Liability

27.1 The Contractor warrants that the Facilities or any part thereof shall be free from defects in the design, engineering, materials and workmanship of the Plant supplied and of the work executed.

27.2 The Defect Liability Period shall be five hundred and forty (540) days from the date of Completion of the Facilities (or any part thereof) or one year from the date of Operational Acceptance of the Facilities (or any part thereof), whichever first occurs, unless specified otherwise in the PC pursuant to GC Sub-Clause 27.10.

If during the Defect Liability Period any defect should be found in the design, engineering, materials and workmanship of the Plant supplied or of the work executed by the Contractor, the Contractor shall promptly, in consultation and agreement with the Employer regarding appropriate remedying of the defects,



and at its cost, repair, replace or otherwise make good as the Contractor shall determine at its discretion, such defect as well as any damage to the Facilities caused by such defect. The Contractor shall not be responsible for the repair, replacement or making good of any defect or of any damage to the Facilities arising out of or resulting from any of the following causes:

- (a) improper operation or maintenance of the Facilities by the Employer;
- (b) operation of the Facilities outside specifications provided in the Contract; or
- (c) normal wear and tear.

27.3 The Contractor's obligations under this GC Clause 27 shall not apply to:

- (a) any materials that are supplied by the Employer under GC Sub-Clause 21.2, are normally consumed in operation, or have a normal life shorter than the Defect Liability Period stated herein;
- (b) any designs, specifications or other data designed, supplied or specified by or on behalf of the Employer or any matters for which the Contractor has disclaimed responsibility herein; or
- (c) any other materials supplied or any other work executed by or on behalf of the Employer, except for the work executed by the Employer under GC Sub-Clause 27.7.

27.4 The Employer shall give the Contractor a notice stating the nature of any such defect together with all available evidence thereof, promptly following the discovery thereof. The Employer shall afford all reasonable opportunity for the Contractor to inspect any such defect.

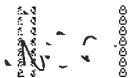
27.5 The Employer shall afford the Contractor all necessary access to the Facilities and the Site to enable the Contractor to perform its obligations under this GC Clause 27.

The Contractor may, with the consent of the Employer, remove from the Site any Plant or any part of the Facilities that are defective if the nature of the defect, and/or any damage to the Facilities caused by the defect, is such that repairs cannot be expeditiously carried out at the Site.

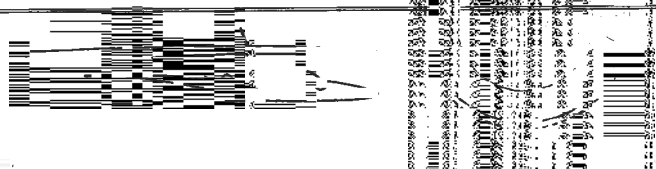
27.6 If the repair, replacement or making good is of such a character that it may affect the efficiency of the Facilities or any part thereof, the Employer may give to the Contractor a notice requiring that tests of the defective part of the Facilities shall be made by the Contractor immediately upon completion of such remedial work, whereupon the Contractor shall carry out such tests.

If such part fails the tests, the Contractor shall carry out further repair, replacement or making good, as the case may be, until that part of the Facilities passes such tests. The tests shall be agreed upon by the Employer and the Contractor.

27.7 If the Contractor fails to commence the work necessary to remedy such defect or any damage to the Facilities caused by such defect within a reasonable time (which shall in no event be considered to be less than fifteen (15) days) the Employer may,



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following notice to the Contractor, proceed to do such work, and the reasonable costs incurred by the Employer in connection therewith shall be paid to the Employer by the Contractor or may be deducted by the Employer from any monies due the Contractor or claimed under the Performance Security.

- 27.8 If the Facilities or any part thereof cannot be used by reason of such defect and/or making good of such defect, the Defect Liability Period of the Facilities or such part, as the case may be, shall be extended by a period equal to the period during which the Facilities or such part cannot be used by the Employer because of any of the aforesaid reasons.
- 27.9 Except as provided in GC Clauses 27 and 33, the Contractor shall be under no liability whatsoever and howsoever arising, and whether under the Contract or at law, in respect of defects in the Facilities or any part thereof, the Plant, design or engineering or work executed that appear after Completion of the Facilities or any part thereof, except where such defects are the result of the gross negligence, fraud, or criminal or willful action of the Contractor.
- 27.10 In addition, any such component of the Facilities, and during the period of time as may be **specified in the PC**, shall be subject to an extended defect liability period. Such obligation of the Contractor shall be in addition to the defect liability period specified under GC Sub-Clause 27.2.

28. Functional Guarantees

- 28.1 The Contractor guarantees that during the Guarantee Test, the Facilities and all parts thereof shall attain the Functional Guarantees specified in the Appendix to the Contract Agreement titled Functional Guarantees, subject to and upon the conditions therein specified.
- 28.2 If, for reasons attributable to the Contractor, the minimum level of the Functional Guarantees specified in the Appendix to the Contract Agreement titled Functional Guarantees, are not met either in whole or in part, the Contractor shall at its cost and expense make such changes, modifications and/or additions to the Plant or any part thereof as may be necessary to meet at least the minimum level of such Guarantees. The Contractor shall notify the Employer upon completion of the necessary changes, modifications and/or additions, and shall request the Employer to repeat the Guarantee Test until the minimum level of the Guarantees has been met. If the Contractor eventually fails to meet the minimum level of Functional Guarantees, the Employer may consider termination of the Contract, pursuant to GC Sub-Clause 42.2.2.
- 28.3 If, for reasons attributable to the Contractor, the Functional Guarantees specified in the Appendix to the Contract Agreement titled Functional Guarantees, are not attained either in whole or in part, but the minimum level of the Functional Guarantees specified in the said Appendix to the Contract Agreement is met, the Contractor shall, at the Contractor's option, either
- (a) make such changes, modifications and/or additions to the Facilities or any part thereof that are necessary to attain the Functional Guarantees at its cost and expense, and shall request the Employer to repeat the Guarantee Test; or
 - (b) pay liquidated damages to the Employer in respect of the failure to meet the Functional Guarantees in accordance with the provisions in the Appendix to the Contract

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Agreement titled Functional Guarantees.

28.4 The payment of liquidated damages under GC Sub-Clause 28.3, up to the limitation of liability specified in the Appendix to the Contract Agreement titled Functional Guarantees, shall completely satisfy the Contractor's guarantees under GC Sub-Clause 28.3, and the Contractor shall have no further liability whatsoever to the Employer in respect thereof. Upon the payment of such liquidated damages by the Contractor, the Project Manager shall issue the Operational Acceptance Certificate for the Facilities or any part thereof in respect of which the liquidated damages have been so paid.

29. Patent Indemnity

29.1 The Contractor shall, subject to the Employer's compliance with GC Sub-Clause 29.2, indemnify and hold harmless the Employer and its employees and officers from and against any and all suits, actions or administrative proceedings, claims, demands, losses, damages, costs, and expenses of whatsoever nature, including attorney's fees and expenses, which the Employer may suffer as a result of any infringement or alleged infringement of any patent, utility model, registered design, trademark, copyright or other intellectual property right registered or otherwise existing at the date of the Contract by reason of: (a) the installation of the Facilities by the Contractor or the use of the Facilities in the country where the Site is located; and (b) the sale of the products produced by the Facilities in any country.

Such indemnity shall not cover any use of the Facilities or any part thereof other than for the purpose indicated by or to be reasonably inferred from the Contract, any infringement resulting from the use of the Facilities or any part thereof, or any products produced thereby in association or combination with any other equipment, plant or materials not supplied by the Contractor, pursuant to the Contract Agreement.

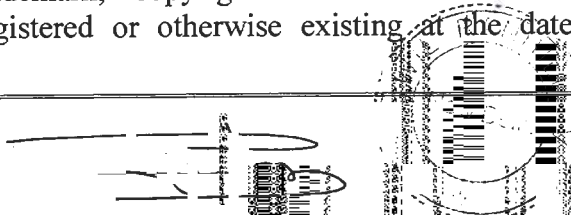
29.2 If any proceedings are brought or any claim is made against the Employer arising out of the matters referred to in GC Sub-Clause 29.1, the Employer shall promptly give the Contractor a notice thereof, and the Contractor may at its own expense and in the Employer's name conduct such proceedings or claim and any negotiations for the settlement of any such proceedings or claim.

If the Contractor fails to notify the Employer within twenty-eight (28) days after receipt of such notice that it intends to conduct any such proceedings or claim, then the Employer shall be free to conduct the same on its own behalf. Unless the Contractor has so failed to notify the Employer within the twenty-eight (28) day period, the Employer shall make no admission that may be prejudicial to the defense of any such proceedings or claim.

The Employer shall, at the Contractor's request, afford all available assistance to the Contractor in conducting such proceedings or claim, and shall be reimbursed by the Contractor for all reasonable expenses incurred in so doing.

29.3 The Employer shall indemnify and hold harmless the Contractor and its employees, officers and Subcontractors from and against any and all suits, actions or administrative proceedings, claims, demands, losses, damages, costs, and expenses of whatsoever nature, including attorney's fees and expenses, which the Contractor may suffer as a result of any infringement or alleged infringement of any patent, utility model, registered design, trademark, copyright or other intellectual property right registered or otherwise existing at the date of the Contract

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arising out of or in connection with any design, data, drawing, specification, or other documents or materials provided or designed by or on behalf of the Employer.

30. Limitation of Liability

- 30.1 Except in cases of criminal negligence or willful misconduct,
- (a) neither Party shall be liable to the other Party, whether in contract, tort, or otherwise, for any indirect or consequential loss or damage, loss of use, loss of production, or loss of profits or interest costs, which may be suffered by the other Party in connection with the Contract, other than specifically provided as any obligation of the Party in the Contract, and
 - (b) the aggregate liability of the Contractor to the Employer, whether under the Contract, in tort or otherwise, shall not exceed the amount resulting from the application of the multiplier **specified in the PC**, to the Contract Price or, if a multiplier is not so specified, the total Contract Price, provided that this limitation shall not apply to the cost of repairing or replacing defective equipment, or to any obligation of the Contractor to indemnify the Employer with respect to patent infringement.

G. Risk Distribution

31. Transfer of Ownership

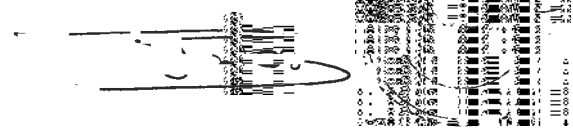
- 31.1 Ownership of the Plant (including spare parts) to be imported into the country where the Site is located shall be transferred to the Employer upon loading on to the mode of transport to be used to convey the Plant from the country of origin to that country.
- 31.2 Ownership of the Plant (including spare parts) procured in the country where the Site is located shall be transferred to the Employer when the Plant are brought on to the Site.
- 31.3 Ownership of the Contractor's Equipment used by the Contractor and its Subcontractors in connection with the Contract shall remain with the Contractor or its Subcontractors.
- 31.4 Ownership of any Plant in excess of the requirements for the Facilities shall revert to the Contractor upon Completion of the Facilities or at such earlier time when the Employer and the Contractor agree that the Plant in question are no longer required for the Facilities.
- 31.5 Notwithstanding the transfer of ownership of the Plant, the responsibility for care and custody thereof together with the risk of loss or damage thereto shall remain with the Contractor pursuant to GC Clause 32 (Care of Facilities) hereof until Completion of the Facilities or the part thereof in which such Plant are incorporated.

32. Care of Facilities

- 32.1 The Contractor shall be responsible for the care and custody of the Facilities or any part thereof until the date of Completion of the Facilities pursuant to GC Clause 24 or, where the Contract provides for Completion of the Facilities in parts, until the date of Completion of the relevant part, and shall make good at its own cost any loss or damage that may occur to the Facilities or the relevant part thereof from any cause whatsoever during such period. The Contractor shall also be responsible for any loss or damage to the Facilities caused by the Contractor or its Subcontractors in the course of any work carried out, pursuant to GC Clause 27. Notwithstanding the foregoing, the Contractor shall not be liable for any loss or damage to the Facilities or that part

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thereof caused by reason of any of the matters specified or referred to in paragraphs (a), (b) and (c) of GC Sub-Clauses 32.2 and 38.1.

32.2 If any loss or damage occurs to the Facilities or any part thereof or to the Contractor's temporary facilities by reason of

- (a) insofar as they relate to the country where the Site is located, nuclear reaction, nuclear radiation, radioactive contamination, pressure wave caused by aircraft or other aerial objects, or any other occurrences that an experienced contractor could not reasonably foresee, or if reasonably foreseeable could not reasonably make provision for or insure against, insofar as such risks are not normally insurable on the insurance market and are mentioned in the general exclusions of the policy of insurance, including War Risks and Political Risks, taken out under GC Clause 34 hereof;
- (b) any use or occupation by the Employer or any third Party other than a Subcontractor, authorized by the Employer of any part of the Facilities; or
- (c) any use of or reliance upon any design, data or specification provided or designated by or on behalf of the Employer, or any such matter for which the Contractor has disclaimed responsibility herein,

the Employer shall pay to the Contractor all sums payable in respect of the Facilities executed, notwithstanding that the same be lost, destroyed or damaged, and will pay to the Contractor the replacement value of all temporary facilities and all parts thereof lost, destroyed or damaged. If the Employer requests the Contractor in writing to make good any loss or damage to the Facilities thereby occasioned, the Contractor shall make good the same at the cost of the Employer in accordance with GC Clause 39. If the Employer does not request the Contractor in writing to make good any loss or damage to the Facilities thereby occasioned, the Employer shall either request a change in accordance with GC Clause 39, excluding the performance of that part of the Facilities thereby lost, destroyed or damaged, or, where the loss or damage affects a substantial part of the Facilities, the Employer shall terminate the Contract pursuant to GC Sub-Clause 42.1 hereof.

32.3 The Contractor shall be liable for any loss of or damage to any Contractor's Equipment, or any other property of the Contractor used or intended to be used for purposes of the Facilities, except (i) as mentioned in GC Sub-Clause 32.2 with respect to the Contractor's temporary facilities, and (ii) where such loss or damage arises by reason of any of the matters specified in GC Sub-Clauses 32.2 (b) and (c) and 38.1.

32.4 With respect to any loss or damage caused to the Facilities or any part thereof or to the Contractor's Equipment by reason of any of the matters specified in GC Sub-Clause 38.1, the provisions of GC Sub-Clause 38.3 shall apply.

33. Loss of or Damage to Property; Accident or Injury to Workers; Indemnifica-

33.1 Subject to GC Sub-Clause 33.3, the Contractor shall indemnify and hold harmless the Employer and its employees and officers from and against any and all suits, actions or administrative proceedings, claims, demands, losses, damages, costs, and expenses of whatsoever nature, including attorney's fees and expenses, in respect of the death or injury of any person or loss of or damage to any property other than the Facilities whether



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accepted or not, arising in connection with the supply and installation of the Facilities and by reason of the negligence of the Contractor or its Subcontractors, or their employees, officers or agents, except any injury, death or property damage caused by the negligence of the Employer, its contractors, employees, officers or agents.

33.2 If any proceedings are brought or any claim is made against the Employer that might subject the Contractor to liability under GC Sub-Clause 33.1, the Employer shall promptly give the Contractor a notice thereof and the Contractor may at its own expense and in the Employer's name conduct such proceedings or claim and any negotiations for the settlement of any such proceedings or claim.

If the Contractor fails to notify the Employer within twenty-eight (28) days after receipt of such notice that it intends to conduct any such proceedings or claim, then the Employer shall be free to conduct the same on its own behalf. Unless the Contractor has so failed to notify the Employer within the twenty-eight (28) day period, the Employer shall make no admission that may be prejudicial to the defense of any such proceedings or claim.

The Employer shall, at the Contractor's request, afford all available assistance to the Contractor in conducting such proceedings or claim, and shall be reimbursed by the Contractor for all reasonable expenses incurred in so doing.

33.3 The Employer shall indemnify and hold harmless the Contractor and its employees, officers and Subcontractors from any liability for loss of or damage to property of the Employer, other than the Facilities not yet taken over, that is caused by fire, explosion or any other perils, in excess of the amount recoverable from insurances procured under GC Clause 34, provided that such fire, explosion or other perils were not caused by any act or failure of the Contractor.

33.4 The Party entitled to the benefit of an indemnity under this GC Clause 33 shall take all reasonable measures to mitigate any loss or damage which has occurred. If the Party fails to take such measures, the other Party's liabilities shall be correspondingly reduced.

34. Insurance

34.1 To the extent specified in the Appendix to the Contract Agreement titled Insurance Requirements, the Contractor shall at its expense take out and maintain in effect, or cause to be taken out and maintained in effect, during the performance of the Contract, the insurances set forth below in the sums and with the deductibles and other conditions specified in the said Appendix. The identity of the insurers and the form of the policies shall be subject to the approval of the Employer, who should not unreasonably withhold such approval.

(a) Cargo Insurance During Transport

Covering loss or damage occurring while in transit from the Contractor's or Subcontractor's works or stores until arrival at the Site, to the Plant (including spare parts therefor) and to the Contractor's Equipment.

(b) Installation All Risks Insurance

Covering physical loss or damage to the Facilities at the Site, occurring prior to Completion of the Facilities, with an extended maintenance coverage for the Contractor's

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liability in respect of any loss or damage occurring during the Defect Liability Period while the Contractor is on the Site for the purpose of performing its obligations during the Defect Liability Period.

(c) Third Party Liability Insurance

Covering bodily injury or death suffered by third Parties including the Employer’s personnel, and loss of or damage to property occurring in connection with the supply and installation of the Facilities.

(d) Automobile Liability Insurance

Covering use of all vehicles used by the Contractor or its Subcontractors, whether or not owned by them, in connection with the execution of the Contract.

(e) Workers’ Compensation

In accordance with the statutory requirements applicable in any country where the Contract or any part thereof is executed.

(f) Employer’s Liability

In accordance with the statutory requirements applicable in any country where the Contract or any part thereof is executed.

(g) Other Insurances

Such other insurances as may be specifically agreed upon by the Parties hereto as listed in the Appendix to the Contract Agreement titled Insurance Requirements.

34.2 The Employer shall be named as co-insured under all insurance policies taken out by the Contractor pursuant to GC Sub-Clause 34.1, except for the Third Party Liability, Workers’ Compensation and Employer’s Liability Insurances, and the Contractor’s Subcontractors shall be named as co-insureds under all insurance policies taken out by the Contractor pursuant to GC Sub-Clause 34.1 except for the Cargo Insurance During Transport, Workers’ Compensation and Employer’s Liability Insurances. All insurer’s rights of subrogation against such co-insureds for losses or claims arising out of the performance of the Contract shall be waived under such policies.

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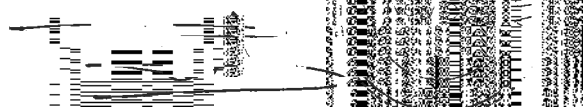
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34.3 The Contractor shall, in accordance with the provisions of the Appendix to the Contract Agreement titled Insurance Requirements, deliver to the Employer certificates of insurance or copies of the insurance policies as evidence that the required policies are in full force and effect. The certificates shall provide that no less than twenty-one (21) days’ notice shall be given to the Employer by insurers prior to cancellation or material modification of a policy.

34.4 The Contractor shall ensure that, where applicable, its Subcontractor(s) shall take out and maintain in effect adequate insurance policies for their personnel and vehicles and for work executed by them under the Contract, unless such Subcontractors are covered by the policies taken out by the Contractor.

34.5 The Employer shall at its expense take out and maintain in effect during the performance of the Contract those insurances specified in the Appendix to the Contract Agreement titled



Insurance Requirements, in the sums and with the deductibles and other conditions specified in the said Appendix. The Contractor and the Contractor's Subcontractors shall be named as co-insureds under all such policies. All insurers' rights of subrogation against such co-insureds for losses or claims arising out of the performance of the Contract shall be waived under such policies. The Employer shall deliver to the Contractor satisfactory evidence that the required insurances are in full force and effect. The policies shall provide that not less than twenty-one (21) days' notice shall be given to the Contractor by all insurers prior to any cancellation or material modification of the policies. If so requested by the Contractor, the Employer shall provide copies of the policies taken out by the Employer under this GC Sub-Clause 34.5.

34.6 If the Contractor fails to take out and/or maintain in effect the insurances referred to in GC Sub-Clause 34.1, the Employer may take out and maintain in effect any such insurances and may from time to time deduct from any amount due the Contractor under the Contract any premium that the Employer shall have paid to the insurer, or may otherwise recover such amount as a debt due from the Contractor. If the Employer fails to take out and/or maintain in effect the insurances referred to in GC 34.5, the Contractor may take out and maintain in effect any such insurances and may from time to time deduct from any amount due the Employer under the Contract any premium that the Contractor shall have paid to the insurer, or may otherwise recover such amount as a debt due from the Employer. If the Contractor fails to or is unable to take out and maintain in effect any such insurances, the Contractor shall nevertheless have no liability or responsibility towards the Employer, and the Contractor shall have full recourse against the Employer for any and all liabilities of the Employer herein.

34.7 Unless otherwise provided in the Contract, the Contractor shall prepare and conduct all and any claims made under the policies effected by it pursuant to this GC Clause 34, and all monies payable by any insurers shall be paid to the Contractor. The Employer shall give to the Contractor all such reasonable assistance as may be required by the Contractor. With respect to insurance claims in which the Employer's interest is involved, the Contractor shall not give any release or make any compromise with the insurer without the prior written consent of the Employer. With respect to insurance claims in which the Contractor's interest is involved, the Employer shall not give any release or make any compromise with the insurer without the prior written consent of the Contractor.

35. Unforeseen Conditions

35.1 If, during the execution of the Contract, the Contractor shall encounter on the Site any physical conditions other than climatic conditions, or artificial obstructions that could not have been reasonably foreseen prior to the date of the Contract Agreement by an experienced contractor on the basis of reasonable examination of the data relating to the Facilities including any data as to boring tests, provided by the Employer, and on the basis of information that it could have obtained from a visual inspection of the Site if access thereto was available, or other data readily available to it relating to the Facilities, and if the Contractor determines that it will in consequence of such conditions or obstructions incur additional cost and expense or require additional time to perform its obligations under the Contract that would not have been required if such physical conditions or artificial obstructions had not been encountered,

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the Contractor shall promptly, and before performing additional work or using additional Plant or Contractor's Equipment, notify the Project Manager in writing of

- (a) the physical conditions or artificial obstructions on the Site that could not have been reasonably foreseen;
- (b) the additional work and/or Plant and/or Contractor's Equipment required, including the steps which the Contractor will or proposes to take to overcome such conditions or obstructions;
- (c) the extent of the anticipated delay; and
- (d) the additional cost and expense that the Contractor is likely to incur.

On receiving any notice from the Contractor under this GC Sub-Clause 35.1, the Project Manager shall promptly consult with the Employer and Contractor and decide upon the actions to be taken to overcome the physical conditions or artificial obstructions encountered. Following such consultations, the Project Manager shall instruct the Contractor, with a copy to the Employer, of the actions to be taken.

35.2 Any reasonable additional cost and expense incurred by the Contractor in following the instructions from the Project Manager to overcome such physical conditions or artificial obstructions referred to in GC Sub-Clause 35.1 shall be paid by the Employer to the Contractor as an addition to the Contract Price.

35.3 If the Contractor is delayed or impeded in the performance of the Contract because of any such physical conditions or artificial obstructions referred to in GC Sub-Clause 35.1, the Time for Completion shall be extended in accordance with GC Clause 40.

36. Change in Laws and Regulations

36.1 If, after the date twenty-eight (28) days prior to the date of Bid submission, in the country where the Site is located, any law, regulation, ordinance, order or by-law having the force of law is enacted, promulgated, abrogated or changed which shall be deemed to include any change in interpretation or application by the competent authorities, that subsequently affects the costs and expenses of the Contractor and/or the Time for Completion, the Contract Price shall be correspondingly increased or decreased, and/or the Time for Completion shall be reasonably adjusted to the extent that the Contractor has thereby been affected in the performance of any of its obligations under the Contract. Notwithstanding the foregoing, such additional or reduced costs shall not be separately paid or credited if the same has already been accounted for in the price adjustment provisions where applicable, in accordance with the PC pursuant to GC Sub-Clause 11.2.

37. Force Majeure

37.1 "Force Majeure" shall mean any event beyond the reasonable control of the Employer or of the Contractor, as the case may be, and which is unavoidable notwithstanding the reasonable care of the Party affected, and shall include, without limitation, the following:

- (a) war, hostilities or warlike operations whether a state of war be declared or not, invasion, act of foreign enemy and civil war,

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- (b) rebellion, revolution, insurrection, mutiny, usurpation of civil or military government, conspiracy, riot, civil commotion and terrorist acts,
- (c) confiscation, nationalization, mobilization, commandeering or requisition by or under the order of any government or de jure or de facto authority or ruler or any other act or failure to act of any local state or national government authority,
- (d) strike, sabotage, lockout, embargo, import restriction, port congestion, lack of usual means of public transportation and communication, industrial dispute, shipwreck, shortage or restriction of power supply, epidemics, quarantine and plague,
- (e) earthquake, landslide, volcanic activity, fire, flood or inundation, tidal wave, typhoon or cyclone, hurricane, storm, lightning, or other inclement weather condition, nuclear and pressure waves or other natural or physical disaster,
- (f) shortage of labor, materials or utilities where caused by circumstances that are themselves Force Majeure.

37.2 If either Party is prevented, hindered or delayed from or in performing any of its obligations under the Contract by an event of Force Majeure, then it shall notify the other in writing of the occurrence of such event and the circumstances thereof within fourteen (14) days after the occurrence of such event.

37.3 The Party who has given such notice shall be excused from the performance or punctual performance of its obligations under the Contract for so long as the relevant event of Force Majeure continues and to the extent that such Party's performance is prevented, hindered or delayed. The Time for Completion shall be extended in accordance with GC Clause 40.


37.4 The Party or Parties affected by the event of Force Majeure shall use reasonable efforts to mitigate the effect thereof upon its or their performance of the Contract and to fulfill its or their obligations under the Contract, but without prejudice to either Party's right to terminate the Contract under GC Sub-Clauses 37.6 and 38.5.

37.5 No delay or nonperformance by either Party hereto caused by the occurrence of any event of Force Majeure shall:

- (a) constitute a default or breach of the Contract, or
- (b) give rise to any claim for damages or additional cost or expense occasioned thereby, subject to GC Sub-Clauses 32.2, 38.3 and 38.4

if and to the extent that such delay or nonperformance is caused by the occurrence of an event of Force Majeure.

37.6 If the performance of the Contract is substantially prevented, hindered or delayed for a single period of more than sixty (60) days or an aggregate period of more than one hundred and twenty (120) days on account of one or more events of Force Majeure during the currency of the Contract, the Parties will attempt to develop a mutually satisfactory solution, failing which either Party may terminate the Contract by giving a notice to the other, but without prejudice to either Party's right to terminate


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the Contract under GC Sub-Clause 38.5.

37.7 In the event of termination pursuant to GC Sub-Clause 37.6, the rights and obligations of the Employer and the Contractor shall be as specified in GC Sub-Clauses 42.1.2 and 42.1.3.

37.8 Notwithstanding GC Sub-Clause 37.5, Force Majeure shall not apply to any obligation of the Employer to make payments to the Contractor herein.

38. War Risks

38.1 "War Risks" shall mean any event specified in paragraphs (a) and (b) of GC Sub-Clause 37.1 and any explosion or impact of any mine, bomb, shell, grenade or other projectile, missile, munitions or explosive of war, occurring or existing in or near the country (or countries) where the Site is located.

38.2 Notwithstanding anything contained in the Contract, the Contractor shall have no liability whatsoever for or with respect to

- (a) destruction of or damage to Facilities, Plant, or any part thereof;
- (b) destruction of or damage to property of the Employer or any third Party; or
- (c) injury or loss of life

if such destruction, damage, injury or loss of life is caused by any War Risks, and the Employer shall indemnify and hold the Contractor harmless from and against any and all claims, liabilities, actions, lawsuits, damages, costs, charges or expenses arising in consequence of or in connection with the same.

38.3 If the Facilities or any Plant or Contractor's Equipment or any other property of the Contractor used or intended to be used for the purposes of the Facilities shall sustain destruction or damage by reason of any War Risks, the Employer shall pay the Contractor for:

- (a) any part of the Facilities or the Plant so destroyed or damaged to the extent not already paid for by the Employer,
- (b) replacing or making good any Contractor's Equipment or other property of the Contractor so destroyed or damaged,
- (c) replacing or making good any such destruction or damage to the Facilities or the Plant or any part thereof,

and so far as may be required by the Employer, and as may be necessary for completion of the Facilities.

If the Employer does not require the Contractor to replace or make good any such destruction or damage to the Facilities, the Employer shall either request a change in accordance with GC Clause 39, excluding the performance of that part of the Facilities thereby destroyed or damaged or, where the loss, destruction or damage affects a substantial part of the Facilities, shall terminate the Contract, pursuant to GC Sub-Clause 42.1.

If the Employer requires the Contractor to replace or make good on any such destruction or damage to the Facilities, the Time for Completion shall be extended in accordance with GC Clause 40.

38.4 Notwithstanding anything contained in the Contract, the Employer shall pay the Contractor for any increased costs or



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incidentals to the execution of the Contract that are in any way attributable to, consequent on, resulting from, or in any way connected with any War Risks, provided that the Contractor shall as soon as practicable notify the Employer in writing of any such increased cost.

- 38.5 If during the performance of the Contract any War Risks shall occur that financially or otherwise materially affect the execution of the Contract by the Contractor, the Contractor shall use its reasonable efforts to execute the Contract with due and proper consideration given to the safety of its and its Subcontractors' personnel engaged in the work on the Facilities, provided, however, that if the execution of the work on the Facilities becomes impossible or is substantially prevented for a single period of more than sixty (60) days or an aggregate period of more than one hundred and twenty (120) days on account of any War Risks, the Parties will attempt to develop a mutually satisfactory solution, failing which either Party may terminate the Contract by giving a notice to the other.
- 38.6 In the event of termination pursuant to GC Sub-Clauses 38.3 or 38.5, the rights and obligations of the Employer and the Contractor shall be specified in GC Sub-Clauses 42.1.2 and 42.1.3.

H. Change in Contract Elements

39. Change in the Facilities

39.1 Introducing a Change

39.1.1 Subject to GC Sub-Clauses 39.2.5 and 39.2.7, the Employer shall have the right to propose, and subsequently require, that the Project Manager order the Contractor from time to time during the performance of the Contract to make any change, modification, addition or deletion to, in or from the Facilities hereinafter called "Change", provided that such Change falls within the general scope of the Facilities and does not constitute unrelated work and that it is technically practicable, taking into account both the state of advancement of the Facilities and the technical compatibility of the Change envisaged with the nature of the Facilities as specified in the Contract.

39.1.2 The Contractor may from time to time during its performance of the Contract propose to the Employer with a copy to the Project Manager, any Change that the Contractor considers necessary or desirable to improve the quality, efficiency or safety of the Facilities. The Employer may at its discretion approve or reject any Change proposed by the Contractor, provided that the Employer shall approve any Change proposed by the Contractor to ensure the safety of the Facilities.

39.1.3 Notwithstanding GC Sub-Clauses 39.1.1 and 39.1.2, no change made necessary because of any default of the Contractor in the performance of its obligations under the Contract shall be deemed to be a Change, and such change shall not result in any adjustment of the Contract Price or the Time for Completion.

39.1.4 The procedure on how to proceed with and execute Changes is specified in GC Sub-Clauses 39.2 and 39.3, and further details and forms are provided in the

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Employer's Requirements (Forms and Procedures).

39.2 Changes Originating from Employer

39.2.1 If the Employer proposes a Change pursuant to GC Sub-Clause 39.1.1, it shall send to the Contractor a "Request for Change Proposal," requiring the Contractor to prepare and furnish to the Project Manager as soon as reasonably practicable a "Change Proposal," which shall include the following:

- (a) brief description of the Change
- (b) effect on the Time for Completion
- (c) estimated cost of the Change
- (d) effect on Functional Guarantees (if any)
- (e) effect on the Facilities
- (f) effect on any other provisions of the Contract.

39.2.2 Prior to preparing and submitting the "Change Proposal," the Contractor shall submit to the Project Manager an "Estimate for Change Proposal," which shall be an estimate of the cost of preparing and submitting the Change Proposal.

Upon receipt of the Contractor's Estimate for Change Proposal, the Employer shall do one of the following:

- (a) accept the Contractor's estimate with instructions to the Contractor to proceed with the preparation of the Change Proposal
- (b) advise the Contractor of any part of its Estimate for Change Proposal that is unacceptable and request the Contractor to review its estimate
- (c) advise the Contractor that the Employer does not intend to proceed with the Change.

39.2.3 Upon receipt of the Employer's instruction to proceed under GC Sub-Clause 39.2.2 (a), the Contractor shall, with proper expedition, proceed with the preparation of the Change Proposal, in accordance with GC Sub-Clause 39.2.1.

39.2.4 The pricing of any Change shall, as far as practicable, be calculated in accordance with the rates and prices included in the Contract. If such rates and prices are inequitable, the Parties thereto shall agree on specific rates for the valuation of the Change.

39.2.5 If before or during the preparation of the Change Proposal it becomes apparent that the aggregate effect of compliance therewith and with all other Change Orders that have already become binding upon the Contractor under this GC Clause 39 would be to increase or decrease the Contract Price as originally set forth in Article 2 (Contract Price) of the Contract Agreement by more than fifteen percent (15%), the Contractor may give a written notice of objection thereto prior to furnishing the Change Proposal as aforesaid. If the Employer accepts the Contractor's objection, the Employer shall withdraw the

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proposed Change and shall notify the Contractor in writing thereof.

The Contractor's failure to so object shall neither affect its right to object to any subsequent requested Changes or Change Orders herein, nor affect its right to take into account, when making such subsequent objection, the percentage increase or decrease in the Contract Price that any Change not objected to by the Contractor represents.

39.2.6 Upon receipt of the Change Proposal, the Employer and the Contractor shall mutually agree upon all matters therein contained. Within fourteen (14) days after such agreement, the Employer shall, if it intends to proceed with the Change, issue the Contractor with a Change Order.

If the Employer is unable to reach a decision within fourteen (14) days, it shall notify the Contractor with details of when the Contractor can expect a decision.

If the Employer decides not to proceed with the Change for whatever reason, it shall, within the said period of fourteen (14) days, notify the Contractor accordingly. Under such circumstances, the Contractor shall be entitled to reimbursement of all costs reasonably incurred by it in the preparation of the Change Proposal, provided that these do not exceed the amount given by the Contractor in its Estimate for Change Proposal submitted in accordance with GC Sub-Clause 39.2.2.

39.2.7 If the Employer and the Contractor cannot reach agreement on the price for the Change, an equitable adjustment to the Time for Completion, or any other matters identified in the Change Proposal, the Employer may nevertheless instruct the Contractor to proceed with the Change by issue of a "Pending Agreement Change Order."

Upon receipt of a Pending Agreement Change Order, the Contractor shall immediately proceed with effecting the Changes covered by such Order. The Parties shall thereafter attempt to reach agreement on the outstanding issues under the Change Proposal.

If the Parties cannot reach agreement within sixty (60) days from the date of issue of the Pending Agreement Change Order, then the matter may be referred to the Dispute Board in accordance with the provisions of GC Sub-Clause 45.1.

39.3 Changes Originating from Contractor

39.3.1 If the Contractor proposes a Change pursuant to GC Sub-Clause 39.1.2, the Contractor shall submit to the Project Manager a written "Application for Change Proposal," giving reasons for the proposed Change and including the information specified in GC Sub-Clause 39.2.1.

Upon receipt of the Application for Change Proposal, the Parties shall follow the procedures outlined in GC Sub-Clauses 39.2.6 and 39.2.7. However, should the Employer choose not to proceed, the Contractor shall not be entitled to recover the costs of preparing the



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Application for Change Proposal.

40. Extension of Time for Completion

40.1 The Time(s) for Completion specified in the PC pursuant to GC Sub-Clause 8.2 shall be extended if the Contractor is delayed or impeded in the performance of any of its obligations under the Contract by reason of any of the following:

- (a) any Change in the Facilities as provided in GC Clause 39;
- (b) any occurrence of Force Majeure as provided in GC Clause 37, unforeseen conditions as provided in GC Clause 35, or other occurrence of any of the matters specified or referred to in paragraphs (a), (b) and (c) of GC Sub-Clause 32.2;
- (c) any suspension order given by the Employer under GC Clause 41 hereof or reduction in the rate of progress pursuant to GC Sub-Clause 41.2;
- (d) any changes in laws and regulations as provided in GC Clause 36;
- (e) any default or breach of the Contract by the Employer, Appendix to the Contract Agreement titled Scope of Works and Supply by the Employer, or any activity, act or omission of the Employer, or the Project Manager, or any other contractors employed by the Employer;
- (f) any delay on the part of a sub-contractor, provided such delay is due to a cause for which the Contractor himself would have been entitled to an extension of time under this sub-clause;
- (g) delays attributable to the Employer or caused by customs; or
- (h) any other matter specifically mentioned in the Contract;

by such period as shall be fair and reasonable in all the circumstances and as shall fairly reflect the delay or impediment sustained by the Contractor.

40.2 Except where otherwise specifically provided in the Contract, the Contractor shall submit to the Project Manager a notice of a claim for an extension of the Time for Completion, together with particulars of the event or circumstance justifying such extension as soon as reasonably practicable after the commencement of such event or circumstance. As soon as reasonably practicable after receipt of such notice and supporting particulars of the claim, the Employer and the Contractor shall agree upon the period of such extension. In the event that the Contractor does not accept the Employer's estimate of a fair and reasonable time extension, the Contractor shall be entitled to refer the matter to a Dispute Board, pursuant to GC Sub-Clause 45.1.

40.3 The Contractor shall at all times use its reasonable efforts to minimize any delay in the performance of its obligations under the Contract.

40.4 In all cases where the Contractor has given a notice of a claim for an extension of time under GC 40.2, the Contractor shall consult with the Project Manager in order to determine the steps (if any) which can be taken to overcome or minimize the actual or anticipated delay. The Contractor shall thereafter comply with all reasonable instructions which the Project Manager shall give in

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order to minimize such delay. If compliance with such instructions shall cause the Contractor to incur extra costs and the Contractor is entitled to an extension of time under GC 40.1, the amount of such extra costs shall be added to the Contract Price.

41. Suspension

41.1 The Employer may request the Project Manager, by notice to the Contractor, to order the Contractor to suspend performance of any or all of its obligations under the Contract. Such notice shall specify the obligation of which performance is to be suspended, the effective date of the suspension and the reasons therefor. The Contractor shall thereupon suspend performance of such obligation, except those obligations necessary for the care or preservation of the Facilities, until ordered in writing to resume such performance by the Project Manager.

If, by virtue of a suspension order given by the Project Manager, other than by reason of the Contractor's default or breach of the Contract, the Contractor's performance of any of its obligations is suspended for an aggregate period of more than ninety (90) days, then at any time thereafter and provided that at that time such performance is still suspended, the Contractor may give a notice to the Project Manager requiring that the Employer shall, within twenty-eight (28) days of receipt of the notice, order the resumption of such performance or request and subsequently order a change in accordance with GC Clause 39, excluding the performance of the suspended obligations from the Contract.

If the Employer fails to do so within such period, the Contractor may, by a further notice to the Project Manager, elect to treat the suspension, where it affects a part only of the Facilities, as a deletion of such part in accordance with GC Clause 39 or, where it affects the whole of the Facilities, as termination of the Contract under GC Sub-Clause 42.1.

41.2 If

(a) the Employer has failed to pay the Contractor any sum due under the Contract within the specified period, has failed to approve any invoice or supporting documents without just cause pursuant to the Appendix to the Contract Agreement titled Terms and Procedures of Payment, or commits a substantial breach of the Contract, the Contractor may give a notice to the Employer that requires payment of such sum, with interest thereon as stipulated in GC Sub-Clause 12.3, requires approval of such invoice or supporting documents, or specifies the breach and requires the Employer to remedy the same, as the case may be. If the Employer fails to pay such sum together with such interest, fails to approve such invoice or supporting documents or give its reasons for withholding such approval, or fails to remedy the breach or take steps to remedy the breach within fourteen (14) days after receipt of the Contractor's notice or

(b) the Contractor is unable to carry out any of its obligations under the Contract for any reason attributable to the Employer, including but not limited to the Employer's failure to provide possession of or access to the Site or other areas in accordance with GC Sub-Clause 10.2, or failure to obtain any governmental permit necessary for the execution and/or completion of the Facilities,

then the Contractor may by fourteen (14) days' notice to

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the Employer suspend performance of all or any of its obligations under the Contract, or reduce the rate of progress.

- 41.3 If the Contractor's performance of its obligations is suspended or the rate of progress is reduced pursuant to this GC Clause 41, then the Time for Completion shall be extended in accordance with GC Sub-Clause 40.1, and any and all additional costs or expenses incurred by the Contractor as a result of such suspension or reduction shall be paid by the Employer to the Contractor in addition to the Contract Price, except in the case of suspension order or reduction in the rate of progress by reason of the Contractor's default or breach of the Contract.
- 41.4 During the period of suspension, the Contractor shall not remove from the Site any Plant, any part of the Facilities or any Contractor's Equipment, without the prior written consent of the Employer.

42. Termination

42.1 Termination for Employer's Convenience

42.1.1 The Employer may at any time terminate the Contract for any reason by giving the Contractor a notice of termination that refers to this GC Sub-Clause 42.1.

42.1.2 Upon receipt of the notice of termination under GC Sub-Clause 42.1.1, the Contractor shall either immediately or upon the date specified in the notice of termination:

- (a) cease all further work, except for such work as the Employer may specify in the notice of termination for the sole purpose of protecting that part of the Facilities already executed, or any work required to leave the Site in a clean and safe condition;
- (b) terminate all subcontracts, except those to be assigned to the Employer pursuant to paragraph (d) (ii) below;
- (c) remove all Contractor's Equipment from the Site, repatriate the Contractor's and its Subcontractors' personnel from the Site, remove from the Site any wreckage, rubbish and debris of any kind, and leave the whole of the Site in a clean and safe condition; and
- (d) subject to the payment specified in GC Sub-Clause 42.1.3,
 - (i) deliver to the Employer the parts of the Facilities executed by the Contractor up to the date of termination;
 - (ii) to the extent legally possible, assign to the Employer all right, title and benefit of the Contractor to the Facilities and to the Plant as of the date of termination, and, as may be required by the Employer, in any subcontracts concluded between the Contractor and its Subcontractors; and
 - (iii) deliver to the Employer all non-proprietary drawings, specifications and other documents prepared by the Contractor or its

Subcontractors as at the date of termination in connection with the Facilities.

42.1.3 In the event of termination of the Contract under GC Sub-Clause 42.1.1, the Employer shall pay to the Contractor the following amounts:

- (a) the Contract Price, properly attributable to the parts of the Facilities executed by the Contractor as of the date of termination;
- (b) the costs reasonably incurred by the Contractor in the removal of the Contractor's Equipment from the Site and in the repatriation of the Contractor's and its Subcontractors' personnel;
- (c) any amounts to be paid by the Contractor to its Subcontractors in connection with the termination of any subcontracts, including any cancellation charges;
- (d) costs incurred by the Contractor in protecting the Facilities and leaving the Site in a clean and safe condition pursuant to paragraph (a) of GC Sub-Clause 42.1.2; and
- (e) the cost of satisfying all other obligations, commitments and claims that the Contractor may in good faith have undertaken with third Parties in connection with the Contract and that are not covered by paragraphs (a) through (d) above.

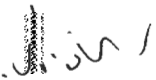
42.2 Termination for Contractor's Default

42.2.1 The Employer, without prejudice to any other rights or remedies it may possess, may terminate the Contract forthwith in the following circumstances by giving a notice of termination and its reasons therefor to the Contractor, referring to this GC Sub-Clause 42.2:

- (a) if the Contractor becomes bankrupt or insolvent, has a receiving order issued against it, compounds with its creditors, or, if the Contractor is a corporation, a resolution is passed or order is made for its winding up, other than a voluntary liquidation for the purposes of amalgamation or reconstruction, a receiver is appointed over any part of its undertaking or assets, or if the Contractor takes or suffers any other analogous action in consequence of debt
- (b) if the Contractor assigns or transfers the Contract or any right or interest therein in violation of the provision of GC Clause 43.
- (c) if the Contractor, in the judgment of the Employer has engaged in corrupt, collusive, coercive, or fraudulent practices, as defined in GC Clause 6, in competing for or in executing the Contract.

42.2.2 If the Contractor:

- (a) has abandoned or repudiated the Contract;
- (b) has without valid reason failed to commence work on the Facilities promptly or has suspended, other


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than pursuant to GC Sub-Clause 41.2, the progress of Contract performance for more than twenty-eight (28) days after receiving a written instruction from the Employer to proceed;

- (c) persistently fails to execute the Contract in accordance with the Contract or persistently neglects to carry out its obligations under the Contract without just cause; or
- (d) refuses or is unable to provide sufficient materials, services or labor to execute and complete the Facilities in the manner specified in the program furnished under GC Sub-Clause 18.2 at rates of progress that give reasonable assurance to the Employer that the Contractor can attain Completion of the Facilities by the Time for Completion as extended,

then the Employer may, without prejudice to any other rights it may possess under the Contract, give a notice to the Contractor stating the nature of the default and requiring the Contractor to remedy the same. If the Contractor fails to remedy or to take steps to remedy the same within fourteen (14) days of its receipt of such notice, then the Employer may terminate the Contract forthwith by giving a notice of termination to the Contractor that refers to this GC Sub-Clause 42.2.

42.2.3 Upon receipt of the notice of termination under GC Sub-Clauses 42.2.1 or 42.2.2, the Contractor shall, either immediately or upon such date as is specified in the notice of termination:

- (a) cease all further work, except for such work as the Employer may specify in the notice of termination for the sole purpose of protecting that part of the Facilities already executed, or any work required to leave the Site in a clean and safe condition,
- (b) terminate all subcontracts, except those to be assigned to the Employer pursuant to paragraph (d) below,
- (c) deliver to the Employer the parts of the Facilities executed by the Contractor up to the date of termination,
- (d) to the extent legally possible, assign to the Employer all right, title and benefit of the Contractor to the Facilities and to the Plant as of the date of termination, and, as may be required by the Employer, in any subcontracts concluded between the Contractor and its Subcontractors,
- (e) deliver to the Employer all drawings, specifications and other documents prepared by the Contractor or its Subcontractors as of the date of termination in connection with the Facilities.

42.2.4 The Employer may enter upon the Site, expel the Contractor, and complete the Facilities itself or by employing any third Party. The Employer may, to the exclusion of any right of the Contractor over the same, take over and use with the payment of a rental rate to

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the Contractor, with all the maintenance costs to the account of the Employer and with an indemnification by the Employer for all liability including damage or injury to persons arising out of the Employer's use of such equipment, any Contractor's Equipment owned by the Contractor and on the Site in connection with the Facilities for such reasonable period as the Employer considers expedient for the supply and installation of the Facilities.

Upon completion of the Facilities or at such earlier date as the Employer thinks appropriate, the Employer shall give notice to the Contractor that such Contractor's Equipment will be returned to the Contractor at or near the Site and shall return such Contractor's Equipment to the Contractor in accordance with such notice. The Contractor shall thereafter without delay and at its cost remove or arrange removal of the same from the Site.

42.2.5 Subject to GC Sub-Clause 42.2.6, the Contractor shall be entitled to be paid the Contract Price attributable to the Facilities executed as of the date of termination, the value of any unused or partially used Plant on the Site, and the costs, if any, incurred in protecting the Facilities and in leaving the Site in a clean and safe condition pursuant to paragraph (a) of GC Sub-Clause 42.2.3. Any sums due the Employer from the Contractor accruing prior to the date of termination shall be deducted from the amount to be paid to the Contractor under this Contract.

42.2.6 If the Employer completes the Facilities, the cost of completing the Facilities by the Employer shall be determined.

If the sum that the Contractor is entitled to be paid, pursuant to GC Sub-Clause 42.2.5, plus the reasonable costs incurred by the Employer in completing the Facilities, exceeds the Contract Price, the Contractor shall be liable for such excess.

If such excess is greater than the sums due the Contractor under GC Sub-Clause 42.2.5, the Contractor shall pay the balance to the Employer, and if such excess is less than the sums due the Contractor under GC Sub-Clause 42.2.5, the Employer shall pay the balance to the Contractor.

The Employer and the Contractor shall agree, in writing, on the computation described above and the manner in which any sums shall be paid.

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42.3 Termination by the Contractor

42.3.1 If

- (a) the Employer has failed to pay the Contractor any sum due under the Contract within the specified period, has failed to approve any invoice or supporting documents without just cause pursuant to the Appendix to the Contract Agreement titled Terms and Procedures of Payment, or commits a substantial breach of the Contract, the Contractor may give a notice to the Employer that requires payment of such sum, with interest thereon as stipulated in GC Sub-Clause 12.3, requires approval of such invoice or supporting documents, or

specifies the breach and requires the Employer to remedy the same, as the case may be. If the Employer fails to pay such sum together with such interest, fails to approve such invoice or supporting documents or give its reasons for withholding such approval, fails to remedy the breach or take steps to remedy the breach within fourteen (14) days after receipt of the Contractor's notice, or

- (b) the Contractor is unable to carry out any of its obligations under the Contract for any reason attributable to the Employer, including but not limited to the Employer's failure to provide possession of or access to the Site or other areas or failure to obtain any governmental permit necessary for the execution and/or completion of the Facilities,

then the Contractor may give a notice to the Employer thereof, and if the Employer has failed to pay the outstanding sum, to approve the invoice or supporting documents, to give its reasons for withholding such approval, or to remedy the breach within twenty-eight (28) days of such notice, or if the Contractor is still unable to carry out any of its obligations under the Contract for any reason attributable to the Employer within twenty-eight (28) days of the said notice, the Contractor may by a further notice to the Employer referring to this GC Sub-Clause 42.3.1, forthwith terminate the Contract.

42.3.2 The Contractor may terminate the Contract forthwith by giving a notice to the Employer to that effect, referring to this GC Sub-Clause 42.3.2, if the Employer becomes bankrupt or insolvent, has a receiving order issued against it, compounds with its creditors, or, being a corporation, if a resolution is passed or order is made for its winding up (other than a voluntary liquidation for the purposes of amalgamation or reconstruction), a receiver is appointed over any part of its undertaking or assets, or if the Employer takes or suffers any other analogous action in consequence of debt.

42.3.3 If the Contract is terminated under GC Sub-Clauses 42.3.1 or 42.3.2, then the Contractor shall immediately:

- (a) cease all further work, except for such work as may be necessary for the purpose of protecting that part of the Facilities already executed, or any work required to leave the Site in a clean and safe condition;
- (b) terminate all subcontracts, except those to be assigned to the Employer pursuant to paragraph (d) (ii);
- (c) remove all Contractor's Equipment from the Site and repatriate the Contractor's and its Subcontractors' personnel from the Site; and
- (d) subject to the payment specified in GC Sub-Clause 42.3.4,
 - (i) deliver to the Employer the parts of the Facilities executed by the Contractor up to the

date of termination;

- (ii) to the extent legally possible, assign to the Employer all right, title and benefit of the Contractor to the Facilities and to the Plant as of the date of termination, and, as may be required by the Employer, in any subcontracts concluded between the Contractor and its Subcontractors; and
- (iii) deliver to the Employer all drawings, specifications and other documents prepared by the Contractor or its Subcontractors as of the date of termination in connection with the Facilities.

42.3.4 If the Contract is terminated under GC Sub-Clauses 42.3.1 or 42.3.2, the Employer shall pay to the Contractor all payments specified in GC Sub-Clause 42.1.3, and reasonable compensation for all loss, except for loss of profit, or damage sustained by the Contractor arising out of, in connection with or in consequence of such termination.

42.3.5 Termination by the Contractor pursuant to this GC Sub-Clause 42.3 is without prejudice to any other rights or remedies of the Contractor that may be exercised in lieu of or in addition to rights conferred by GC Sub-Clause 42.3.

42.4 In this GC Clause 42, the expression “Facilities executed” shall include all work executed, Installation Services provided, and all Plant acquired, or subject to a legally binding obligation to purchase, by the Contractor and used or intended to be used for the purpose of the Facilities, up to and including the date of termination.



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42.5 In this GC Clause 42, in calculating any monies due from the Employer to the Contractor, account shall be taken of any sum previously paid by the Employer to the Contractor under the Contract, including any advance payment paid pursuant to the Appendix to the Contract Agreement titled Terms and Procedures of Payment.

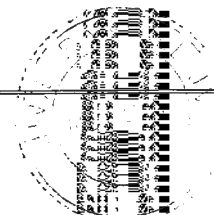
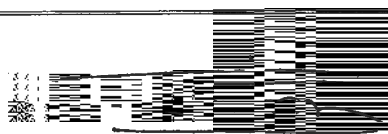
43. Assignment

43.1 Neither the Employer nor the Contractor shall, without the express prior written consent of the other Party, which consent shall not be unreasonably withheld, assign to any third Party the Contract or any part thereof, or any right, benefit, obligation or interest therein or thereunder, except that the Contractor shall be entitled to assign either absolutely or by way of charge any monies due and payable to it or that may become due and payable to it under the Contract.

I. Claims, Disputes and Arbitration

44. Contractor’s Claims

44.1 If the Contractor considers himself to be entitled to any extension of the Time for Completion and/or any additional payment, under any Clause of these Conditions or otherwise in connection with the Contract, the Contractor shall submit a notice to the Project Manager, describing the event or circumstance giving rise to the claim. The notice shall be given as soon as practicable, and not later than twenty-eight (28) days after the Contractor became aware, or should have become aware, of the event or circumstance.



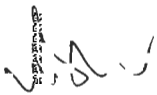
If the Contractor fails to give notice of a claim within such period of twenty-eight (28) days, the Time for Completion shall not be extended, the Contractor shall not be entitled to additional payment, and the Employer shall be discharged from all liability in connection with the claim. Otherwise, the following provisions of this Sub-Clause shall apply.

The Contractor shall also submit any other notices which are required by the Contract, and supporting particulars for the claim, all as relevant to such event or circumstance.

The Contractor shall keep such contemporary records as may be necessary to substantiate any claim, either on the Site or at another location acceptable to the Project Manager. Without admitting the Employer's liability, the Project Manager may, after receiving any notice under this Sub-Clause, monitor the record-keeping and/or instruct the Contractor to keep further contemporary records. The Contractor shall permit the Project Manager to inspect all these records, and shall (if instructed) submit copies to the Project Manager.

Within forty-two (42) days after the Contractor became aware (or should have become aware) of the event or circumstance giving rise to the claim, or within such other period as may be proposed by the Contractor and approved by the Project Manager, the Contractor shall send to the Project Manager a fully detailed claim which includes full supporting particulars of the basis of the claim and of the extension of time and/or additional payment claimed. If the event or circumstance giving rise to the claim has a continuing effect:

- (a) this fully detailed claim shall be considered as interim;
- (b) the Contractor shall send further interim claims at monthly intervals, giving the accumulated delay and/or amount claimed, and such further particulars as the Project Manager may reasonably require; and
- (c) the Contractor shall send a final claim within twenty-eight (28) days after the end of the effects resulting from the event or circumstance, or within such other period as may be proposed by the Contractor and approved by the Project Manager.



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Within forty-two (42) days after receiving a claim or any further particulars supporting a previous claim, or within such other period as may be proposed by the Project Manager and approved by the Contractor, the Project Manager shall respond with approval, or with disapproval and detailed comments. He may also request any necessary further particulars, but shall nevertheless give his response on the principles of the claim within such time.

Each Payment Certificate shall include such amounts for any claim as have been reasonably substantiated as due under the relevant provision of the Contract. Unless and until the particulars supplied are sufficient to substantiate the whole of the claim, the Contractor shall only be entitled to payment for such part of the claim as he has been able to substantiate.

The Project Manager shall agree with the Contractor or estimate: (i) the extension (if any) of the Time for Completion (before or after its expiry) in accordance with GC Clause 40, and/or (ii) the additional payment (if any) to which the

Contractor is entitled under the Contract.

The requirements of this Sub-Clause are in addition to those of any other Sub-Clause which may apply to a claim. If the Contractor fails to comply with this or another Sub-Clause in relation to any claim, any extension of time and/or additional payment shall take account of the extent (if any) to which the failure has prevented or prejudiced proper investigation of the claim, unless the claim is excluded under the second paragraph of this Sub-Clause.

In the event that the Contractor and the Employer cannot agree on any matter relating to a claim, either Party may refer the matter to the Dispute Board pursuant to GC 45 hereof.

45. Disputes and Arbitration

45.1 Appointment of the Dispute Board

Disputes shall be referred to a DB for decision in accordance with GC Sub-Clause 45.3. The Parties shall appoint a DB by the date **stated in the PC**.

The DB shall comprise, as stated in the PC, either one or three suitably qualified persons (“the members”), each of whom shall be fluent in the language for communication defined in the Contract and shall be a professional experienced in the type of activities involved in the performance of the Contract and with the interpretation of contractual documents. If the number is not so stated and the Parties do not agree otherwise, the DB shall comprise three persons, one of whom shall serve as chairman.

If the Parties have not jointly appointed the DB twenty-one (21) days before the date **stated in the PC** and the DB is to comprise three persons, each Party shall nominate one member for the approval of the other Party. The first two members shall recommend and the Parties shall agree upon the third member, who shall act as chairman.

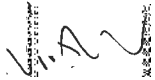
However, if a list of potential members is **included in the PC**, the members shall be selected from those on the list, other than anyone who is unable or unwilling to accept appointment to the DB.

The agreement between the Parties and either the sole member or each of the three members shall incorporate by reference the General Conditions of Dispute Board Agreement contained in the Appendix to these General Conditions, with such amendments as are agreed between them.

The terms of the remuneration of either the sole member or each of the three members, including the remuneration of any expert whom the DB consults, shall be mutually agreed upon by the Parties when agreeing the terms of appointment of the member or such expert (as the case may be). Each Party shall be responsible for paying one-half of this remuneration.

If a member declines to act or is unable to act as a result of death, disability, resignation or termination of appointment, a replacement shall be appointed in the same manner as the replaced person was required to have been nominated or agreed upon, as described in this Sub-Clause.

The appointment of any member may be terminated by mutual agreement of both Parties, but not by the Employer or the Contractor acting alone. Unless otherwise agreed by both Parties, the appointment of the DB (including each member)


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shall expire at the end of the Defect Liability Period as specified in GC Sub-Clause 27.2.

45.2 Failure to Agree on the Composition of the Dispute Board

If any of the following conditions apply, namely:

- (a) the Parties fail to agree upon the appointment of the sole member of the DB by the date stated in the first paragraph of GC Sub-Clause 45.1,
- (b) either Party fails to nominate a member (for approval by the other Party) of a DB of three persons by such date,
- (c) the Parties fail to agree upon the appointment of the third member (to act as chairman) of the DB by such date, or
- (d) the Parties fail to agree upon the appointment of a replacement person within forty-two (42) days after the date on which the sole member or one of the three members declines to act or is unable to act as a result of death, disability, resignation or termination of appointment,

then the appointing entity or official **named in the PC** shall, upon the request of either or both of the Parties and after due consultation with both Parties, appoint this member of the DB. This appointment shall be final and conclusive. Each Party shall be responsible for paying one-half of the remuneration of the appointing entity or official.

45.3 Obtaining Dispute Board's Decision

If a dispute (of any kind whatsoever) arises between the Parties in connection with the performance of the Contract, including any dispute as to any certificate, determination, instruction, opinion or valuation of the Project Manager, either Party may refer the dispute in writing to the DB for its decision, with copies to the other Party and the Project Manager. Such reference shall state that it is given under this Sub-Clause.

For a DB of three persons, the DB shall be deemed to have received such reference on the date when it is received by the chairman of the DB.

Both Parties shall promptly make available to the DB all such additional information, further access to the Site, and appropriate facilities, as the DB may require for the purposes of making a decision on such dispute. The DB shall be deemed to be not acting as arbitrator(s).

Within eighty-four (84) days after receiving such reference, or within such other period as may be proposed by the DB and approved by both Parties, the DB shall give its decision, which shall be reasoned and shall state that it is given under this Sub-Clause. The decision shall be binding on both Parties, who shall promptly give effect to it unless and until it shall be revised in an amicable settlement or an arbitral award as described below. Unless the Contract has already been abandoned, repudiated or terminated, the Contractor shall continue with the performance of the Facilities in accordance with the Contract.

If either Party is dissatisfied with the DB's decision, then either Party may, within twenty-eight (28) days after receiving the decision, give notice to the other Party of its dissatisfaction and

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intention to commence arbitration. If the DB fails to give its decision within the period of eighty-four (84) days (or as otherwise approved) after receiving such reference, then either Party may, within twenty-eight (28) days after this period has expired, give notice to the other Party of its dissatisfaction and intention to commence arbitration.

In either event, this notice of dissatisfaction shall state that it is given under this Sub-Clause, and shall set out the matter in dispute and the reason(s) for dissatisfaction. Except as stated in GC Sub-Clauses 45.6 and 45.7, neither Party shall be entitled to commence arbitration of a dispute unless a notice of dissatisfaction has been given in accordance with this Sub-Clause.

If the DB has given its decision as to a matter in dispute to both Parties, and no notice of dissatisfaction has been given by either Party within twenty-eight (28) days after it received the DB's decision, then the decision shall become final and binding upon both Parties.

45.4 Amicable Settlement

Where notice of dissatisfaction has been given under GC Sub-Clause 45.3 above, both Parties shall attempt to settle the dispute amicably before the commencement of arbitration. However, unless both Parties agree otherwise, arbitration may be commenced on or after the fifty-sixth (56) day after the day on which notice of dissatisfaction and intention to commence arbitration was given, even if no attempt at amicable settlement has been made.

45.5 Arbitration

Unless **indicated otherwise in the PC**, any dispute not settled amicably and in respect of which the DB's decision (if any) has not become final and binding shall be finally settled by arbitration. Unless otherwise agreed by both Parties, arbitration shall be conducted as follows:

- (a) For contracts with foreign contractors:
 - (i) international arbitration with proceedings administered by the international arbitration institution **appointed in the PC**, in accordance with the rules of arbitration of the appointed institution;
 - (ii) the place of arbitration shall be the city where the headquarters of the appointed arbitration institution is located or such other place selected in accordance with the applicable arbitration rules; and
 - (iii) the arbitration shall be conducted in the language for communications defined in Sub-Clause 5.3; and
- (b) For contracts with domestic contractors, arbitration with proceedings conducted in accordance with the laws of the Employer's country.

The arbitrator(s) shall have full power to open up, review and revise any certificate, determination, instruction, opinion or valuation of the Project Manager, and any decision of the DB, relevant to the dispute. Nothing shall disqualify the Project Manager from being called as a witness and giving evidence before the arbitrator(s) on any matter whatsoever relevant to the

dispute.

Neither Party shall be limited in the proceedings before the arbitrator(s) to the evidence or arguments previously put before the DB to obtain its decision, or to the reasons for dissatisfaction given in its notice of dissatisfaction. Any decision of the DB shall be admissible in evidence in the arbitration.

Arbitration may be commenced prior to or after completion of the Works. The obligations of the Parties, the Project Manager and the DB shall not be altered by reason of any arbitration being conducted during the progress of the Works.

45.6 Failure to Comply with Dispute Board's Decision

In the event that a Party fails to comply with a DB decision which has become final and binding, then the other Party may, without prejudice to any other rights it may have, refer the failure itself to arbitration under GC Sub-Clause 45.5. GC Sub-Clauses 45.3 and 45.4 shall not apply to this reference.

45.7 Expiry of Dispute Board's Appointment

If a dispute arises between the Parties in connection with the performance of the Contract, and there is no DB in place, whether by reason of the expiry of the DB's appointment or otherwise:

- (a) GC Sub-Clauses 45.3 and 45.4 shall not apply, and
- (b) the dispute may be referred directly to arbitration under GC Sub-Clause 45.5.

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APPENDIX

General Conditions of Dispute Board Agreement

1. Definitions

Each "Dispute Board Agreement" is a tripartite agreement by and between:

the "Employer";

the "Contractor"; and

the "Member" who is defined in the Dispute Board Agreement as being:

- (i) the sole member of the "DB" and, where this is the case, all references to the "Other Members" do not apply, or
- (ii) one of the three persons who are jointly called the "DB" (or "Dispute Board") and, where this is the case, the other two persons are called the "Other Members".

The Employer and the Contractor have entered (or intend to enter) into a contract, which is called the "Contract" and is defined in the Dispute Board Agreement, which incorporates this Appendix. In the Dispute Board Agreement, words and expressions which are not otherwise defined shall have the meanings assigned to them in the Contract.

2. General Provisions

Unless otherwise stated in the Dispute Board Agreement, it shall take effect on the latest of the following dates:

- (a) the Commencement Date defined in the Contract,
- (b) when the Employer, the Contractor and the Member have each signed the Dispute Board Agreement, or
- (c) when the Employer, the Contractor and each of the Other Members (if any) have respectively each signed a dispute board agreement.

This employment of the Member is a personal appointment. At any time, the Member may give not less than 70 days' notice of resignation to the Employer and to the Contractor, and the Dispute Board Agreement shall terminate upon the expiry of this period.

3. Warranties

The Member warrants and agrees that he/she is and shall be impartial and independent of the Employer, the Contractor and the Project Manager. The Member shall promptly disclose, to each of them and to the Other Members (if any), any fact or circumstance which might appear inconsistent with his/her warranty and agreement of impartiality and independence.

When appointing the Member, the Employer and the Contractor relied upon the Member's representations that he/she is:

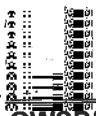
- (a) experienced in the work which the Contractor is to carry out under the Contract,
- (b) experienced in the interpretation of contract documentation, and
- (c) fluent in the language for communications defined in the Contract.

4. General Obligations of the Member

The Member shall:

- (a) have no interest financial or otherwise in the Employer, the Contractor or the Project Manager, nor any financial interest in the Contract except for payment under the Dispute Board Agreement;

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- (b) not previously have been employed as a consultant or otherwise by the Employer, the Contractor or the Project Manager, except in such circumstances as were disclosed in writing to the Employer and the Contractor before they signed the Dispute Board Agreement;
- (c) have disclosed in writing to the Employer, the Contractor and the Other Members (if any), before entering into the Dispute Board Agreement and to his/her best knowledge and recollection, any professional or personal relationships with any director, officer or employee of the Employer, the Contractor or the Project Manager, and any previous involvement in the overall project of which the Contract forms part;
- (d) not, for the duration of the Dispute Board Agreement, be employed as a consultant or otherwise by the Employer, the Contractor or the Project Manager, except as may be agreed in writing by the Employer, the Contractor and the Other Members (if any);
- (e) comply with the annexed procedural rules and with GC Sub-Clause 45.3;
- (f) not give advice to the Employer, the Contractor, the Employer's Personnel or the Contractor's Personnel concerning the conduct of the Contract, other than in accordance with the annexed procedural rules;
- (g) not while a Member enter into discussions or make any agreement with the Employer, the Contractor or the Project Manager regarding employment by any of them, whether as a consultant or otherwise, after ceasing to act under the Dispute Board Agreement;
- (h) ensure his/her availability for all site visits and hearings as are necessary;
- (i) become conversant with the Contract and with the progress of the Facilities (and of any other parts of the project of which the Contract forms part) by studying all documents received which shall be maintained in a current working file;
- (j) treat the details of the Contract and all the DB's activities and hearings as private and confidential, and not publish or disclose them without the prior written consent of the Employer, the Contractor and the Other Members (if any); and
- (k) be available to give advice and opinions, on any matter relevant to the Contract when requested by both the Employer and the Contractor, subject to the agreement of the Other Members (if any).

5. General Obligations of the Employer and the Contractor

The Employer, the Contractor, the Employer's Personnel and the Contractor's Personnel shall not request advice from or consultation with the Member regarding the Contract, otherwise than in the normal course of the DB's activities under the Contract and the Dispute Board Agreement. The Employer and the Contractor shall be responsible for compliance with this provision, by the Employer's Personnel and the Contractor's Personnel respectively.

The Employer and the Contractor undertake to each other and to the Member that the Member shall not, except as otherwise agreed in writing by the Employer, the Contractor, the Member and the Other Members (if any):

- (a) be appointed as an arbitrator in any arbitration under the Contract;
- (b) be called as a witness to give evidence concerning any dispute before arbitrator(s) appointed for any arbitration under the Contract; or
- (c) be liable for any claims for anything done or omitted in the discharge or purported discharge of the Member's functions, unless the act or omission is shown to have been in bad faith.

The Employer and the Contractor hereby jointly and severally indemnify and hold the Member harmless against and from claims from which he is relieved from liability under the preceding paragraph.

Whenever the Employer or the Contractor refers a dispute to the DB under GC Sub-Clause 45.3, which will require the Member to make a site visit and attend a hearing, the Employer or the Contractor shall provide appropriate security for a sum equivalent to the reasonable expenses to be incurred by the Member. No account shall be taken of any other payments due or paid to the Member.

6. Payment

The Member shall be paid as follows, in the currency named in the Dispute Board Agreement:

- (a) a retainer fee per calendar month, which shall be considered as payment in full for:
 - (i) being available on 28 days' notice for all site visits and hearings;
 - (ii) becoming and remaining conversant with all project developments and maintaining relevant files;
 - (iii) all office and overhead expenses including secretarial services, photocopying and office supplies incurred in connection with his duties; and
 - (iv) all services performed hereunder except those referred to in sub-paragraphs (b) and (c) of this Clause.

The retainer fee shall be paid with effect from the last day of the calendar month in which the Dispute Board Agreement becomes effective; until the last day of the calendar month in which the Taking-Over Certificate is issued for the whole of the Works.

With effect from the first day of the calendar month following the month in which Taking-Over Certificate is issued for the whole of the Works, the retainer fee shall be reduced by one third. This reduced fee shall be paid until the first day of the calendar month in which the Member resigns or the Dispute Board Agreement is otherwise terminated.

- (b) a daily fee which shall be considered as payment in full for:
 - (i) each day or part of a day up to a maximum of two days' travel time in each direction for the journey between the Member's home and the site, or another location of a meeting with the Other Members (if any);
 - (ii) each working day on site visits, hearings or preparing decisions; and
 - (iii) each day spent reading submissions in preparation for a hearing.
- (c) all reasonable expenses including necessary travel expenses (air fare in less than first class, hotel and subsistence and other direct travel expenses) incurred in connection with the Member's duties, as well as the cost of telephone calls, courier charges, taxes and telexes: a receipt shall be required for each item in excess of five (5) percent of the daily fee referred to in sub-paragraph (b) of this Clause;
- (d) any taxes properly levied in the Country on payments made to the Member (unless a national or permanent resident of the Country) under this Clause 6.

The retainer and daily fees shall be as specified in the Dispute Board Agreement. Unless it specifies otherwise, these fees shall remain fixed for the first 24 calendar months, and shall thereafter be adjusted by agreement between the Employer, the Contractor and the Member, at each anniversary of the date on which the Dispute Board Agreement became effective.

If the Parties fail to agree on the retainer fee or the daily fee the appointing entity or official named in the PC shall determine the amount of the fees to be used.

The Member shall submit invoices for payment of the monthly retainer and air fares quarterly in advance. Invoices for other expenses and for daily fees shall be submitted following the conclusion of a site visit or hearing. All invoices shall be accompanied by a brief description of activities performed during the relevant period and shall be addressed to the Contractor.

The Contractor shall pay each of the Member's invoices in full within 56 calendar days after receiving each invoice and shall apply to the Employer (in the Statements under the Contract) for

reimbursement of one-half of the amounts of these invoices. The Employer shall then pay the Contractor in accordance with the Contract.

If the Contractor fails to pay to the Member the amount to which he/she is entitled under the Dispute Board Agreement, the Employer shall pay the amount due to the Member and any other amount which may be required to maintain the operation of the DB; and without prejudice to the Employer's rights or remedies. In addition to all other rights arising from this default, the Employer shall be entitled to reimbursement of all sums paid in excess of one-half of these payments, plus all costs of recovering these sums and financing charges calculated at the rate specified in accordance with GC Sub-Clause 12.3.

If the Member does not receive payment of the amount due within 70 days after submitting a valid invoice, the Member may (i) suspend his/her services (without notice) until the payment is received, and/or (ii) resign his/her appointment by giving notice under Clause 7.

7. Termination

At any time: (i) the Employer and the Contractor may jointly terminate the Dispute Board Agreement by giving 42 days' notice to the Member; or (ii) the Member may resign as provided for in Clause 2.

If the Member fails to comply with the Dispute Board Agreement, the Employer and the Contractor may, without prejudice to their other rights, terminate it by notice to the Member. The notice shall take effect when received by the Member.

If the Employer or the Contractor fails to comply with the Dispute Board Agreement, the Member may, without prejudice to his other rights, terminate it by notice to the Employer and the Contractor. The notice shall take effect when received by them both.

Any such notice, resignation and termination shall be final and binding on the Employer, the Contractor and the Member. However, a notice by the Employer or the Contractor, but not by both, shall be of no effect.

8. Default of the Member

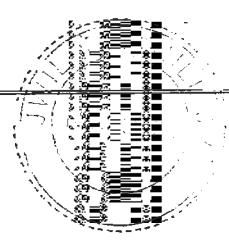
If the Member fails to comply with any of his obligations under Clause 4 concerning his impartiality or independence in relation to the Employer or the Contractor, he/she shall not be entitled to any fees or expenses hereunder and shall, without prejudice to their other rights, reimburse each of the Employer and the Contractor for any fees and expenses received by the Member and the Other Members (if any), for proceedings or decisions (if any) of the DB which are rendered void or ineffective by the said failure to comply.

9. Disputes

Any dispute or claim arising out of or in connection with this Dispute Board Agreement, or the breach, termination or invalidity thereof, shall be finally settled by institutional arbitration. If no other arbitration institute is agreed, the arbitration shall be conducted under the Rules of Arbitration of the International Chamber of Commerce by one arbitrator appointed in accordance with these Rules of Arbitration.

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Annex

DISPUTE BOARD GUIDELINES

1. Unless otherwise agreed by the Employer and the Contractor, the DB shall visit the site at intervals of not more than 140 days, including times of critical construction events, at the request of either the Employer or the Contractor. Unless otherwise agreed by the Employer, the Contractor and the DB, the period between consecutive visits shall not be less than 70 days, except as required to convene a hearing as described below.
2. The timing of and agenda for each site visit shall be as agreed jointly by the DB, the Employer and the Contractor, or in the absence of agreement, shall be decided by the DB. The purpose of site visits is to enable the DB to become and remain acquainted with the progress of the Works and of any actual or potential problems or claims, and, as far as reasonable, to prevent potential problems or claims from becoming disputes.
3. Site visits shall be attended by the Employer, the Contractor and the Project Manager and shall be co-ordinated by the Employer in co-operation with the Contractor. The Employer shall ensure the provision of appropriate conference facilities and secretarial and copying services. At the conclusion of each site visit and before leaving the site, the DB shall prepare a report on its activities during the visit and shall send copies to the Employer and the Contractor.
4. The Employer and the Contractor shall furnish to the DB one copy of all documents which the DB may request, including Contract documents, progress reports, variation instructions, certificates and other documents pertinent to the performance of the Contract. All communications between the DB and the Employer or the Contractor shall be copied to the other Party. If the DB comprises three persons, the Employer and the Contractor shall send copies of these requested documents and these communications to each of these persons.
5. If any dispute is referred to the DB in accordance with GC Sub-Clause 45.3, the DB shall proceed in accordance with GC Sub-Clause 45.3 and these Guidelines. Subject to the time allowed to give notice of a decision and other relevant factors, the DB shall:
 - (a) act fairly and impartially as between the Employer and the Contractor, giving each of them a reasonable opportunity of putting his case and responding to the other's case, and
 - (b) adopt procedures suitable to the dispute, avoiding unnecessary delay or expense.
6. The DB may conduct a hearing on the dispute, in which event it will decide on the date and place for the hearing and may request that written documentation and arguments from the Employer and the Contractor be presented to it prior to or at the hearing.
7. Except as otherwise agreed in writing by the Employer and the Contractor, the DB shall have power to adopt an inquisitorial procedure, to refuse admission to hearings or audience at hearings to any persons other than representatives of the Employer, the Contractor and the Project Manager, and to proceed in the absence of any Party who the DB is satisfied received notice of the hearing; but shall have discretion to decide whether and to what extent this power may be exercised.
8. The Employer and the Contractor empower the DB, among other things, to:
 - (a) establish the procedure to be applied in deciding a dispute,
 - (b) decide upon the DB's own jurisdiction, and as to the scope of any dispute referred to it,
 - (c) conduct any hearing as it thinks fit, not being bound by any rules or procedures other than those contained in the Contract and these Guidelines,
 - (d) take the initiative in ascertaining the facts and matters required for a decision,
 - (e) make use of its own specialist knowledge, if any,
 - (f) decide upon the payment of financing charges in accordance with the Contract,

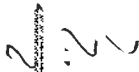
- (g) decide upon any provisional relief such as interim or conservatory measures,
- (h) open up, review and revise any certificate, decision, determination, instruction, opinion or valuation of the Project Manager, relevant to the dispute, and
- (i) appoint, should the DB so consider necessary and the Parties agree, a suitable expert at the cost of the Parties to give advice on a specific matter relevant to the dispute.

9. The DB shall not express any opinions during any hearing concerning the merits of any arguments advanced by the Parties. Thereafter, the DB shall make and give its decision in accordance with GC Sub-Clause 45.3, or as otherwise agreed by the Employer and the Contractor in writing. If the DB comprises three persons:

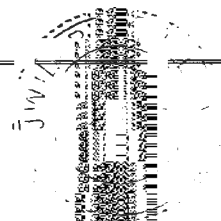
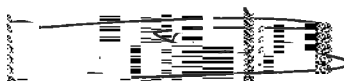
- (a) it shall convene in private after a hearing, in order to have discussions and prepare its decision;
- (b) it shall endeavour to reach a unanimous decision: if this proves impossible the applicable decision shall be made by a majority of the Members, who may require the minority Member to prepare a written report for submission to the Employer and the Contractor; and
- (c) if a Member fails to attend a meeting or hearing, or to fulfil any required function, the other two Members may nevertheless proceed to make a decision, unless:
 - (i) either the Employer or the Contractor does not agree that they do so, or
 - (ii) the absent Member is the chairman and he/she instructs the other Members not to make a decision.

Project Director
Project Implementation Unit (P.I.U)
JICA Funded Guwahati Water Supply Project

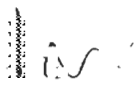
Technical Specifications (Separate Volume)



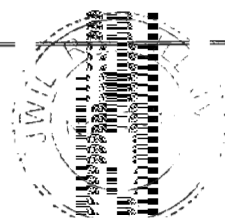
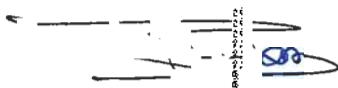
Project Director
Project Implementation Unit (P.I.U)
JICA Funded Guwahati Water Supply Project



Drawings (Separate Volume)



Project Director
Project Implementation Unit (P.I.U)
JICA Project



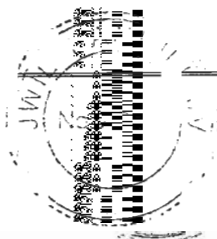
Other Bidding Forms Submitted with Bid

WIN

Project Director

Project Implementation Unit
JICA Funded Guwahati Water Supply

WIN



Technical Proposal

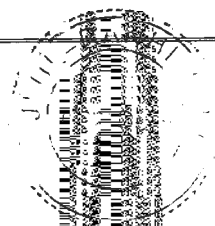
Technical Schedule I: Statement of Technical Alternatives

Technical Schedule II: Technical Parameters to be proposed by the Bidder

Schedule II A	A.1 Schematic Flow Diagram A.2 General Layout Plan A.3 Cross Section of Raw Water Intake A.4 Hydraulic Profile of Water Treatment Plant A.5 Single Line Diagram A.6 Architecture of SCADA System
Schedule II B	Details of Raw water Intake Structure, Transmission Main, Water Treatment Plant and Clear Water Reservoir
Schedule II C	Major Mechanical Equipment
Schedule II D	Electrical and Instrumentation / Control Equipment
Schedule VII	Construction Schedule
Others	Electrical Load List and Transformer Sizing



Project Director
Project Implementation
JICA F...



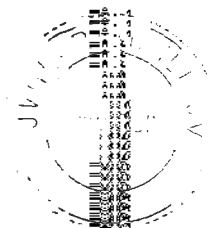
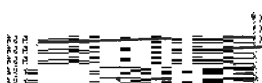
Schedule I - Statement of Technical Alternatives

(To be submitted under the separate sealed envelope)

Sr	Clause	Alternative	Remarks
1	General Requirements		Not Applicable
2	Scope of Work		Not Applicable
3	Civil, Building and Road Works		Not Applicable
4	Piping		Not Applicable
5	Gates and Valves		Not Applicable
6	Mechanical Equipment		Not Applicable
7	Electrical Equipment		Not Applicable
8	Instrumentation, Automation and Control Systems		Not Applicable
9	Intake Structure and Raw Water Pump Station		Not Applicable
10	Water Treatment Plant (with Clear Water Pump Station)		Not Applicable
11	Interception and Diversion Drain		Not Applicable

Guwahati Water Supply Project – GWSP-C401

Project Director
 Project Implementation Unit (P.I.U)
 Guwahati Water Supply Project

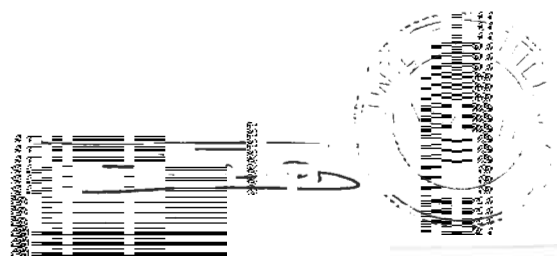
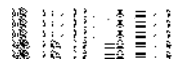


12	Quality Assurance and quality Control			Not Applicable	
13	Erection, Testing and Commissioning			Not Applicable	
14	Operation and Maintenance			Not Applicable	
15	Environmental and Social Requirements			Not Applicable	



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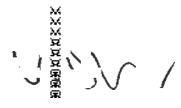
Project Director
Project Implementation (P-I)
JICA Funded Guwahati Project



Schedule II - Technical Parameters to be proposed by the Bidder

A.1 Schematic Flow Diagram

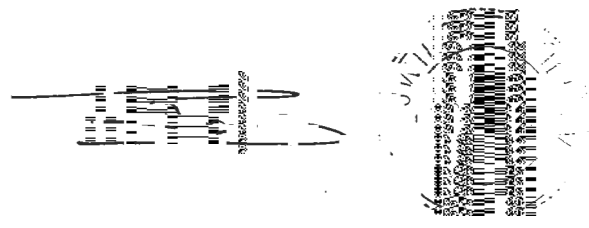
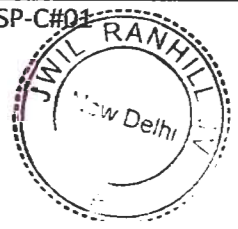
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Project Director
Project Implementation Unit (P.I.U)
JICA Funded Guwahati Water Supply Project



Guwahati Water Supply Project - GWSP-C#01



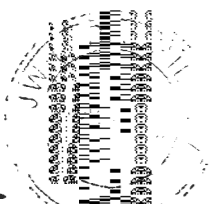
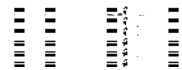
A.2 General Layout Plan

- WTP
- Intake

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Project Director
Project Implementation
JICA Funded Guwahati Water Supply Project



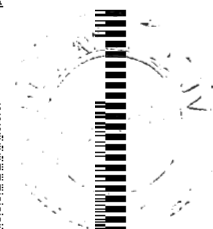
A.3 Cross Section of Raw Water Intake

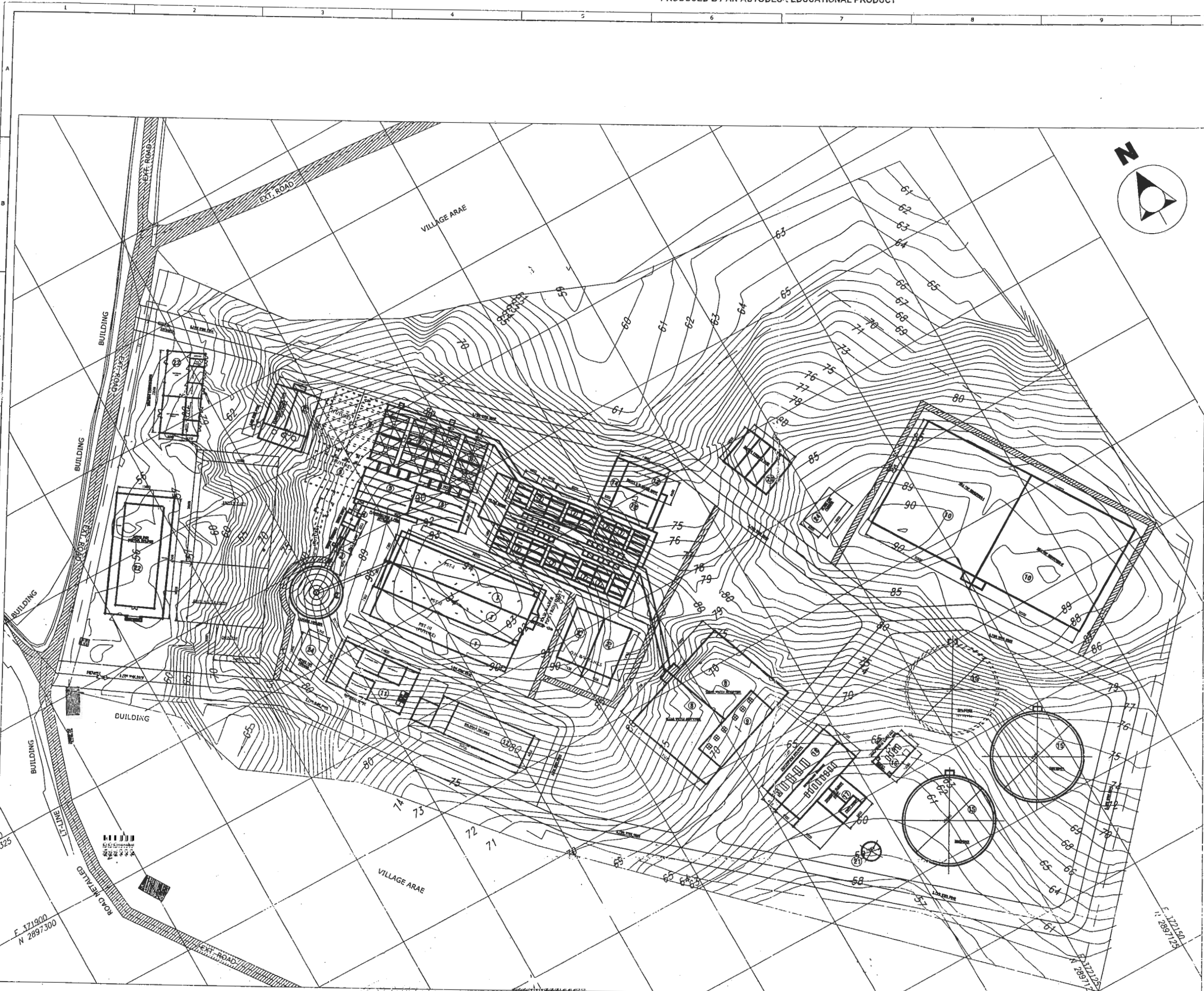
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Prof. ...

SVJ



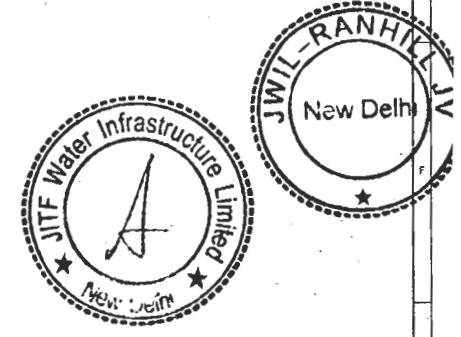


LIST OF UNITS			
UNIT No.	DESCRIPTION	QTY/NO.	SIZE
1	PRE SETTLING TANK	2	38000 x 7300 x 3000 SHD
2	CASCADE AERATOR	1	13700 DIA
3	PARSHALL FLUME	1	610 THROAT WIDTH
4	FLASH MIXER	1	3500 x 3500 x 3000 SHD
5	FLOCCULATOR	2	13000 x 8500 x 3500 SHD
6	TUBE SETTLER	2	13000 x 13400 x 3000 SHD
7	FILTER BED	2	(5800 x 9000 (3900 x 2 + 800 + 200 x 2)
8	CLEAR WATER RESERVOIR (CWR)	2	75230 x 15000 x 3000 LD
9	CWR PUMP ROOM		
10	HILL TOP RESERVOIR	2	30550 x 30500 x 6000 LD
11	CHEMICAL HOUSE	1	12000 x 21000 (DOUBLE STOREY)
12	CHLORINE BUILDING	1	31000 x 8000
13	WASTE B/W WATER SUMP	1	5500 x 14000 x 3000 LD
14	WASTE B/W PUMP ROOM		
15	THICKENER		24000 DIA x 4000 SHD
16	THICKENED SLUDGE PUMP ROOM	1	6000 x 10000
17	THICKENED SLUDGE SUMP	1	8550 x 9000
18	DEWATERING BUILDING	1	22000 x 11000 (DOUBLE STOREY)
19	CLF SLUDGE SUMP AND PUMPS	1	15000 x 11750 x 2000 LD
20	SLUDGE STORAGE YARD	1	10500 x 14000 x 1800 LD
21	SUPERNATANT SUMP PUMP	1	4800 DIA x 2000 LD
22	ADM. BUILDING	1	32000 x 15000 (DOUBLE STOREY)
23	MAINTENANCE BLDG.	1	22000 x 10000
24	SPACE FOR PARKING	2	11000 x 6000
25	OVERHEAD BACK WASH TANK	1	300 CUM EACH

GENERAL NOTES

GENERAL NOTES

1. ALL DIMENSIONS ARE IN MM & ALL LEVELS ARE IN METERS.
2. THIS IS A TENTATIVE Dwg. FOR TENDER PURPOSE ONLY AND SUBJECT TO MODIFICATIONS DURING DETAILED Dwg.
3. PLEASE DO NOT SCALE THIS Dwg. IF IN DOUBT PLEASE ASK.
4. I/SR SHALL BE AT -SCALE IN THE PLANT AREA.

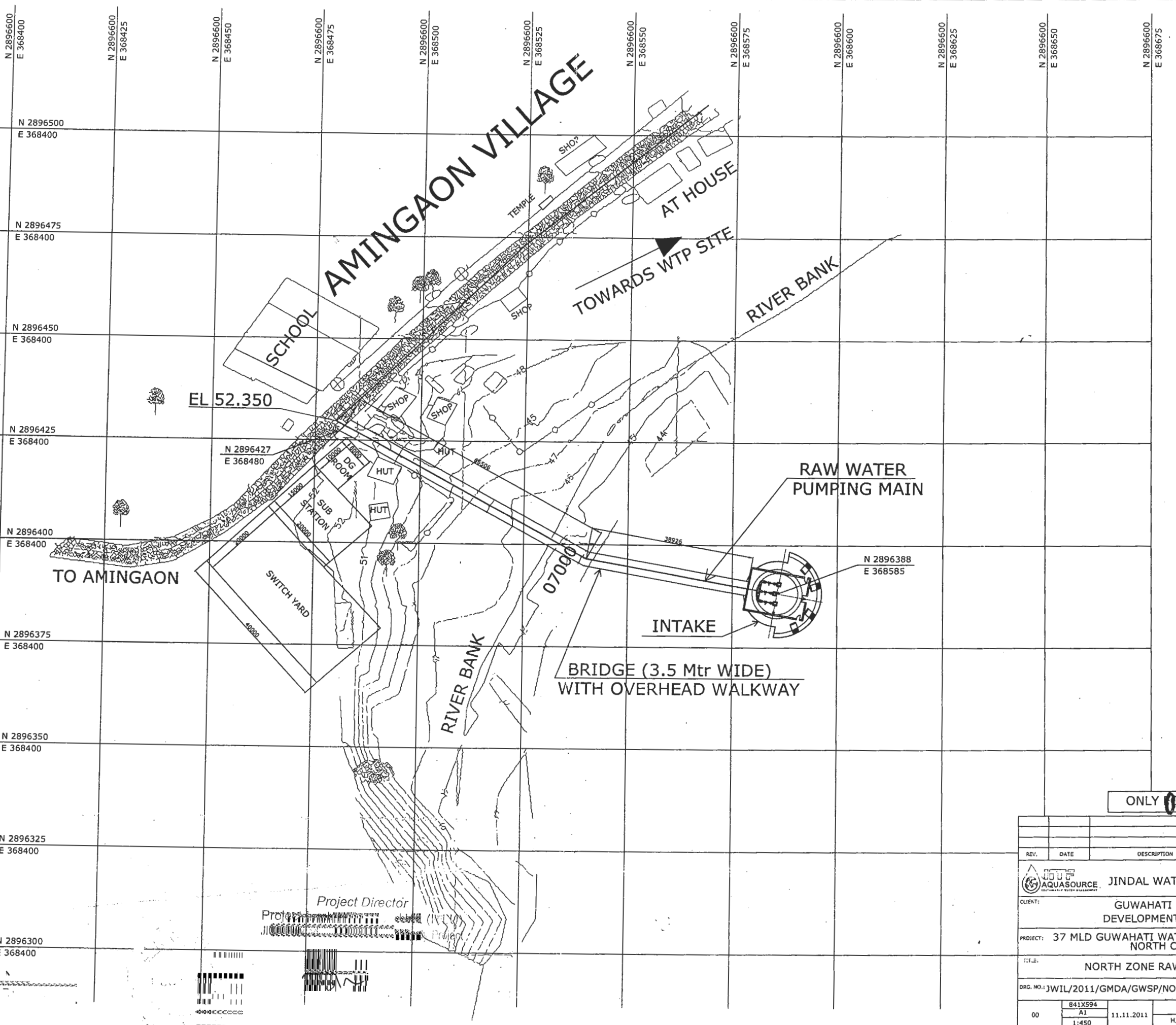


REV.	DATE	DESCRIPTION	000740	DR. BY	APPD. BY
JITF WATER INFRASTRUCTURE LTD.					
CLIENT: GUWAHATI METROPOLITAN DEVELOPMENT AUTHORITY					
PROJECT: 37 MLD GUWAHATI WATER SUPPLY PROJECT (GWSP) NORTH CENTRAL ZONE					
TITLE: LAYOUT PLAN FOR WTP					
DRAWING NO. JWIL/2011/GWSP/NORTH/WTP/A1				SHEET NO. 1 / 1	
00	841 x 594	11.11.2011	SUNIL	SK	H.C. RAJA P.J.
REVISION	SCALE	DATE	DRN. BY	DSN. BY	CHK. BY APPVD. BY

Project Director
Project Implementation Unit (P.I.U)
JICA Funded Guwahati Water Supply Project

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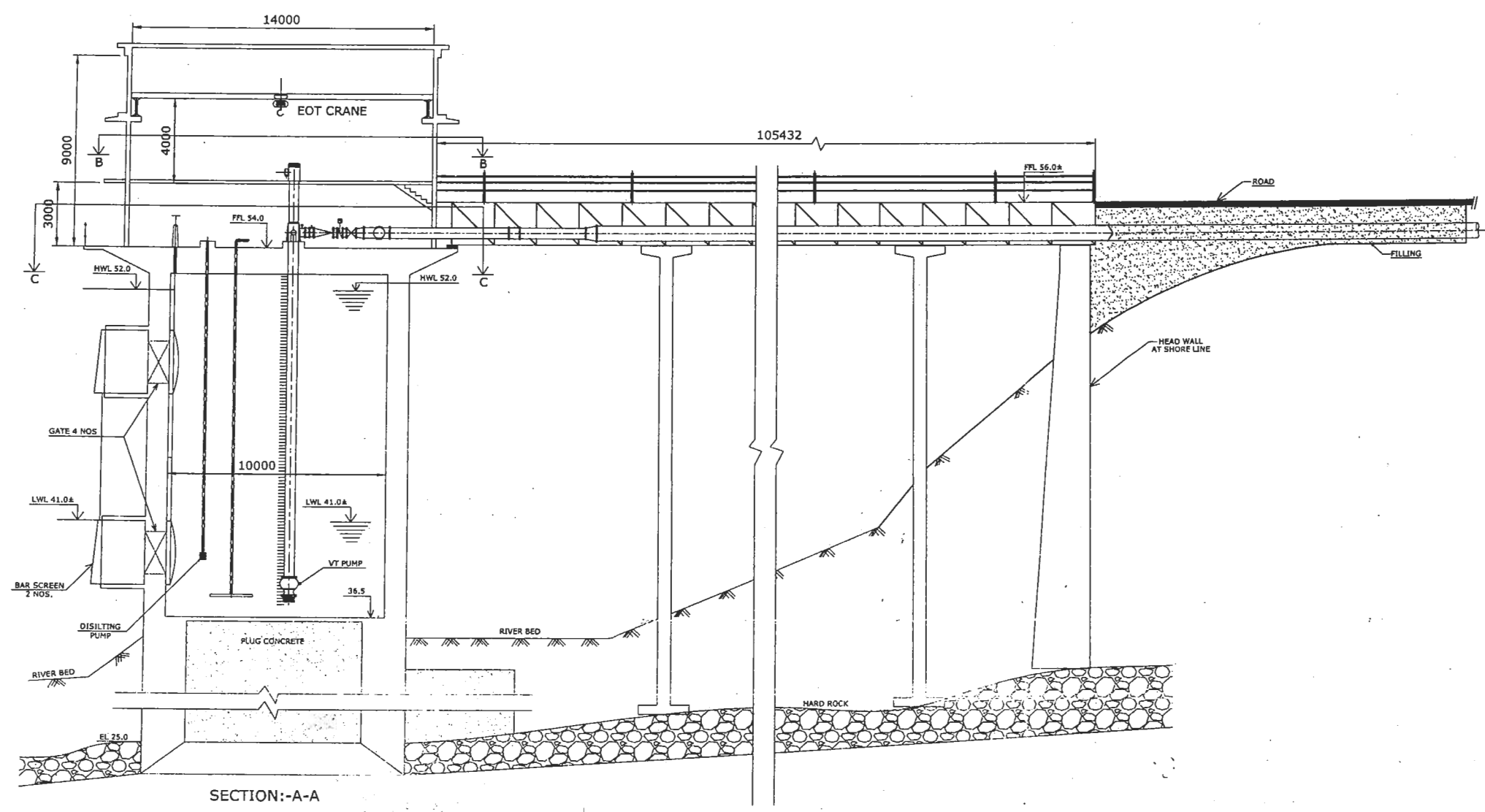
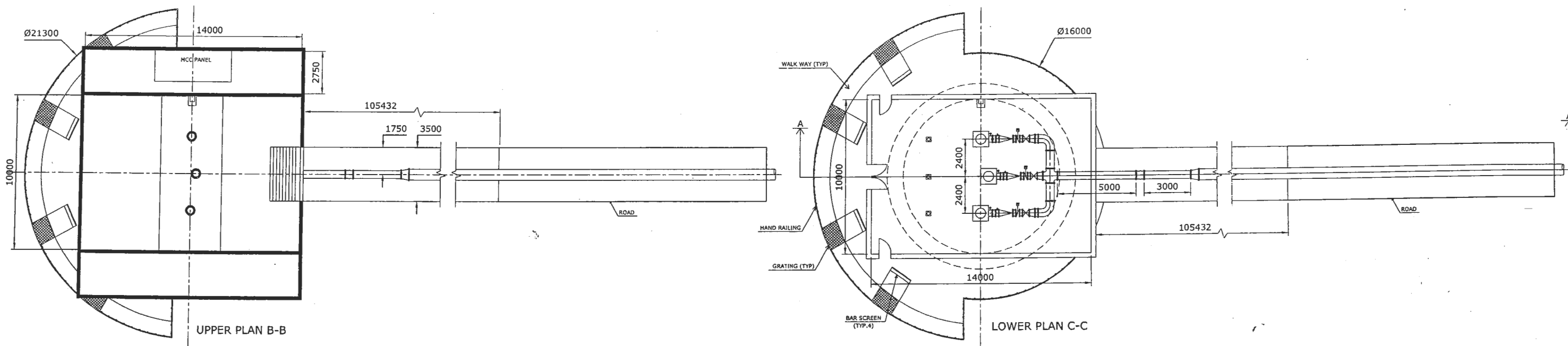
AMINGAON VILLAGE



ONLY FOR REFERENCE PURPOSE

REV.	DATE	DESCRIPTION	DRN.	CHD.	APPD.
JINDAL WATER INFRASTRUCTURE LTD.					
CLIENT: GUWAHATI METROPOLITAN DEVELOPMENT AUTHORITY (GMDA)					
PROJECT: 37 MLD GUWAHATI WATER SUPPLY PROJECT (GWSP) NORTH CENTRAL ZONE					
TITLE: NORTH ZONE RAW WATER INTAKE SITE					
DRG. NO.: JWIL/2011/GMDA/GWSP/NORTH INTAKE/A1 SH. NO. 2 OF 2					
00	841X594 A1	11.11.2011	HJ	HJ	SK/HR PJ
REVISION	SCALE	DATE	GEN. BY	DRAN. BY	REVWD. BY APPD. BY

Project Director
 Project Engineer
 Project



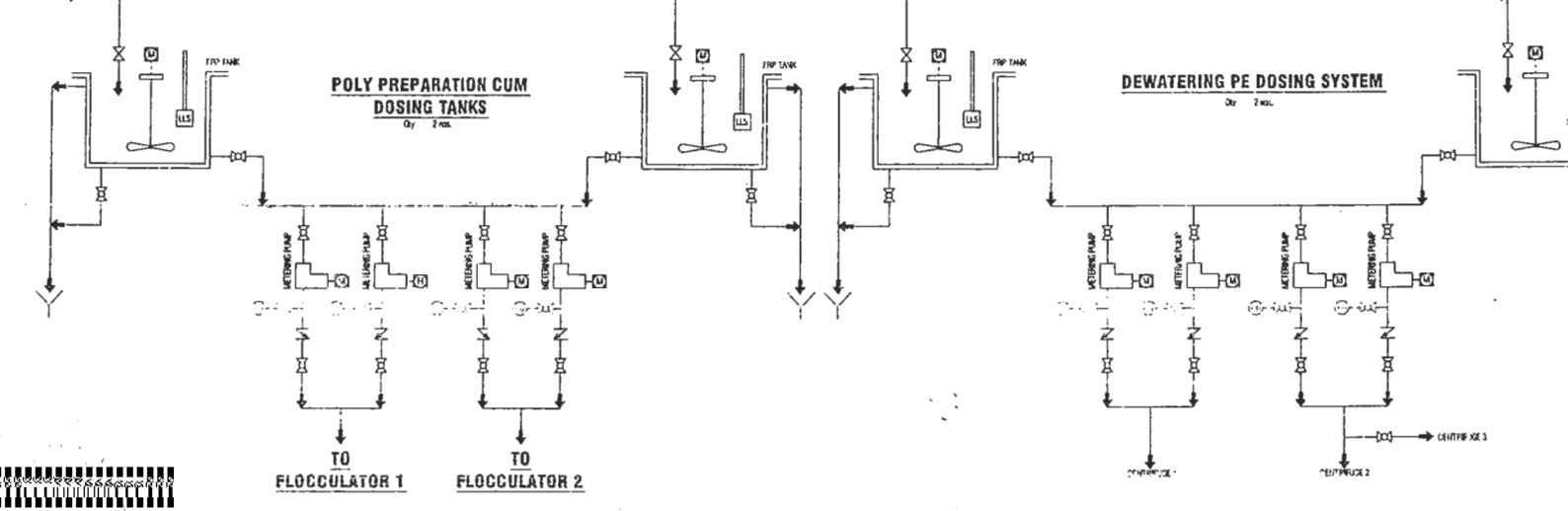
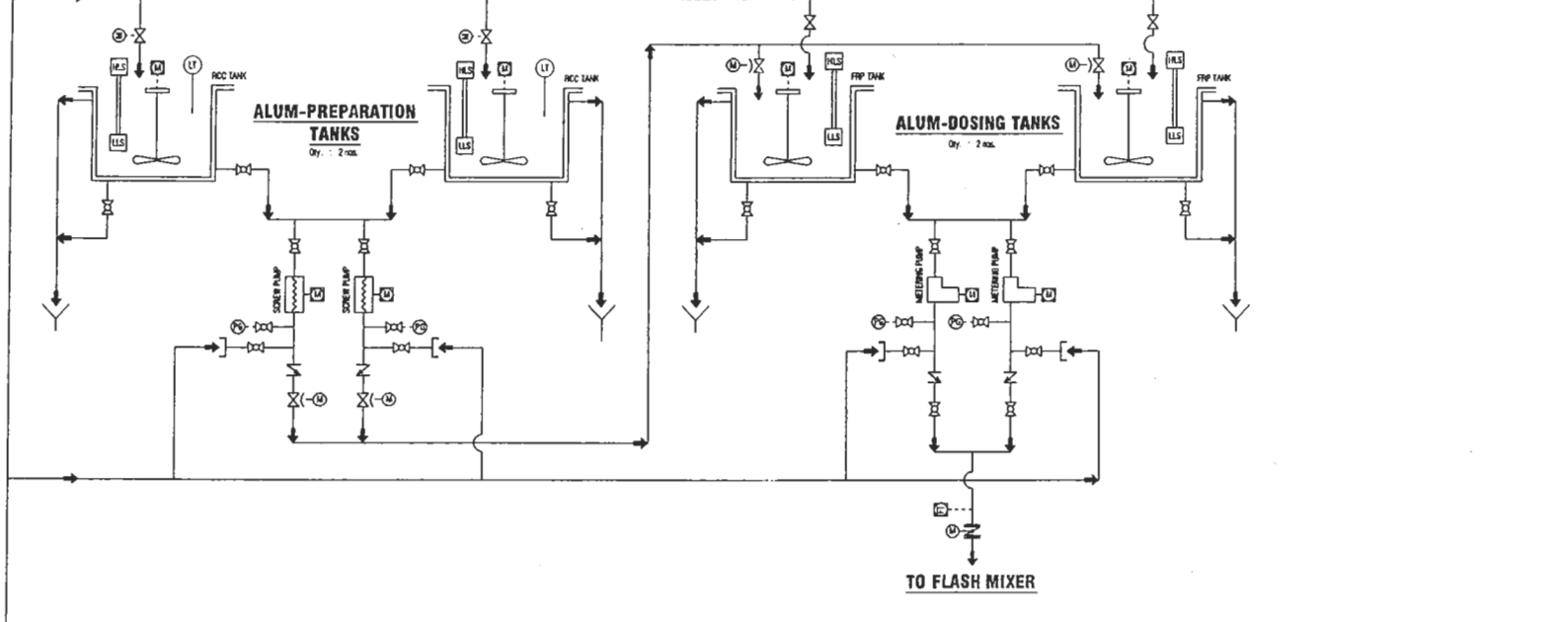
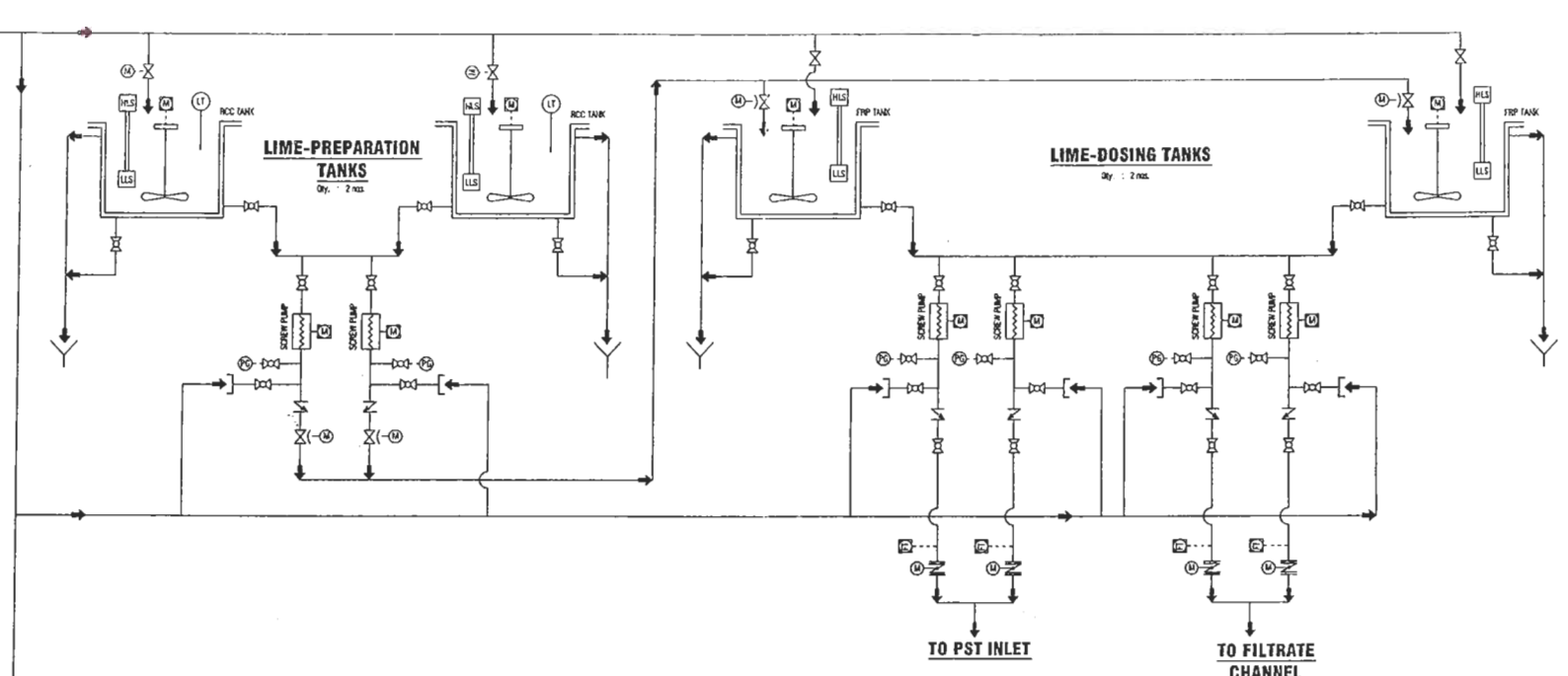
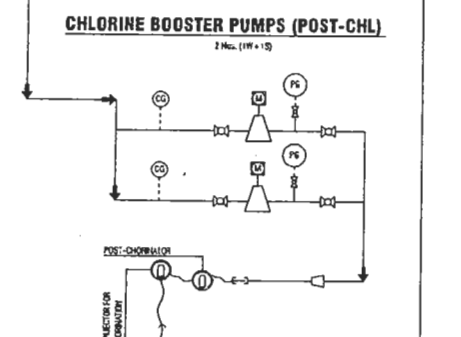
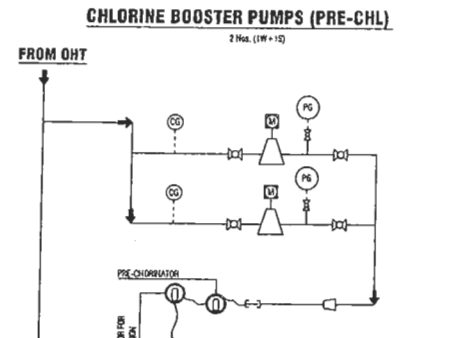
ONLY FOR TENDER PURPOSE

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Project Director
 (P.I.U)
 Project

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SCALE					
DATE					
GEN. BY					
DRAN. BY					
REVWD. BY					
APPD. BY					

JINDAL WATER INFRASTRUCTURE LTD.
 CLIENT: GUWAHATI METROPOLITAN DEVELOPMENT AUTHORITY (GMDA)
 PROJECT: 37 MLD GUWAHATI WATER SUPPLY PROJECT (GWSP) NORTH CENTRAL ZONE
 TITLE: NORTH INTAKE WELL PLAN & SECTIONS
 DRG. NO.: JWIL/2010/GMDA/GWSP/NORTH INTAKE/A0 SH. NO. 1 OF 2



LEGEND	
	PS PRESSURE SWITCH
	LI LEVEL INDICATOR
	LT LEVEL TRANSMITTER
	LHH LEVEL ALARM - HIGH
	LAL LEVEL ALARM - LOW
	LALL LEVEL ALARM - LOW LOW
	LS LEVEL SWITCH
	FTI FLOW INDICATOR TRANSMITTER
	FR FLOW RECORDER
	FD FLOW TOTALIZER
	PHI pH INDICATING TRANSMITTER
	TUT TURBIDITY INDICATING TRANSMITTER
	CL RESIDUAL CHLORINE
	RFI RATE OF FLOW (FILTER)
	LOF LOSS OF HEAD (FILTER)
	TS TORQUE SWITCH
	TAN TORQUE ALARM HIGH
	TANH TORQUE ALARM HIGH HIGH
	PG(S) PRESSURE GAUGE WITH SEAL (WITH 3-WAY COCK)
	PG PRESSURE GAUGE WITHOUT SEAL (WITH 3-WAY COCK)
	LSL LEVEL SWITCH LOW
	LSH LEVEL SWITCH HIGH
	I INTERLOCK
	HA HIGH ALARM
	LL LOW LEVEL
	HL HIGH LEVEL
	TSV TELESCOPIC BLEED VALVE
	CG COMPOUND GAUGE
	PT PRESSURE TRANSMITTER
	RCA RESIDUAL CHLORINE ANALYZER
	LE LEVEL ELEMENT



Project Director
 Project Manager
 JIC

JTF WATER INFRASTRUCTURE LTD.	
CLIENT: GUWAHATI METROPOLITAN DEVELOPMENT AUTHORITY	
PROJECT: 37 MLD GUWAHATI WATER SUPPLY PROJECT (GWSP) NORTH CENTRAL ZONE	
TITLE: P&ID FOR WTP	
DRAWING NO. JWIL/2011/GWSP/NORTH WTP/A*	SHEET NO. 2/2
00	AT
VS	VS
REVISION	SCALE
DATE	DATE
DESIGNED BY	DESIGNED BY
CHECKED BY	CHECKED BY
APPROVED BY	APPROVED BY

A.4 Hydraulic Profile of Water Treatment Plant

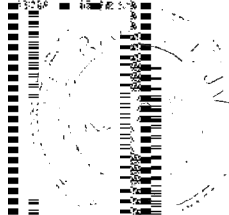
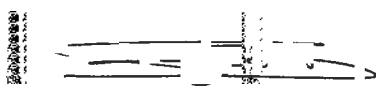
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Project Director

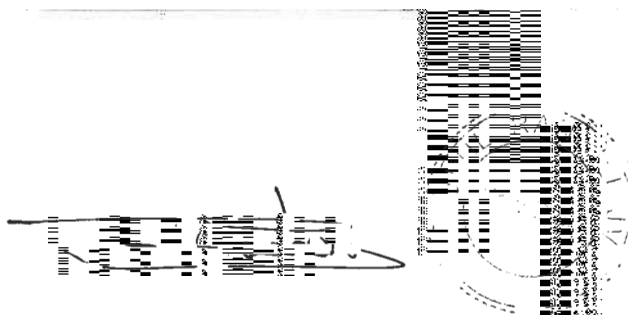
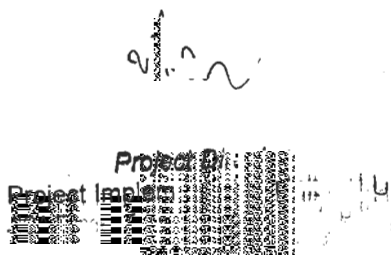
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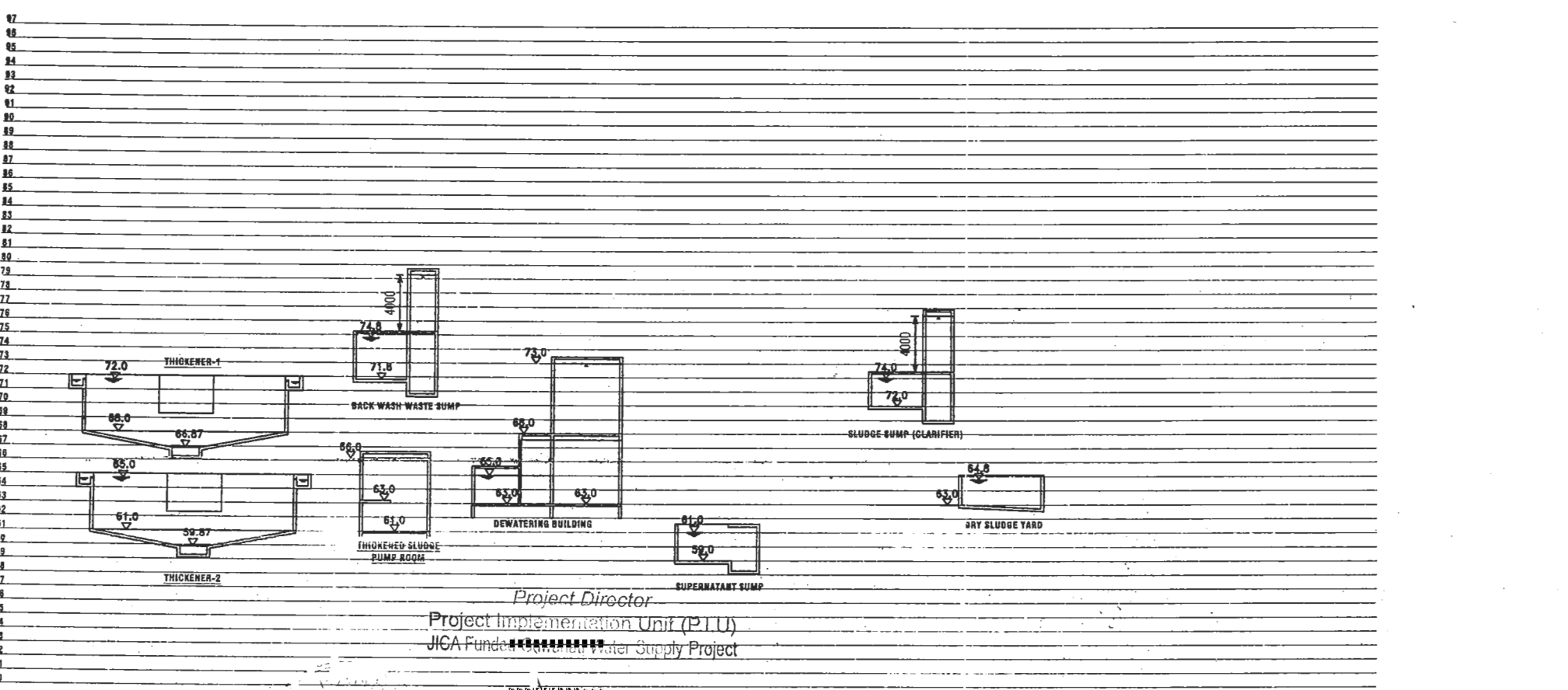
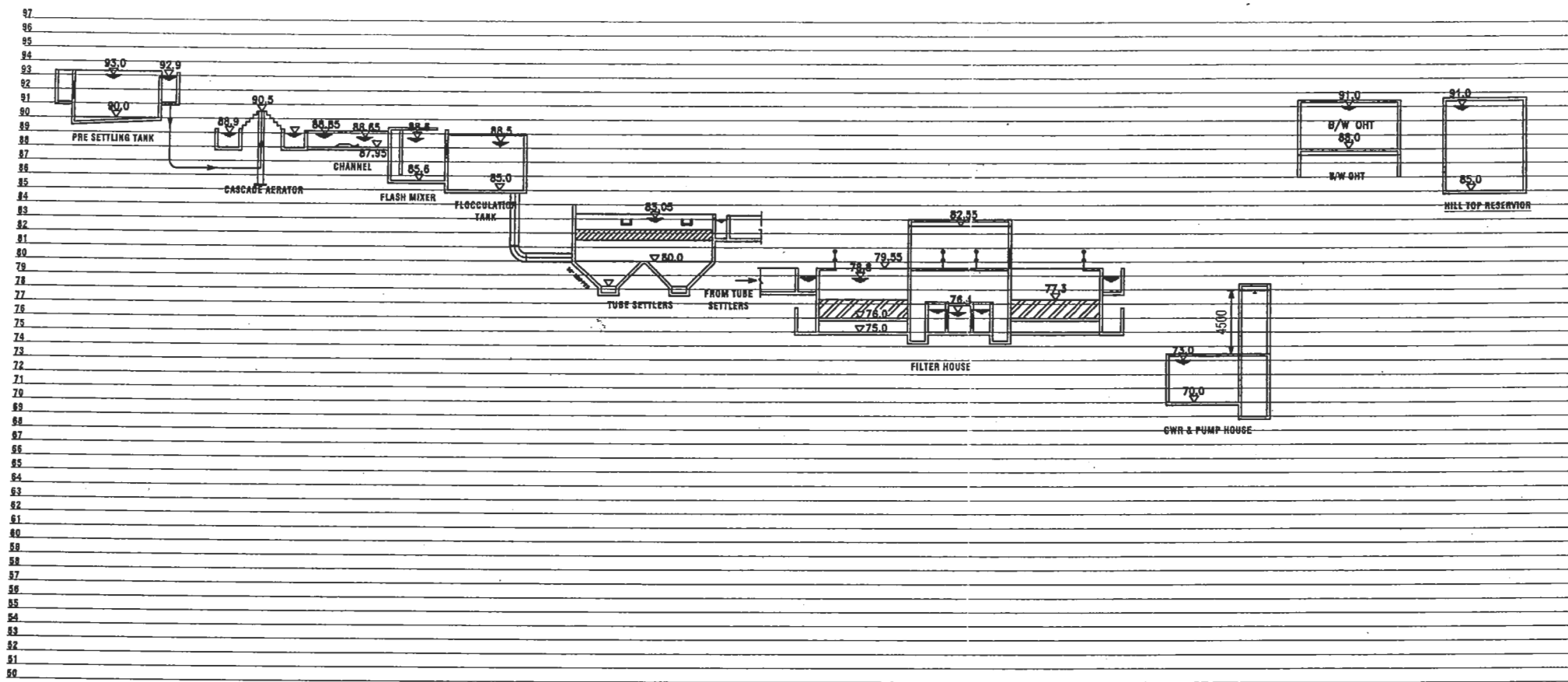
Project In-charge



A.5 Single line Diagram of Raw Water Pump Intake and Water Treatment Plant

ATTACHED





Project Director
 Project Implementation Unit (PIU)
 JICA Funds



- GENERAL NOTES**
1. ALL DIMENSIONS ARE IN MM & ALL LEVELS ARE IN METERS.
 2. THIS IS A TENTATIVE DWG. FOR TENDER PURPOSE ONLY AND SUBJECT TO MODIFICATIONS DURING DETAILED ENGG.
 3. PLEASE DO NOT SCALE THIS DWG. IF IN DOUBT, CONTACT THE DESIGNER.
 4. FGL SHALL BE AT >54.00 m IN THE PLANT AREA.

000745

REV.	DATE	DESCRIPTION	DRN. BY	CHKD. BY	APPD. BY
00					

CLIENT
 GUWAHATI METROPOLITAN DEVELOPMENT AUTHORITY

PROJECT
 37 MLD GUWAHATI WATER SUPPLY PROJECT (GWSP) NORTH CENTRAL ZONE

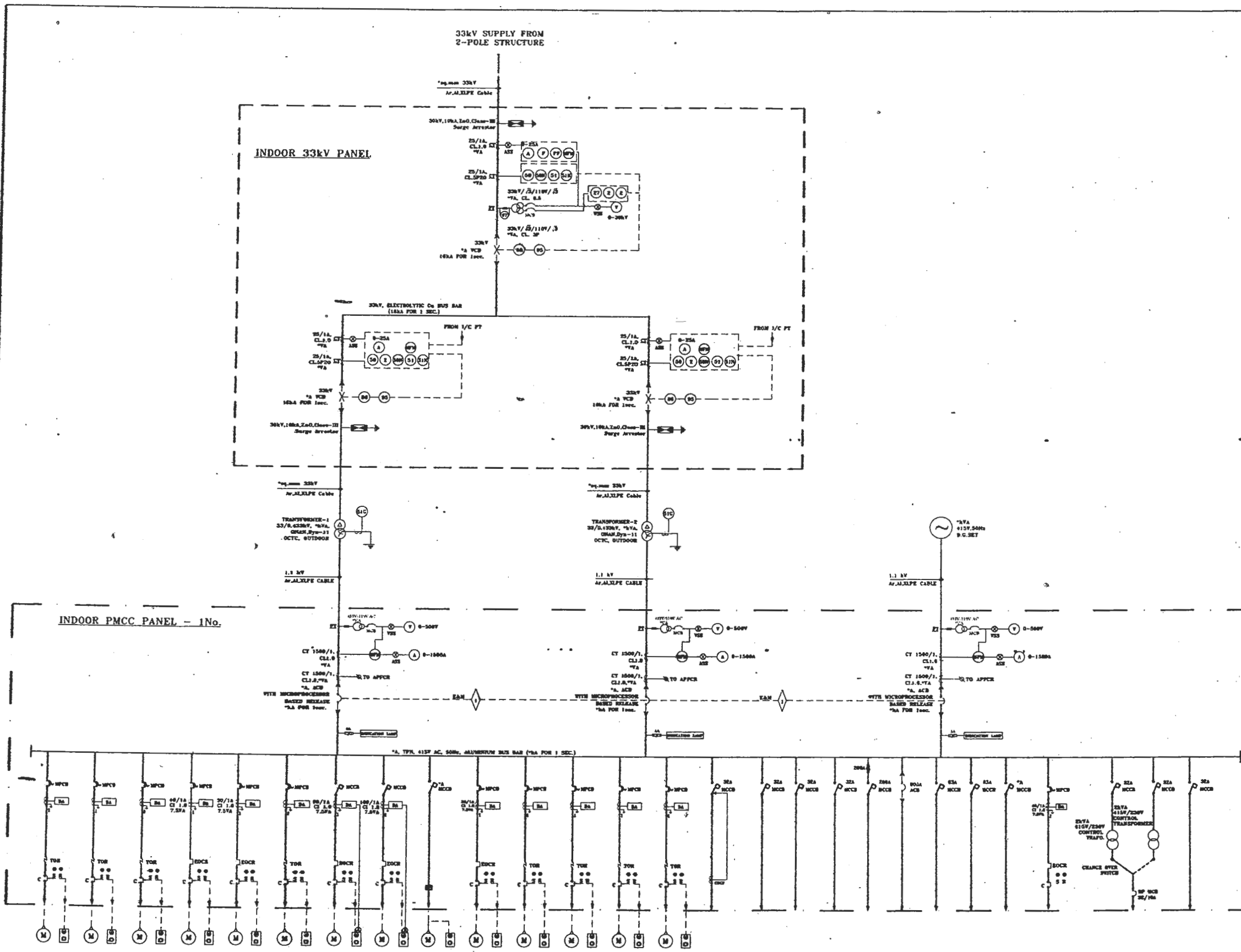
TITLE
 HYDRAULIC FLOW DIAGRAM

DRAWING NO. JWIL/2011/GWSP/NORTH WTP/A2 **SHEET NO.** 1 / 1

00	041 x 594	AT	1:200	19.11.2011					
REVISION	SCALE	DATE	DRN. BY	DGN. BY	CHKD. BY	APPVD. BY			

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LEGEND

(Symbol)	INST. O/C RELAY
(Symbol)	INST. E/F RELAY
(Symbol)	IDMT O/C RELAY
(Symbol)	IDMT E/F RELAY
(Symbol)	TRIPPING RELAY
(Symbol)	TRIP CRT. SUPERVISION RELAY
(Symbol)	U/V RELAY
(Symbol)	TIME DELAY RELAY
(Symbol)	PT FUSE FAILURE RELAY
(Symbol)	COMPOSITE MOTOR PROTECTION RELAY
(Symbol)	MULTIFUNCTION METER
(Symbol)	MOTOR
(Symbol)	DRAWOUT TYPE MCB
(Symbol)	DRAWOUT TYPE MCCB
(Symbol)	MFCB WITH SHORT CIRCUIT PROTECTION ONLY
(Symbol)	MCCB WITH SHORT CIRCUIT PROTECTION
(Symbol)	CURRENT TRANSFORMER
(Symbol)	POTENTIAL TRANSFORMER
(Symbol)	CONTROL TRANSFORMER
(Symbol)	EOCR (ELECTRONIC OVER CURRENT RELAY)
(Symbol)	TERMINAL OVER LOAD RELAY WITH INHERENT PROTECTION AGAINST SINGLE PHASING
(Symbol)	CONTROL FUSE
(Symbol)	CONTACTOR
(Symbol)	EMERGENCY STOP, EMERGENCY FUSE BUTTON
(Symbol)	INDICATION LAMP CLUSTER LED TYPE
(Symbol)	POWER TRANSFORMER
(Symbol)	415V, 50Hz, 3-Phase
(Symbol)	CABLE GLAND
(Symbol)	SURGE ARRESTER

- NOTES:-**
1. PMCC WILL BE SINGLE/DOUBLE PHASE, FIXED METAL ENCLOSED, FREE STANDING, FLOOR MOUNTING, WITH BOTTOM CABLE ENTRY COMPARTMENTALIZED, DUST AND VERMIN PROOF, DEGREE OF PROTECTION NOT LESS THAN IP-54, WITH EXTENDABLE BUS ON EITHER SIDE. ALL ACB FEEDERS IN THE MCC SHALL BE DRAWOUT TYPE & INTERCHANGEABLE.
 2. FRAMES WILL BE MADE OUT OF 18 SMC (2MM) CRCA EXCEPT THAT THE DOORS AND COVERS WILL BE MADE OF HEIGHT (1.8MM) 18SGC - CRCA. THE GLAND PLATE WILL BE OF 3MM THICK. EACH VERTICAL PANEL WILL HAVE INTEGRAL HASK FRAME SUITABLE FOR ERECTION TACK WELDING. METAL SHEET SEGREGATION BETWEEN ADJACENT PANELS WILL BE PROVIDED.
 3. BUS BAR WILL BE OF HIGH CONDUCTIVITY ALUMINIUM SUPPORTED ON INSULATOR MADE OF NON-HYDROSCOPIC, NON-FLAMMABLE MATERIAL THE RATING WILL BE FOR FULL LOAD CURRENT OF TRANSFORMER SECONDARY.
 4. SPACE HEATER WILL BE PROVIDED FOR MOTORS RATED 75 kW AND ABOVE.
 5. EOCR FOR OVER CURRENT PROTECTION WITH DIGITAL DISPLAY SHALL BE PROVIDED FOR MOTOR RATED 7.5kW - 15kW.
 6. EOCR FOR O/C & E/F, UNBALANCED PROTECTION WITH DIGITAL DISPLAY SHALL BE PROVIDED FOR MOTOR RATED 15kW - 110kW.
 7. COMPOSITE MOTOR PROTECTION RELAY FOR OVERLOAD, O/C, E/F PHASE UNBALANCED & LOCKED ROTOR PROTECTION WITH DIGITAL DISPLAY SHALL BE PROVIDED FOR MOTOR RATED 110kW AND ABOVE.
 8. ALL INDICATING INSTRUMENTS SHALL BE OF DIGITAL TYPE. INDICATING LAMPS WILL BE OF CLUSTER LED TYPE WITH MINIMUM 8 MM DIA.
 9. THE PMCC WIRING SHALL BE CARRIED OUT BY 2.5sqmm. FR PVC INSULATED COPPER CONDUCTOR FOR CT CIRCUITS & 1.5sqmm. FOR CONTROL CIRCUITS.
 10. EACH VERTICAL SECTION SHALL BE PROVIDED WITH THERMOSTAT CONTROLLED SPACE HEATER & SA 3-PIN PLUG SOCKET.
 11. ENGRAVED NAME PLATES (IN TWO PARTS) OF 3-PLY (BLACK-WHITE-BLACK) LAMINATED SHEETS OR ANODISED ALUMINIUM WILL BE PROVIDED. NAME PLATE FOR EACH FEEDER WILL HAVE FEEDER NUMBER & A SECOND REMOVABLE PLATE WITH MOTOR TAG NUMBER, MOTOR NAME, RATING & GANGE SIZE.
 12. ALL STARTER FEEDERS WILL MEET THE REQUIREMENT OF TYPE 2 CO-ORDINATION FOR 1sec.
 13. ALL COMPONENTS OF THE PMCC SHALL BE SUITABLE FOR 'HA' FAULT LEVEL FOR 1sec.
 14. FINAL COLOUR SHADE SHALL BE SEMIENS GREY RAL-7032.
 15. THE LOADS SPECIFIED IN THIS SDC, IS ACC. TO THE SUBMITTED ELECTRICAL LOAD LIST - WTP (INT/2008-10/MSDA/WTP/D.014 REV.1)
 16. ALL SWITCHGEAR COMPONENTS SHALL BE AS PER APPROVED VENDOR LIST.
 17. COMPONENT DETAILS (LAMP/SWITCH ETC) SHALL BE FINALISED IN MANUFACTURE DRAWING.

REV.	DATE	DESCRIPTION	DRN. BY	CHKD. BY	APPD. BY

JTF WATER INFRASTRUCTURE LTD.

CLIENT NAME GUNHATI METROPOLITAN DEVELOPMENT AUTHORITY

PROJECT 37 MLD WATER SUPPLY SYSTEM AT GUNHATI NORTH

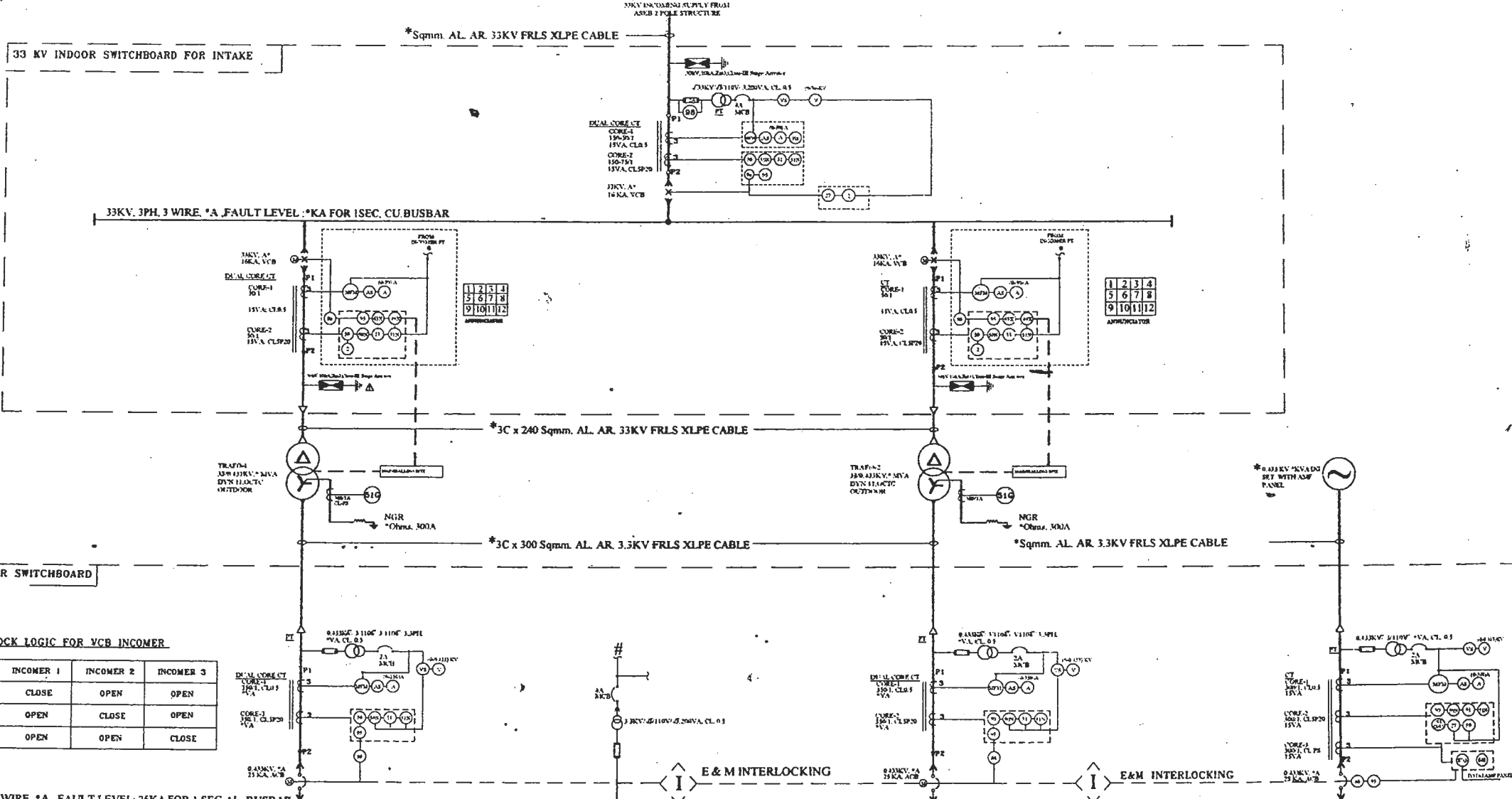
TITLE SLD FOR WTP.CWPS

DRAWING NO. JWH/2010-11/GUNHATI NORTH/WTP/D.02

SHEET NO. 1 OF 1

00	NTS	13.12.2011	BLAVED	M.SINGH	NAMEEN	P.JAIN
REVISION	SCALE	DATE	DRN. BY	CHKD. BY	ENGG. BY	APPVD. BY

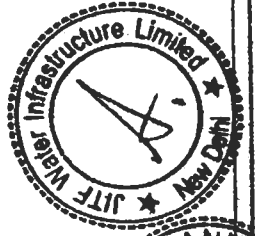
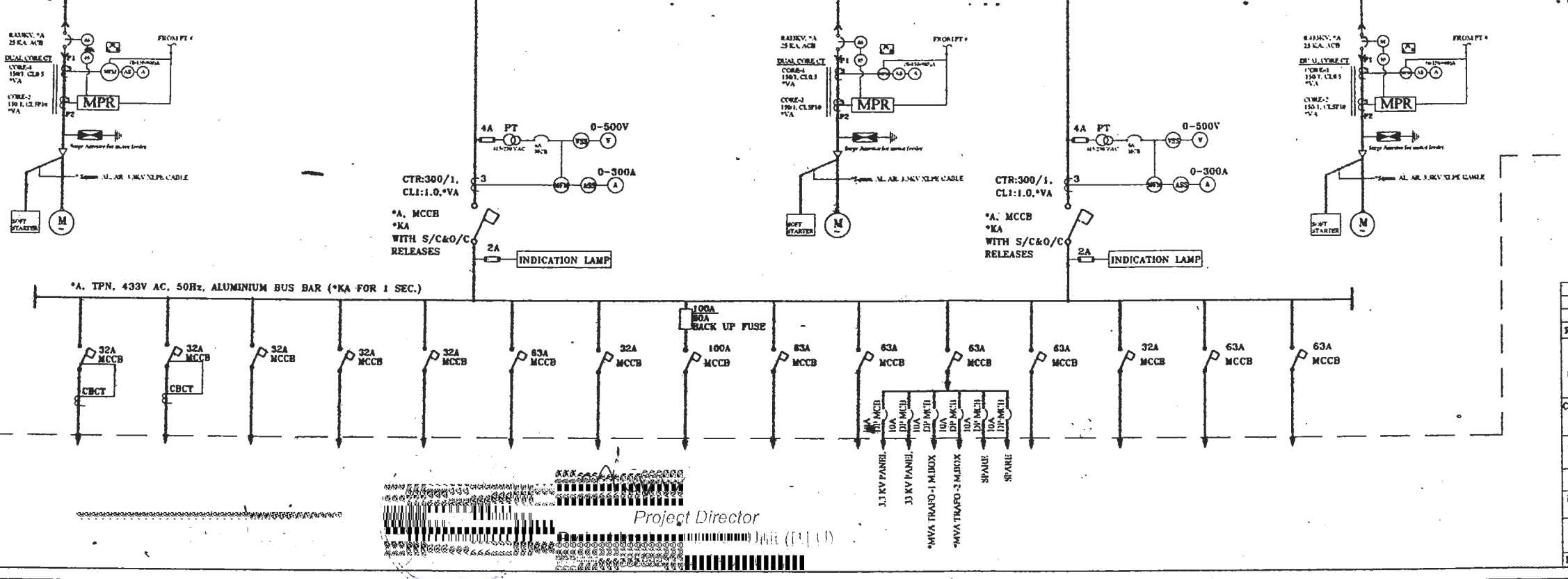
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LEGEND

DEV. NO.	DESCRIPTION
A	AMMETER
AS	AMMETER SELECTOR SWITCH
V	VOLTMETER
VS	VOLTAGE SELECTOR SWITCH
MFM	MULTIFUNCTION METER (A, V, KW, Hz, W, KVAR,) WITH RS-485 COMMUNICATION
DC	DC FAIL RELAY WA, KVAR
Z	TIME DELAY RELAY
Z7	UV RELAY WITH 2 TIMERS
Z7LV	RE-ACCELERATION AUTHORISATION
Z7	UNDER CURRENT RELAY
46	SINGLE PHASING RELAY
47	PHASE REVERSAL, INVERTED PHASE SEQUENCE PROTECTION
48	STALL PROTECTION
49	OVERLOAD PROTECTION
49X	AUX CONTACTS FOR BCLZ, WTI, OVI TRIP
50N	INST. O/C RELAY
50EF	INST. E/F RELAY
50S	CIRCUIT BREAKER FAILURE PROTECTION
51	LOCKED ROTOR
51N	IDMT O/C RELAY
51G	IDMT E/F RELAY
51LR	STANDBY E/F RELAY
59	LOCKED ROTOR
63X	AUX CONTACTS FOR BCLZ, WTI, OVI ALARM
66	O/V RELAY
64R	FREQUENT START PROTECTION
86	RESTRICTED E/F RELAY
81 OVI	MASTER TRIP RELAY
87G	OVER/UNDER FREQUENCY
87M	DIFF. PROTECTION RELAY FOR GENERATOR
95	DIFF. PROTECTION RELAY FOR MOTOR
97	TRIP CKT SUPERVISION RELAY
98	PT FUSE FAILURE RELAY

	MOTORISED DRAWOUT ACB
	CURRENT TRANSFORMER
	DT SET
	SINGLE CORE FIXED TYPE PT
	POWER TRANSFORMER
	MOTOR
	3PH CAPACITOR BANK
	SURGE ARRESTOR



REV.	DATE	DESCRIPTION	DRN. BY	CHKD. BY	APPD. BY
00					

JTF WATER INFRASTRUCTURE LTD.

CLIENT NAME: GUWHATI METROPOLITAN DEVELOPMENT AUTHORITY

PROJECT: 37 MLD WATER SUPPLY SYSTEM AT GUWHATI NORTH

TITLE: SLD FOR INTAKE

DRAWING NO.: JWL/2010-11/GUWHATI NORTH/INTAKE/D.01

SHEET NO.: 1 OF 1

REVISION	SCALE	DATE	DRN. BY	CHKD. BY	ENGG. BY	APPVD. BY
00		13.12.2011	M.JAWED	A.K.SINGH	NADEEM	P.JAIN

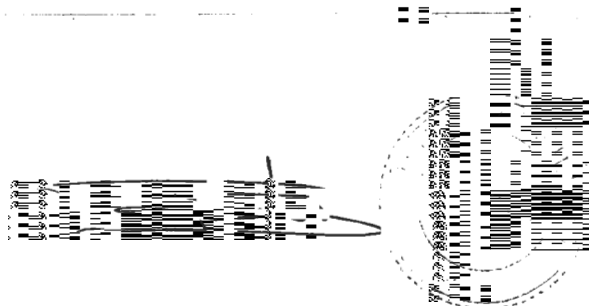
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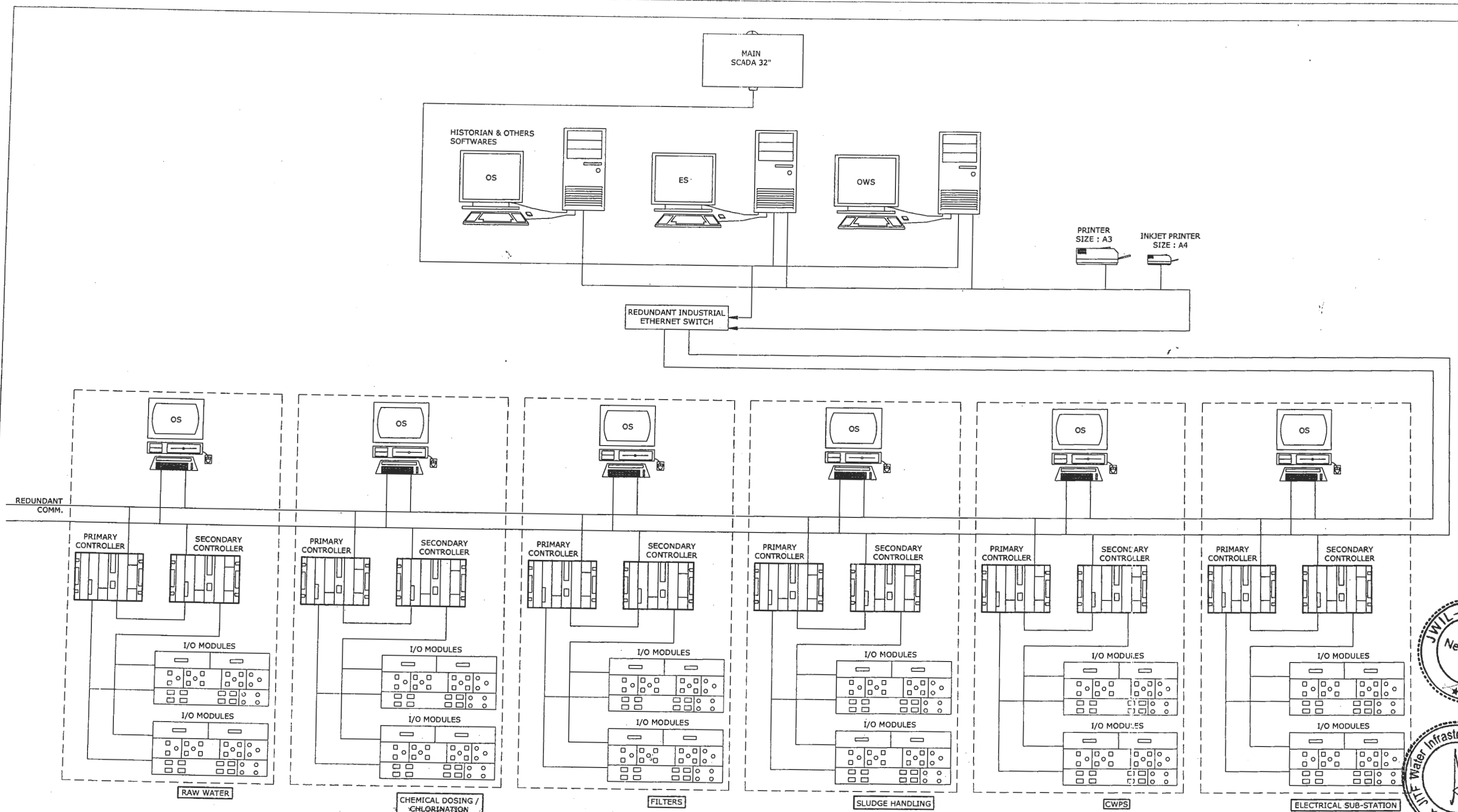
A.6 Architecture of SCADA System

ATTACHED



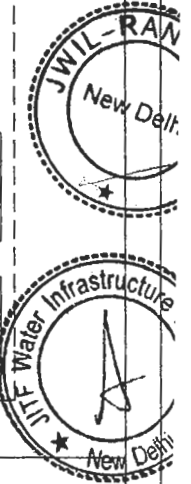
Project Director
Project Implementation Unit (P.I.U)
JICA Funded Guwahati Water Supply Project





[Signature]
 Project Director

Project Director
 JICA



JTF WATER INFRASTRUCTURE LTD.						
CLIENT						
GUWAHATI METROPOLITAN DEVELOPMENT AUTHORITY						
PROJECT						
37 MLD GUWAHATI WATER SUPPLY PROJECT (GWSP) NORTH CENTRAL ZONE						
TITLE						
SYSTEM ARCHITECTURE FOR WTP						
DRAWING NO.						SHEET NO.
JWIL/2011/GWSP/NORTH WTP/A6						00/75
00	420 x 297	13.12.2011	S. SOLANKI	MANUSHRI	H.C. RANA	P. JAIN
REVISION	SCALE	DATE	DRN. BY	ENGG. BY	CHD. BY	APPVD. BY

B. Details of Raw Water Intake Structure, Transmission Main, Water Treatment Plant and Clear water reservoir

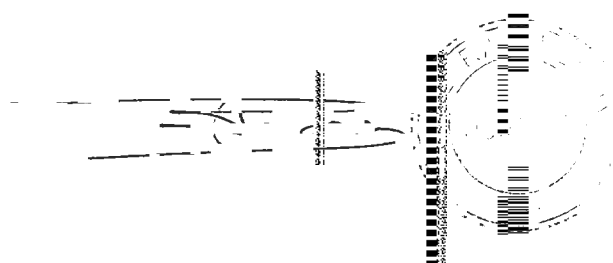
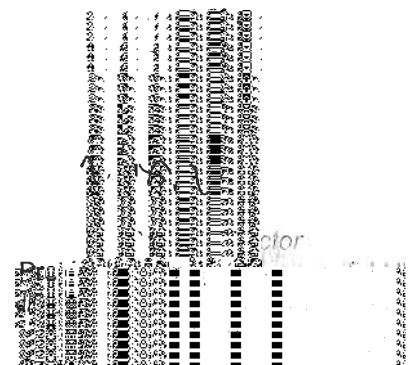
B.1 Raw Water Intake Structure/Pumping Station and Transmission Main

B.1.1 Raw Water Intake Structure and Pumping Station

	Description	Unit	Particulars
1.	Number of Intake Well and Shapes		
1.1	Number of Wells	nos.	One
1.2	Shapes ¹		Circular
2.	Structure of Intake Well and Construction Method²	--	RCC
3.	Dimensions of Well		
3.1	Foundation Well		
a.	Inner Dimensions	m	Please refer layout attached
b.	Wall Thickness	mm	DDE
3.2	Pump Suction Well		
a.	Inner Dimensions	m	Please refer layout attached
b.	Wall Thickness	mm	DDE
3.3	Intake gates		Details referred to Schedule C
a.	Number of Gates		Details referred to Schedule C
b.	Number of Screens		Details referred to Schedule C



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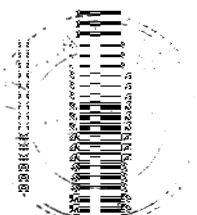


	Description	Unit	Particulars
c.	Size of gate (width x height)	mm x mm	Details referred to Schedule C
3.4	Levels		
a.	Top Level of Well (motor floor level)	m msl	Refer Intake section drawing attached
b.	Bottom level of Well	m msl	Refer Intake section drawing attached
c.	Level of Foundation	m msl	Refer Intake section drawing attached
d.	Top Intake Gate (center)	m msl	Refer Intake section drawing attached
e.	Bottom Intake Gate (center)	m msl	Refer Intake section drawing attached
4.	Pump Station		
4.1	Inner Dimensions		
4.2	Area		
a.	Lower Floor for Piping/Valving	m ²	Refer Intake section drawing attached
b.	Upper Floor (total Area)	m ²	Refer Intake section drawing attached
c.	Pump motor and Electric panels	m ²	Refer Intake section drawing attached
d.	Control room	m ²	Refer Intake section drawing attached
e.	Duty room	m ²	Refer Intake section drawing attached
f.	Store room	m ²	Refer WTP drawing
g.	Any other areas or rooms proposed	m ²	Not applicable
4.2	Head room	m	Refer Intake section drawing attached
5.	Access Bridge		
5.1	Construction Materials and	--	Refer Intake section drawing attached

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JICA Funded Guwahati Water



	Description	Unit	Particulars
	Structure ²		
5.2	Width (clear roadway/total)	m	Refer Intake section drawing attached
5.3	Length	m	Refer Intake section drawing attached
5.1	Number of piers	m	Refer Intake section drawing attached
6.	Any other items not listed above but incidental to complete the works	-	

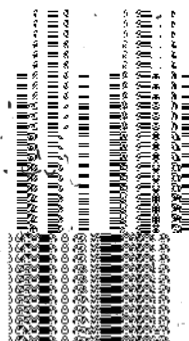
note: ¹ Submit general plan showing inner dimensions and wall thickness for foundation well and pump suction well in separate sheet (A3 size)

² Brief description in separate sheet (s)

B.1.2 Raw Water Transmission Main

	Description	Unit	Particulars
1.	Pipe Materials	--	Details referred to Schedule C
2.	Economical diameter		700 mm
2.1	Length	m	Around 4300 meters
2.2	Combined efficiency of pumping unit	%	83
2.3	C- value		140
2.4	Losses other than frictional losses in % of frictional loss	%	-
2.5	Pumping unit cost	Rs./KW	4.5 as per Tender part I
2.6	Economical diameter	mm	700 mm
3.	Flow meter and Control valve		For details refer to Schedule C and D

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	Description	unit	Particulars
4.	Auxiliary Valves and Crossing Works	--	
4.1	Washouts (Blow-off)	pls.	Included
4.2	Air valves	pls.	Included
5.	Surge Protection ¹	mm	DDE
note:			
¹ Submit surge analysis in separate sheet (s) never-the-less the protection shall be required or not. If the protection is found as required, the brief description of method and major equipment or structures to be proposed in separate sheet(s)			

B.2 Water Treatment Plant

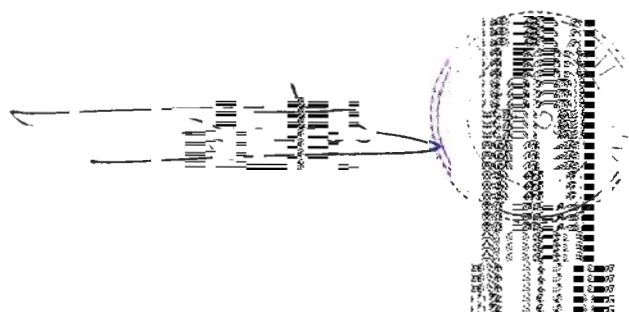
B.2.1 Pre-Settling tank

	Description	unit	Particulars
1.	Detention Time	min	60
2	Tanks		
2.1	Number of Tanks	nos	2
2.2	Internal Dimensions of each		
a.	Width	m	7.3
b.	Length	m	38
c.	Side Water Depth	m	3
d.	Depth of Sediment deposit	m	Slope considered
e.	Free Board	m	0.3

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JICA Finance Corporation

	Description	Unit	Particulars
3.	De-silting		
3.1	Method	--	De-silting shall be done in 2 methods. 1. Through extraction pumps, the silt + sludge will be pumped out 2. Drain valves provided at bottom most point of tank will opened in periodic intervals to remove silt + sludge
3.2.	Estimated De-silting Cycle per tank	days	Depends on particular raw water quality

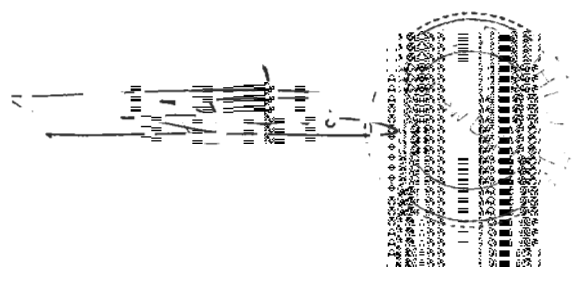
B.2.2 Cascade Aerator

	Description	Unit	Particulars
1.	Aerator		
1.1	Number	units	1
1.2	Number of steps (falls)		
a.	Number	nos	6
b.	Total height of fall	m	0.25
1.3	Shape	--	
1.4.	Dimensions		
a.	Diameter or Width x Length	m	11.5 dia
b.	Height of a step	cm	0.25

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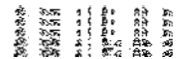
Project ...
JICA Fund...



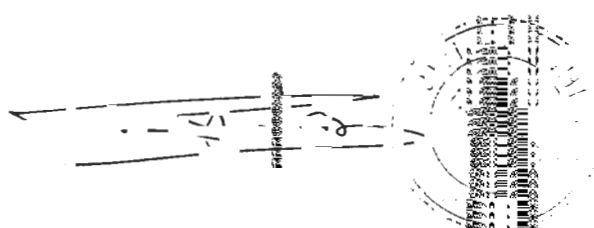
B.2.3 Flash Mixing Tanks

	Description	Unit	Particulars
1.	Mixing Method (Mechanical or Hydraulic)	--	Mechanical type
2.	Detention Time	sec	60
3.	Number of Tanks	units	1
4.	Mixing Tank		
4.1	Width	m	3.5
4.2.	Length	m	3.5
4.3	Side Water Depth	m	3
4.4	Free Board	m	0.3
5.	Mixing Intensity ¹		
5.1	Mechanical Mixing		
a.	Type Flash Mixer	--	Agitator type
b.	Motor Output	kW	Refer electrical load list
c.	Mixing Intensity (G-value)	sec ⁻¹	500
5.2	Hydraulic Mixing		Not applicable
a.	Type of Mixing	--	Not applicable
b.	Head Loss	m	Not applicable
c.	Mixing Intensity (G-value)	sec ⁻¹	Not applicable
note: ¹ Submit analysis of mixing intensity in separate sheet			

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JICA Funded Unit (P.I.U) Project

B.2.4 Flocculation Tanks

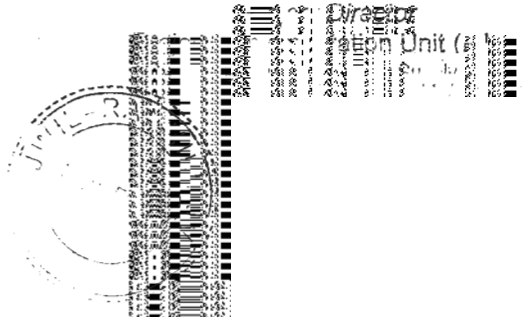
	Description	Unit	Particulars
1.	Mixing Method (Mechanical or Hydraulic)	--	Hydraulic type
2.	Detention Time	Min	30
3.	Number of Tanks	units	2
4.	Flocculation Tank		
4.1	Nos. of compartments per tank	nos	1 (baffling arrangement provided)
4.2	Dimensions of compartment		
a.	Width	m	8.5
b.	Length	m	13.9
c.	Side Water Depth	m	3.5
d.	Free Board	M	0.3
4.3	Effective Volume of compartment	M3	413.5
5.	Mixing Intensity ¹		
5.1	Mechanical Mixing		Not applicable
a.	Type Flocculator	--	Not applicable
b.	Motor Output		Not applicable
	1st compartment	kW	Not applicable
	2nd compartment	kW	Not applicable
	3rd compartment	kW	Not applicable
c.	Mixing Intensity (G-value)		Not applicable

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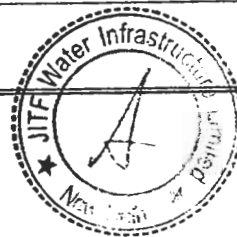
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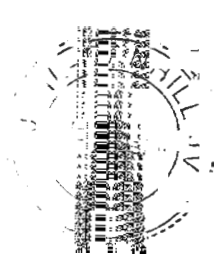
	Description	Unit	Particulars
	1st compartment	sec ⁻¹	Not applicable
	2nd compartment	sec ⁻¹	Not applicable
	3rd compartment	sec ⁻¹	Not applicable
d.	Energy Dissipation (GT-value)		Not applicable
	1st compartment	--	Not applicable
	2nd compartment	--	Not applicable
	3rd compartment	--	Not applicable
	Total	--	Not applicable
5.2	Hydraulic Mixing		
a.	Number of baffle wall		
	1st compartment	nos	DDE
	2nd compartment	nos	DDE
	3rd compartment	nos	DDE
b.	Head Loss		
	1st compartment	cm	DDE
	2nd compartment	cm	DDE
	3rd compartment	cm	DDE
b.	Energy Dissipation (GT-value)		
	1st compartment	--	DDE
	2nd compartment	--	DDE
	3rd compartment	--	DDE

Guwahati Water Supply Project - GWSP-C#01



Project Director

Concentration Unit
Guwahati



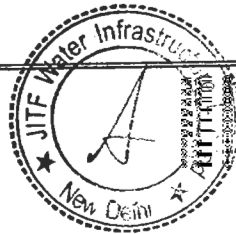
Description	Unit	Particulars
Total	--	DDE

note: ¹ Submit analysis of mixing intensity and energy dissipation in separate sheet

B.2.5 Tube Settling Tanks

Description	Unit	Particulars
1. Type (Plate or Tube settler)	--	Tube
2. Detention Time	sec	DDE
3. Number of Tanks	units	2
4. Settling Tank		
4.1 Number of Compartments per tank	nos	1
4.2 Dimensions of Compartment		
a. Width	m	13.4
b. Length	m	13.9
c. Side Water Depth	m	3.05
d. Water depth above module	m	0.8
e. Total height of module including support	m	0.75
f. Height below module	m	1.5
g. Length of Inlet Stilling Zone	m	13.4

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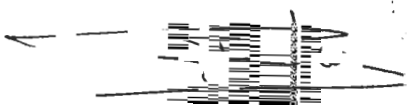
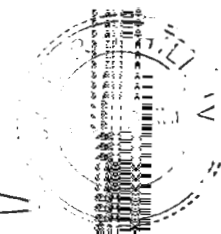
Director
Project Implementation Unit
ICA Funded Guwahati Water Supply

	Description	Unit	Particulars
h	Free Board	m	0.3
4.3	Effective Volume of Compartment		568.1
5.	Inclining Plate or Tube Installation (per a compartment)		
5.1	Dimensions of a Tube Module		
a.	Width	m	13.4 per clarifier
b.	Length	m	13.9 per clarifier
c.	Installation Height	m	0.75 m media height
d.	Spacing between Plates or Tube size	mm	As per media manufacturer's standard
e.	Thickness of Plates or Tube	mm	As per media manufacturer's standard
f.	Installation Angle	deg.	As per media manufacturer's standard
g.	Effective area of Module	m ²	11 m2 per m3 of module
h.	Number of Modules		
	along tank width	nos.	As per media manufacturer's standard
	along tank length	nos.	As per media manufacturer's standard
i	Weight of plate/tube per unit plan area	kg/sq.m	As per media manufacturer's standard
j	Thickness	mm	As per media manufacturer's standard DDE
k	Height of module, after installation	m	0.75

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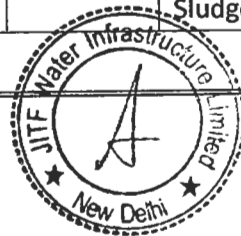


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 Project Implementation Unit
 JICA Funded Guwahati Water Supply Project



	Description	Unit	Particulars
5.2.	Surface Loading	m ³ /hr/m ²	< 1 (media surface loading)
5.3	Up flow Velocity 1	m ³ /hr/m ²	< 6
6.	Clarified Water Collector		
6.1	Method/Type of Collector	m	Launders/weirs
6.2	Total Length of Collector	m	DDE
6.3	Weir Loading	m ³ /day/m	< 200 m ³ /m ² /day
7	Sludge Extraction (per tank)		
7.1	Method of Sludge Extraction ²	--	Through sludge hopper
7.2	Number of Sludge Hopper		4 Nos per clarifier
a.	Mechanical Sludge Scraping Type	nos.	Not applicable
b.	Hopper Type	nos.	4 Nos per clarifier
7.3	Sludge Scraper		
a.	Type of Scraper	--	Not applicable
b.	Width and Height of Scraping Blade	cm	Not applicable
c.	Scraping Speed	m/hr	Not applicable
d.	Number of Scraper per Tank	units	Not applicable
e.	Maximum Scraping Capacity ³	m ³ /day	Not applicable
7.4	Sludge Extraction Cycle per tank (at Maximum turbidity)	times/day	continuous
7.5	Sludge Extraction Operation (per Cycle at Max. turbidity)	nos	continuous
a.	Sludge Concentration	%	Around 2%. Sludge consistency depends on

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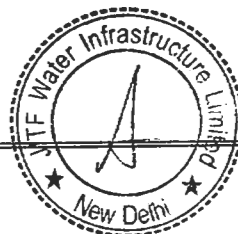
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Project Director
 Wastewater Treatment Unit
 Guwahati Water Supply

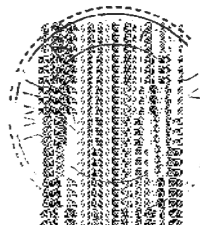
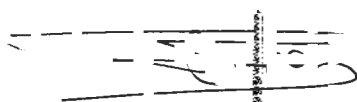


	Description	Unit	Particulars
			raw water TSS
b.	Sludge Extraction Times per Cycle	times	10 minutes for every 1 hour
c.	Time for a Sludge Extraction	min	10 minutes for every 1 hour
d.	Time for Sludge Extraction per Cycle	min	10 minutes for every 1 hour
7.6	Sludge Extraction Piping		
a.	Size of Sludge Extraction Pipes	mm	200
b.	Number of Sludge Extraction Valves	units	2 Numbers per clarifier
c.	Type of Sludge Extraction Valves	--	Referred to Schedule C
d.	Size of Sludge Extraction Header	mm	150
e.	Applied head for sludge extraction	m	Static head of clarifier
f.	Maximum Sludge Extraction Flow	l/sec	Depends on TSS
<p>note:</p> <p>1 Up flow velocity is calculated as treatment flow divided by net tank area (horizontal).</p> <p>2 Either by Mechanical (with Scraper) or Hopper type</p> <p>3 Maximum sludge scraping volume will be determined based on estimated sludge concentration during scraping.</p> <p>4 Sludge extraction is made water level deference between tank and sludge discharge chamber by gravity.</p>			

Guwahati Water Supply Project - GWSP-C#01



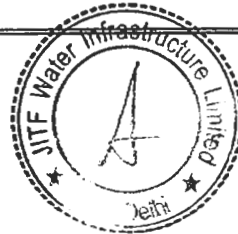
Project Director
Project Implementation
JICA Funded Guwahati Water



B.2.6 Rapid Sand Filter

	Description	Unit	Particulars
1.	Type of Filtration Control	--	Declining rate filter with restrictor valve at outlet
2.	Filtration Rate	m ³ /hr/m ²	6 m3/m2/hr
3.	Number of Filters	units	6
4.	Filter		
4.1	Number of Cell per Filter	nos	Twin bed filters
4.2	Dimensions of a Cell		
a.	Width	m	3.9
b.	Length	m	5.8
c.	Side Water Depth	m	Refer HFD
d.	Water depth above sand Layer	m	Refer HFD
e.	Depth of filter media (sand & gravel)	m	Refer HFD
f.	Height of under drain	m	Refer HFD
g.	Free Board	m	Refer HFD
4.3	Width of Wash drain Gutter including side walls	m	0.8
5.	Filter Media		
5.1	Filter Sand		
a.	Effective Size	mm	0.8 to 1

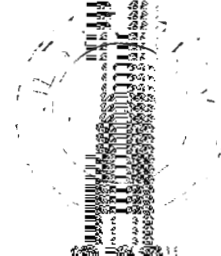
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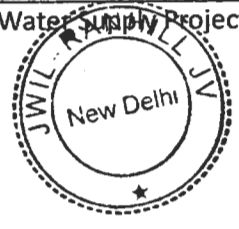
Project Director
 Project Implementation Unit
 JICA Funded City Water Supply

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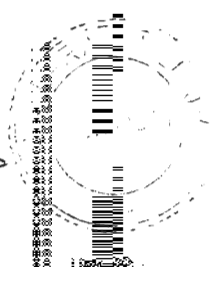


	Description	Unit	Particulars
b.	Uniformity Co-efficient	--	< 1.6
c.	Thickness of media layer	mm	900
5.2.	Supporting Gravel (optional)		
a.	Number of Layers	nos.	3
b.	Range of Size (diameter)	mm	First layer: 2.5mm to 6mm, Second layer : 6mm to 12mm, Third layer: 12mm to 37mm
c.	Thickness of each Layer	mm	First layer 100 mm, second layer 150 mm, Third layer 150 mm
6.	Under drain System		
6.1	Type (Partition Block or Nozzle Type)		Header Lateral Type
6.2	Partition Block Type Under drain		Header Lateral Type
a.	Materials of Block	--	NA
b.	Installation Height	mm	NA
c.	Maximum Head Loss (at 0.6 m ³ /min)	cm	NA
6.3	Nozzle Type		NA
a.	Total Area of Plunk Pipe to Filter Bed Area	%	NA
b.	Installation Spacing of Nozzle	mm	NA
c.	Net Clearance under False Slab to Base Slab	cm	NA

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Project: *[Handwritten text]*