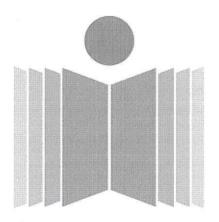
NIT No.: IITH/CMD/ELE/NIT/2022-23/05



भारतीय प्रौद्योगिकी संस्थान हैदराबाद Indian Institute of Technology Hyderabad

NOTICE INVITING TENDER (NIT)

Name of the work: "5 Years of Operation and Maintenance of 650 KLD capacity Sewage Treatment Plant-1(STP-1) at IITH campus".

> **Executive Engineer - Electrical** IIT Hyderabad

INDEX

Sl. No.	Description	Page No
1	Notice Inviting Tender (NIT)	01
2	Instructions for online submission	02
3	Guidelines for Registration	02
4	Preparation of Bids	03
5	Submission of Bids	03
6	Eligibility Criteria	05
7	Form – J (Affidavit)	10
8	Checklist of Documents to be submitted	11
9	Undertaking pursuant to Section 206AB of Income Tax Dept.	12
10	Proforma of Schedules A to F	13
11	Schedule F	14
12	Special Conditions of Contract	18
13	Notes on Price bid	36
13	Appendices I to III	37

INDIAN INSTITUTE OF TECHNOLOGY HYDERABAD

NOTICE INVITING TENDER

NIT Reference No. IITH/CMD/ELE/NIT/2022-23/05

Indian Institute of Technology Hyderabad invites on behalf of President of India online Item rate bids (e-tender) in Two Bid (Technical cum Eligibility + Financial) System, from the Original Equipment Manufacturer (OEM)/ OEM authorized Specialized Agencies for the below mentioned work.

Copy of valid Registration of Firm (ROF) certificate, PAN card, GST Registration certificate & GSTIN should accompany the Technical Bid and those certificates should be valid on the last date of submission of bid.

1.1	NIT No.:		IITH/CMD/ELE/NIT/2022-23/05
1.2	Name of Work:		"5 Years of Operation and Maintenance of 650 KLD capacity Sewage Treatment Plant(STP) at IITH campus.".
1.3	Location of work		Indian Institute of Technology(IIT) Hyderabad campus, Kandi-502284, Sangareddy, Telangana, India
1.4	Estimated Cost:		Rs. 5,10,04,447/-
1.5	(given merely as a rough guide) Earnest Money Deposit (EMD):		Rs. 10,20,100/-
1.6	Period of Completion:		5 years
1.7	Date of Online Publication/Download of Tender		10/10/2022 @1700hrs
1.8	Last Date & time for	Date & Time	17/10/2022 @1600 hrs
	receiving of Pre-Bid Queries and to mail ID	To Mail ID:	ee.electrical@iith.ac.in
1.9	Date and Time of Pre-bid meeting at Conference hall, CMD, IIT Hyderabad		18/10/2022 @ 1100 hrs
1.10	Last Date for Submission of Bids		03/11/2022 1500hrs
1.11	Date and time of Opening of Technical Bids		04/11/2022 1530hrs
1.12	Date and time of Opening of Financial Bids		To be decided
1.13	Cost of Bid Document:		NIL

The Tender Document can be downloaded from https://mhrd.euniwizarde.com OR Institute websitehttps://www.iith.ac.in/tenders/#Civil%20Works.

bid is to be submitted online mode only through the E-procurement portal of https://mhrd.euniwizarde.com up to the last date and time of submission of tender. Manual bids shall not be accepted.

The bids (both Technical and Financial) shall be submitted online through E-procurement portal of https://mhrd.euniwizarde.com.

Any queries relating to the process of online bid submission or queries relating to e-tender Portal in general may be directed to the Helpdesk Support - Phone No. 011-49606060. Mail id: helpdeskeuniwizarde@gmail.com.

INSTRUCTIONS FOR ONLINE BID SUBMISSION:

The Tender Document can be downloaded from https://mhrd.euniwizarde.com OR Institute websitehttps://iith.ac.in/tenders.

The bidders are required to submit soft copies of their bids electronically on the https://mhrd.euniwizarde.com using valid Digital Signature Certificates. The instructions given below are meant to assist the bidders in registering on the Portal, prepare their bids in accordance with the requirements and submitting their bids online.

More information useful for submitting online bids may be obtained at: https://mhrd.euniwizarde.com

GUIDELINES FOR REGISTRATION:

- 1. Bidders are required to enrol on the e-Procurement Portal with clicking on the link "Bidder Enrolment" on the e-tender Portal by paying the Registration fee as applicable + Applicable GST.
- 2. As part of the enrolment process, the bidders will be required to choose a unique username and assign a password for their accounts.
- 3. Bidders are advised to register their valid email address and mobile numbers as part of the registration process. These would be used for any communication from the e-Wizard Portal.
- 4. Upon enrolment, the bidders will be required to register their valid Digital Signature Certificate (Only Class III Certificates with signing + encryption key usage) issued by any Certifying Authority recognized by CCA India (e.g. Sify / TCS / nCode / eMudhra etc.) with their profile or bidders can contact help desk for getting the DSC.
- 5. Only valid DSC should be registered by a bidder. Please note that the bidders are responsible to ensure that they do not lend their DSC's to others which may lead to misuse.
- 6. Bidder then logs in to the site through the secured log-in by entering their user ID/password and the password of the DSC / e-Token.
- 7. The scanned copies of all original documents should be uploaded in pdf format on portal https://mhrd.euniwizarde.com
- 8. After completion of registration payment, bidders need to send their acknowledgement copy on help desk mail id helpdeskeuniwizarde@gmail.com for activation of their account.

SEARCHING FOR TENDER DOCUMENTS:

- 1. There are various search options built in the e-tender Portal, to facilitate bidders to search active tenders by several parameters like Department name, Tender category, estimated value, Date, other keywords, etc. to search for a tender published on the Online Portal
- 2. Once the bidders have selected the tenders they are interested in, you can pay the form fee and processing fee (NOT REFUNDABLE) by net-banking / Debit / Credit card then you may download the required documents / tender schedules, Bid documents etc. Once you pay both fee tenders will be moved to the respective 'requested' Tab. This would enable the e-tender Portal to intimate the bidders through e-mail in case there is any corrigendum issued to the tender document.
- 3. The bidder should make a note of the unique Tender No assigned to each tender, in case they want to obtain any clarification/help from the Helpdesk.

PREPARATION OF BIDS:

- 1. Bidder should take into account any corrigendum published on the tender document before submitting their bids.
- 2. Please go through the tender advertisement and the tender document carefully to understand the documents required to be submitted as part of the bid.
- 3. Bidder, in advance, should get ready the bid documents to be submitted as indicated in the tender document / schedule and generally, they can be in PDF/XLSX/PNG etc., formats. Bid Original documents may be scanned with 100 dpi with Colour option which helps in reducing size of the scanned document.
- 4. To avoid the time and effort required in uploading the same set of standard documents which are required to be submitted as a part of every bid, a provision of uploading such standard documents (e.g. PAN card copy, GST, Annual reports, auditor certificates etc.) has been provided to the bidders. Bidders can use "My Documents" available to them to upload such documents.
- 5. These documents may be directly submitted from the "My Documents" area while submitting a bid, and need not be uploaded again and again. This will lead to a reduction in the time required for bid submission process.
- 6. Please note the number of covers in which the bid documents have to be submitted, the number of documents - including the names and content of each of the document that needs to be submitted. Any deviations from these may lead to rejection of the bid.

SUBMISSION OF BIDS:

- 1. Bidder should log into the website well in advance for the submission of the bid so that it gets uploaded well in time i.e. on or before the bid submission time. Bidder will be responsible for any delay due to other issues.
- 2. The bidder has to digitally sign and upload the required bid documents one by one as indicated in the tender document as a token of acceptance of the terms and conditions laid down by IIT Hyderabad.
- 3. Bidder has to select the payment option as "e-payment" to pay the tender fee / EMD as applicable and enter details of the instrument.
- 4. In case of Bank Guarantee (BG) bidder should prepare the BG as per the instructions specified in the tender document. The BG in original should be posted/couriered/given in person to the concerned official of IIT Hyderabad before the Online Opening of Technical Bid. In case of non-receipt of BG in

19:24:08 IST

original by the said time, the uploaded bid will be summarily rejected.

- 5. Bidders are requested to note that they should necessarily submit their financial bids in the format provided and no other format is acceptable. If the price bid has been given as a standard BOQ format with the tender document, then the same is to be downloaded and to be filled by all the bidders. Bidders are required to download the BOQ file, open it and complete the white Colored (unprotected) cells with their respective financial quotes and other details (such as name of the bidder). No other cells should be changed. Once the details have been completed, the bidder should save it and submit it online, without changing the filename. If the BOQ file is found to be modified by the bidder, the bid will be rejected.
- 6. The server time (which is displayed on the bidders' dashboard) will be considered as the standard time for referencing the deadlines for submission of the bids by the bidders, opening of bids etc. The bidders should follow this time during bid submission.
- 7. All the documents being submitted by the bidders would be encrypted using PKI encryption techniques to ensure the secrecy of the data, which cannot be viewed by unauthorized persons until the time of bid opening.
- 8. The uploaded tender documents become readable only after the tender opening by the authorized bid openers.
- 9. Upon the successful and timely submission of bid click "Complete" (i.e. after Clicking "Submit" in the portal https://mhrd.euniwizarde.com), the portal will give a successful Tender submission acknowledgement & a bid summary will be displayed with the unique id and date & time of submission of the bid with all other relevant details.
- 10. The tender summary has to be printed and kept as an acknowledgement of the submission of the tender. This acknowledgement may be used as an entry pass for any bid opening meetings.
- 11. The off-line tender shall not be accepted and no request in this regard will be entertained whatsoever.
- 12. As per portal norms Tender Processing Fee will be applicable.

AMENDMENTS OF BID DOCUMENT:

At any time prior to the deadline for submission of Bids, the department reserve the right to add/modify/delete any portion of this document by the issuance of a Corrigendum, which would be published on the website and will also be made available to the all the Bidder who has been issued the tender document. The Corrigendum shall be binding on all bidders and will form part of the bid documents.

ASSISTANCE TO BIDDERS:

For any clarification in using https://mhrd.euniwizarde.com

- 1. Any queries relating to the tender document and the terms and conditions contained therein should be addressed to the Tender Inviting Authority for a tender or the relevant contact person indicated in the tender.
- 2. Any queries relating to the process of online bid submission or queries relating to e-Wizard Portal in general may be directed to the 24X7 e-Wizard Helpdesk Support. Please feel free to contact euniwizard helpdesk (as given below) for any query related to e- tendering - Phone No. 011-49606060.

Mail id: - helpdeskeuniwizarde@gmail.com

The contact number for the helpdesk is 8448288994/86/87/89/88/81/90/92/82

011-49606060, 07903269552, 9355030608, 9055030613, 7903810198, 9355030606, 9315620706, 9355030623, 9355030628, 8800526452, 9205898228, 9122643040, 9355030604 eprochelpdesk.01@gmail.com, eprochelpdesk.44@gmail.com, eprochelpdesk.06@gmail.com

- 3. The tender inviting authority has the right to cancel this e-tender or extend the due date of receipt of the bid(s).
- 4. The bid should be submitted through e-Wizard portal (https://mhrd.euniwizarde.com/) only.

NOTICE INVITING TENDER

NIT Reference No. IITH/CMD/ELE/NIT/2022-23/05

1. BASIC ELIGIBILITY CRITERIA

Bidders shall produce definite proof from the appropriate authority, which shall be to the satisfaction of the competent authority, of having satisfactorily completed similar works of magnitude specified below:

Experience of having successfully completed similar works during the last 7 years ending last day of the month previous to the one in which tenders are invited

Three similar completed works each costing not less than Rs. 2,04,01,779/-only or

Two similar completed works each costing not less than Rs. 3,06,02,668/-only or

One similar completed work costing not less than Rs. 4,08,03,558/-only

The value of executed works shall be brought to current costing level by enhancing the actual value of work at simple rate of 7% per annum, calculated from the date of completion to the last date of submission of tender.

"Similar Work" shall mean the work of SITC (Supply, Installation, Testing and commissioning) or 24/7/365days O & M (Annual Operation & Maintenance Contract) of Sewage treatment plant with MBR Technology for a minimum period of 2 years and capacity not less than 450/600 KLD.

(For private works TDS certificate or Form-26 AS in support of value of work done.)

- 2. Turnover: Average annual financial turnover on similar works should be at least 50% of the estimated cost put to tender during the immediate last three consecutive financial years ending 31st March 2022. The value of annual turnover figures shall be brought to current value by enhancing the actual turnover figures at simple rate of 7% per annum. The certificate from the Chartered Accountant shall be enclosed with the bid.
- 3. Profit/loss: The bidder should not have incurred any loss (profit after tax should be positive) in more than two years during available last five consecutive balance sheet (balance sheet in case of private/public limited company means its standalone financial statement and consolidated financial statement both), duly audited and certified by the Chartered Accountant.
- 4. Banker's Certificate from a Commercial Bank or Net worth Certificate: Banker's Certificate of the amount equal to 40% of the Estimated Cost put to tender (ECPT),

Net worth certificate of minimum 10% of the estimated cost put to tender issued by certified Chartered Accountant with UDIN as per format enclosed as Annexure-I

- 5. To become eligible, the tenderer shall have to furnish an affidavit as per Form 'J' of the NIT.
- 6. The bidder shall have Employees Provident Fund (EPF) enlistment and proof of the same shall be attached along with the Technical Bid clearly showing the Provident Fund Code number.

- 7. The bidder shall have the Employee State Insurance Corporation (ESIC) enlistment and proof of the same shall be attached with the Technical bid.
- 8. The bidder shall submit the Indemnity bond as per format provided in Annexure-II.
- 9. The bidder shall submit the authorization certificate from the Technology Provider of existing STP-01 plant as per format enclosed as Annexure-III
- 10. Agreement shall be drawn with the successful tenderer on prescribed Form which is available in the website: https://drive.google.com/file/d/1C7|CvsCtaK6sIZYnRlAPxe_2Eu8WZixB/view (with up to date correction slips if any) Tenderer shall quote his rates as per various terms and conditions of the said form which will form part of the agreement.
- 11. The time allowed for carrying out the work will be as stated at para 1 from the date of start as defined in schedule 'F' or from the first date of handing over of the site, whichever is later, in accordance with the phasing, if any, indicated in the tender documents.
- 12. The site for the work is available.
- 13. Tender documents consisting of plans, specifications, the schedule of quantities of the various classes of work to be done and the set of terms & conditions of contract to be complied with by the contractor whose tender may be accepted and other necessary documents can be seen for information at the above mentioned website.
- 14. Applicants are advised to keep visiting the above mentioned website from time to time (till the deadline for bid submission) for any updates in respect of the tender documents, if any. Failure to do so shall not absolve the applicant of his liabilities to submit the applications complete in all respects including updates thereof, if any. An incomplete application may be liable for rejection.
- 15. The contractor whose tender is accepted, will be required to furnish performance guarantee of 3% (Three Percent) of the tendered amount within the period specified in Schedule F. This guarantee shall be in the form of Deposit at Call receipt of any scheduled bank/Banker's cheque of any scheduled bank/Demand Draft of any scheduled bank/Pay order of any scheduled bank or Fixed Deposit Receipts or Guarantee Bonds of any Scheduled Bank or the State Bank of India in accordance with the prescribed form. In case the contractor fails to deposit the said performance guarantee within the period as indicated in Schedule 'F'. including the extended period if any, the Earnest Money deposited by the contractor shall be forfeited automatically without any notice to the contractor.
- 16. The description of the work is as follows:
 - "5 Years of Operation and Maintenance of 650 KLD capacity Sewage Treatment Plant-1(STP-1) at IITH campus".

Tenderers are advised to inspect and examine the site and its surroundings and satisfy themselves before submitting their tenders as to the nature of the ground and sub-soil (so far



as is practicable), the form and nature of the site, the means of access to the site, the accommodation they may require and in general shall themselves obtain all necessary information as to risks, contingencies and other circumstances which may influence or affect their tender. A tenderer shall be deemed to have full knowledge of the site whether he inspects it or not and no extra charge consequent on any misunderstanding or otherwise shall be allowed. The tenderer shall be responsible for arranging and maintaining at his own cost all materials, tools & plants, facilities for workers and all other services required for executing the work unless otherwise specifically provided for in the contract documents. Submission of a tender by a tenderer implies that he has read this notice and all other contract documents and has made himself aware of the scope and specifications of the work to be done and of conditions and rates at which stores, tools and plant, etc. will be issued to him by the Government and local conditions and other factors having a bearing on the execution of the work.

- 17. Tenders with any condition including that of conditional rebates shall be rejected forthwith.
- 18. Cost of Bid document cost and EMD may also be remitted to Institute's account number as per bank particulars given below:

Indian Institute of Technology Hyderabad Name of the Account Holder

30412797764 (Current Account) **Account Number** :

Name of the Bank State Bank of India .

IIT Kandi, IIT Hyderabad Campus, Address of the Bank

Kandi, Sangareddy, Telangana - 502285

Branch code ŝ

IFSC code SBIN0014182 : MICR code 502002528 : SBININBB762 SHIFT code

- 19. The competent authority on behalf of the President of India does not bind itself to accept the lowest or any other tender and reserves to itself the authority to reject any or all the tenders received without the assignment of any reason. All tenders in which any of the prescribed condition is not fulfilled or any condition including that of conditional rebate is put forth by the tenderer shall be summarily rejected.
- 20. Canvassing whether directly or indirectly, in connection with tenderers is strictly prohibited and the tenders submitted by the contractors who resort to canvassing will be liable to rejection.
- 21. The competent authority on behalf of President of India reserves to himself the right of accepting the whole or any part of the tender and the tenderer shall be bound to perform the same at the rate quoted.
- 22. The contractor shall not be permitted to tender for works if his near relative is posted a Divisional Accountant or as an officer in any capacity between the grades of Superintending Engineer and Junior Engineer (both inclusive). Any breach of this condition by the contractor would render him liable to be removed from the approved list of contractors of this Institute.
- $23. \ \ No\,Engineer\,of\,gazette\,rank\,or\,other\,Gazetted\,Officer\,employed\,in\,Engineering\,or\,Administrative$ duties in an Engineering Department of the Government of India is allowed to work as a contractor for a period of one year after his retirement from Government service, without the

previous permission of the Government of India in writing. This contract is liable to be cancelled if either the contractor or any of his employees is found any time to be such a person who had not obtained the permission of the Government of India as aforesaid before submission of the tender or engagement in the contractor's service.

- 24. The tender for the works shall remain open for acceptance for a period of 90 days from the date of opening of tenders/ ninety days from the date of opening of financial bid in case tenders are invited on 2/3 envelop system (strike out as the case may be) if any tenderer withdraws his tender before the said period or issue of letter of acceptance, whichever is earlier, or makes any modifications in the terms and conditions of the tender which are not acceptable to the department, then the Government shall, without prejudice to any other right or remedy, be at liberty to forfeit 50% of the said earnest money as aforesaid. Further the tenderer shall not be allowed to participate in the retendering process of the work.
- 25. (A) All taxes, Labour Cess etc., as applicable shall be borne by the contractor himself. The contractor shall quote his rates considering all such taxes including GST on works. Any recovery towards GST is notified by the competent authority, the same shall be effected and no claim what so ever shall be entertained by IITH. The contractor shall quote his rates accordingly.
 - (B) 2% as TDS amount of GST amount payable on the bills will be deducted as per the Govt. of India, Ministry of Finance, Department of Revenue notification vide No.65/39/2018-DOR, dtd: 14-09-2018.
- 26. GST registration certificate of the state in which the work is to be taken up, if already obtained by the bidder.

If the bidder has not obtained GST registration in the state in which the work is to be taken up or as required by GST authorities, then in such a case the bidder shall scan and upload following under taking along with other bid documents.

"If the work awarded to me, I/We shall obtain GST registration certificate of the state, in which work is to be taken up, within one month from the date of receipt of award letter or before release of any payment by IIT Hyderabad, whichever earlier, failing which I/We shall responsible for any delay in payments which will be due towards me/us on a/c of the work executed and/or for any action taken by IIT Hyderabad or GST department in this regard."

- 27. Bidder has to submit Undertaking on their letter head pursuant to the Section 206AB (as applicable) of the Income Tax Act, 1961 in prescribed format as enclosed at Annexure-A along with each and every bill submitted for payment.
- 28. Pre-bid conference shall be held with the eligible and intending bidders in the office of Superintending Engineer, Construction & Maintenance Division, IIT Hyderabad, Kandi, Sangareddy- 502 284, Telangana State at 1100 Hrs. on 18-10-2022 to clear the doubts of intending bidders, if any. Bidders should send by email all their queries, one day prior to the date of pre-bid conference i.e. on or before 17-10-2022 1600 Hrs,

Email id- ee.electrical@iith.ac.in

29. After pre-bid conference, modifications if required in the bidding documents and clarifications to the queries raised by intending bidders will be posted on the website and E-tendering portal. If further pre-bid conferences are required for complete and effective interactions, the date and time of same will be communicated at the end of 1st pre-bid meeting or later. All modifications/addendums/corrigendum issued regarding this bidding process, shall be posted on website and E-Tendering portal only and shall not be published in any Newspaper.

- 30. This notice inviting Tender shall form a part of the contract document. The successful tenderer/contractor, on acceptance of his tender by the Accepting Authority shall within 15 days from the stipulated date of start of the work, sign the contract consisting of: -
- a) The Notice Inviting Tender, all the documents including additional conditions, specifications and drawings, if any, forming the tender as issued at the time of invitation of tender and acceptance thereof together with any correspondence leading thereto.

b) Standard Contract form (General Conditions of Contract) as posted in the website of the Institute. The bidder is deemed to have gone through and understood the Standard Contract Form and the General Conditions of Contract.

> Executive Engineer-Electrical **IIT Hyderabad**

(Signature of bidder)

FORM 'J'

AFFIDAVIT

I/we undertake and confirm that our firm/partnership firm has not been blacklisted by any state/Central Departments/PSUs/Autonomous bodies during the last 7 years of its operations. Further that, if such information comes to the notice of the department then I/we shall be debarred for bidding in IIT Hyderabad in future forever. Also, if such information comes to the notice of IIT Hyderabad on any day before date of start of work, the Engineer-in-charge shall be free to cancel the agreement and to forfeit the entire amount of Earnest Money Deposit/Performance Guarantee (Scanned copy of this notarized affidavit to be uploaded at the time of submission of bid)

NOTE: Affidavit to be furnished on a 'Non-Judicial' stamp paper worth Rs.100/-

Signature of Bidder(s) or an authorized Officer of the firm with stamp

Checklist of documents to be submitted along with Technical Bid

Sl. No.	Doc Ref	Description of the Document	Enclosed Yes/No	Remarks
	Applicant shall submit the following documents for Technical scrutiny			
1	Registration of Firm (ROF)	Copy of valid Registration of Firm (ROF)		
2	PAN details	Copy of PAN card		
3	GST registration details	Copy of GST Registration certificate & GSTIN should accompany the Technical Bid		
4	Details of similar woks executed (Detailed statements to be enclosed)	Not less than 40% of estimated cost i.e., Rs. 2,04,01,779.00 (Three similar works) Not less than 60% of estimated cost i.e., 3,06,02,668.00 (Two similar works) Not less than 80% of estimated cost i.e., Rs. 4,08,03,558.00 (One Similar work)		
5	As per Para No. 1.5 of NIT	Cost of EMD		
6	As per Sl. No.2 of NIT	Copy of Certificate from CA for Average Annual Financial Turnover for last 03 years		
7	As per Sl.No.3 of NIT	Profit and loss account statement for Last 05 financial years		
8	As per Sl.No.4 of NIT	Banker's certificate or Net worth certificate as per Annexure-I		
9	As per Sl.No.6 of NIT	EPF Enlistment proof		
10	As per Sl.No.7 of NIT	ESIC enlistment proof		
11	As per Sl. No. 8 of NIT	Indemnity bond as per Annex-II		
12	As per Sl.No.9 of NIT	Technology Provider Authorization certificate as per Annexure-III		
13	As per Sl.No.26 of NIT	Undertaking for GST registration in the state in which the work is to be taken up		
14	As per Sl.No.27 of NIT	Undertaking pursuant to Section 206AB (as applicable) of the Income Tax Act, 1961 (Proforma enclosed as Annexure-A)		

On Contractor/ Agency's Letter Head

Undertaking pursuant to Section 206AB (as applicable) of the Income Tax Act, 1961

To, The Registrar IIT Hyderabad Kandi, Sangareddy- 502284.		
Dear Sir/Madam,		a
Subject: Declaration confirming filing of Ir	ncome Tax Return for immedia	ite two preceding years.
	ice at Fax Returns for immediately la	_ do hereby declare that ast 2 preceding Financial Years as
Financial Year for which Income Tax Return was due as per Section 139(1)	Acknowledgement no. of ITR filed under Section 139(1)	Date of Filing
2020-21 (if applicable on date of this declaration)		
2019-20		
2018-19		
Further, I confirm that	_ has lined the above PAN wit	h Aadhaar number as on this date.
I also undertake that he any loss/liability (including any Tax, interabove information.		
For		
Signature: Name of person: Designation: Place: Date:		

15

PROFORMA OF SCHEDULES

SCHEDULE 'A'

Schedule of quantities (Enclosed): Volume 2

SCHEDULE 'B'

Schedule of materials to be issued to the contractor

Sl. No.	Description of item	Quantity	Rates in figure & words at which the material will be charged to the Contractor	Place of issue
			NIL	

SCHEDULE 'C'

Tools and plants to be hired to the contractor

Sl. No.	Description	Hire Charges per day	Place of issue	
NIL				

SCHEDULE 'D'

Extra schedule for specific requirements/documents for the work, if any.

--- NIL ---

SCHEDULE 'E'

Reference to General Condition of

Contract.

"General Conditions of Contract for Maintenance

works as posted on IITH website".

Name of the work

"5 Years of Operation and Maintenance of 650 KLD

capacity Sewage Treatment Plant-1(STP-1) at IITH

campus.".

Estimated cost of work

Rs. 5,10,04,447/-

Earnest money

Rs. 10,20,100/-

Performance Guarantee

3.0% of the accepted tendered value

Security Deposit

2.50% of the tendered value

SCHEDULE 'F'

GENERAL RULES AND DIRECTIONS:

Officer inviting tender:

Executive Engineer-Electrical, IITH

Maximum percentage for quantity of items of work to be executed beyond which rates are to be determined in accordance with Clauses 12.2 & 12.3

See below

Definitions:

2(a) Engineer -in- Charge Executive Engineer-Electrical, Indian Institute of Technology,

Hyderabad.

2(b) Accepting Authority

Superintending Engineer, Indian

Institute of Technology, Hyderabad.

2(c) Percentage on cost materials and Labour to cover all overheads and profit

15% (Fifteen) per cent.

2(d) Standard Schedule of Rate

CPWD, Delhi Schedule of Rates (DSR) 2022 Electrical, with up to

date correction slips.

Standard Contract Form

IITH General Conditions of Contract

for Maintenance works

Clause 1

i) Time allowed for submission of Performance Guarantee, Programme Chart (Time and Progress) and applicable licenses, registration with EPFO, ESIC and BOCW Welfare Board or proof of applying thereof from the date of issue of letter of acceptance, in days

15(Fifteen) Days

ii) Maximum allowable extension beyond the period provided in(i) above

7(Seven) Days

Yes

Clause 1A

Whether Clause 1A is applicable

Authority for fixing Compensation under

Clause 2

Superintending Engineer, Indian Institute of Technology, Hyderabad

Clause 3(VII): If the contractor had secured the contract with Government as a result of wrong tendering or other non-bonafide methods of competitive tendering or commits breach of Integrity Agreement-will be made ineligible.

Clause 5:

Number of days from the date of issue of letter of acceptance for reckoning date of start

7 days

Milestones

Not Applicable

Time of AMC Period

5 Years

Authority to give fair and reasonable Extension of time for completion of work (Web based hindrance register)

Superintending Engineer, IITH

Rescheduling of mile stones

Superintending Engineer, IITH

Clause 6:- Measurement Book

Applicable

- (i) For works having estimated cost more than Rs 15 Lakh - Clause 6
- (ii) For works having estimated cost Rs. 15 Lakh or less - Contractor's option of Clause 6 or to be exercised at the time of Tender Submission

Clause 7:

Gross work to be done together with net payment /adjustment of advances for material collected, if any, since the last such payment for being eligible to interim payment

Rs. 5 Lakhs/-

Clause 7A:

Whether Clause 7A is applicable

No running account bill shall be paid for the work till the applicable labour licenses, registration with EPFO, ESIC and BOCW Welfare Board, whatever applicable are submitted by the contractor to the Engineer-in-charge.

Clause 10A:

List of testing equipment to be provided by the contractor at site lab

As given in additional specifications

Clause 10B (i)- Secured advance on Materials:

Whether Clause 10 B (i) shall be applicable

NA

Clause 10C:

Component of labour expressed as percent of value of work

NA

Clause 10CA

Not Applicable

Clause 10CC

Not Applicable

Clause 10D

Applicable

Clause 11:

Specification to be followed for execution

of work

For ELECTRICAL WORKS

i) CPWD DSR Items:

CPWD General Specifications

Part I Internal 2013 Part II External 1994

For all Market Rate Items:

Particular Specifications / Manufacturers

specifications

Clause 12:

12.2 & 12.3: Deviation limit beyond which Clause 12.2 &12.3 shall apply for

building work

100% (as per CPWD circular No.

DG/CON/313 Dt: 17.02.2021

12.5 : Deviation Limit beyond which clauses 12.2 & 12.3 shall apply for

foundation work

100% (One hundred per cent)

Clause 14:

Whether Clause 14 is applicable

Yes.

Clause 16

Competent Authority for deciding

reduced rates.

Superintending Engineer, IIT Hyderabad up to 5% of tendered amount, beyond which,

Director, IITH.

Clause 18:

List of mandatory machinery, tools & plants to be deployed by the contractor at

As required for the work.

Clause 25:

Settlement of disputes by Conciliation and Arbitration

Conciliator

Dean (Planning)

Director, IIT Hyderabad

Authority to appoint arbitrator

Hyderabad

Place of Arbitration Venue of Arbitration

IIT Hyderabad

Type of Arbitration Tribunal

Sole Arbitrator

Note: Provisions of Arbitration and Conciliation Act 1996 with latest amendments in force shall be applicable.

17

Clause 32: As required for the work.

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Clause 38:

(i): Schedule/statement for determining theoretical quantity of cement & bitumen on the basis of Delhi Schedule of Rates

Not Applicable

(ii): Variations permissible on theoretical quantities:

Not Applicable

Special Conditions of Contract (SCC)

1.0 Introduction

The contractor shall ensure the Operation and Maintenance of the Sewage Treatment Plant (STP) in

compliance to the guidelines contained in the latest edition of the Manual on Sewerage Sewage Treatment

Systems, Operations and Maintenance, published by the Central Public Health Environmental Engineering

Organization (CPHEEO), Ministry of Urban Development, Government of India, New Delhi.

Notwithstanding any-thing contained in the said manual, conditions laid down here under in the foregoing

sections shall also apply.

1.1 Scope of Operation and Maintenance Services

The Contractor shall operate and maintain the Sewage Treatment Plant-01 under this contract for a total

period of Five (5) years.

1. The Contractor shall operate and maintain the sewage treatment plant, all instruments and mechanical,

electrical equipment in accordance with the quantity and quality parameters as per approved O&M manual

and maintain the quality of the treated effluent as prescribed in the contract document.

2. At the discretion of the Institute, the contractor shall provide the O&M services for further three months'

period beyond the five years at the same quoted rates applicable for the Fifth year. The plant equipment

covered under the above contract shall be totally attended to, by the contractor including any

troubleshooting to ensure smooth and trouble free operation.

3. The Equipment is operated and maintained at all times in accordance with the Operations and Maintenance

manual duly approved by IITH

4. The plant is operated within the mixed liquor characteristics defined in the contract

5. The contractor shall monitor the performance of the sewage treatment plant; conduct analysis of the inlet

sewage and effluent quality after treatment. Contractor shall initiate and take adequate actions to ensure

smooth and satisfactory performance / running of the plant.

6. The Contractor shall prepare and implement an effective plant maintenance programme in consultation

with IITH. It is an absolutely Contractors responsibility to look after all sorts of maintenance whether

preventive, Minor, Major, or break-down.

7. The Contractor shall determine operating parameters, select settling (Chemical doses etc.) and generally

optimize the process, and working of the treatment plant meeting the required quality parameters.

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- 8. The Contractor should plan & procure all spares, Polyelectrolyte and all consumables including chemicals, grease, lubricating oil, cleaning agents, laboratory reagents etc.
- The Contractor shall be responsible for keeping up-to-date record of documents including History Card for equipment and maintaining every day log book relating to various analyses performed.
- 10. The Contractor shall maintain and update logbook, in which details of operational parameters are recorded every day and at regular interval say hourly or as decided mutually.
- 11. The Contractor shall prepare and submit a weekly report of plant performance records.
- 12. The Contractor shall be responsible to carry out day to day periodic maintenance, necessary to ensure to smooth and efficient performance / running of all equipment / instruments comprising the sewage treatment plant and maintaining the record of the same.
- 13. The Contractor shall have to issue identity cards with photographs to all the staff employed for Operation and Maintenance. The list of the same shall be submitted to IITH mentioning qualification & experience.
- 14. The Contractor shall employ staff for operation and maintenance of the Plant as per the minimum specified here in for entire duration of O& M Services period of Five (5) years.
- 15. The above staff shall be distributed in three shifts and at no point of time the plant shall remain unattended. As per agreement the number of staff in each shift should always remain present otherwise penalty towards absence of any staff shall be recovered from the Contractor. The Contractor shall make the arrangement of reliever for weekly off/holiday etc., Absence on any ground like weekly off or holiday shall not be considered. The presence of staff in each shift should be marked in muster (muster shall be in electronic form by use of biometric machines logged to the computer system installed in the plant) to be maintained at office of shift-in-charge at Sewage Treatment Plant that shall be considered as final. The Contractors staff must mark their presence in this muster. The Contractor may maintain a separate register for his own purpose. Copy of muster shall be enclosed with every monthly bill.
- 16. The staff of Contractor shall always remain in contact with the Engineer-in-Charge or his authorized representative deployed by IITH and follow their instruction.
- 17. Unsatisfactory and inefficient running of the plant and unnecessary and excessive usage of spare, consumable, etc. supported by the reasons which are under control of Contractor shall be highly objected. In such cases IITH s decision shall be final and binding to the Contractor.
- 18. It is required that at least once in every one month a technical expert of contractor other than the Staff of the Contractor shall visit and audit the functionality of the plant and systems and shall suggest, if required,

to improve the efficiency and working of the plant etc. No separate payment shall be made for such visits. The visit must be recorded and outcome of the visit/minutes of the meeting should be got signed by Engineer-in-charge without which the visit shall not be considered.

- 19. In addition to the contractor's technical expert visit, the contractor shall arrange a visit to the plant by representative of Technology Provider (GE) once in every six months. The Technology Provider shall study the functioning of the plant, conduct tests on incoming sewage and treated sewage, compare the results with the specified parameters of effluent. The Technology Provider shall submit the inspection report commenting on the state of affairs of the plant, maintenance and up-keep of equipment, housekeeping, safety and environmental issues including the test results. The report shall also include suggestions for the reasons and corrective actions needed if the test results are not satisfactory and improvement of systems, in general.
- 20. Compliance on the issues mentioned in the inspection report of Technology Provider shall invariably be furnished by the contractor to the Engineer-in-Charge with-in one month of date of issue of inspection report. Documentary evidence shall be furnished along with compliance report substantiating the corrective action taken and the subsequent test results meeting the requirements of contract.
- 21. The first inspection of plant by Technology provider shall be carried out within the first six months (preferably at the end of first three months) of O& M period and subsequent visits shall be planned once in every three months until completion of total Five Years O& M period.
- All expenses for arranging visits of Technology Provider shall be borne by the Contractor and hence the contract price for O& M Services are deemed to be inclusive of the same. Nothing extra shall be paid by IITH on this account. In case, the visit of Technology Provider is not arranged by the contractor within fifteen (15) days from the due date of visit, IITH shall arrange such visit by the Technology Provider at the risk and cost of the Contractor. All expenses incurred by IITH towards arranging the visit of Technology Provider for inspection of plant will be recovered from the ensuing bill of the contractor in addition to a penalty amount of Rs 10,000.00 for every such default on part of contractor.
- 23. Contractor shall comply with all safety rules and regulations mentioned in O& M manual. IITH shall not be responsible for any accident /injury to the staff of the Contractor. Further the IITH shall not provide any insurance or medical facility to the staff of Contractor. The responsibility lies with the Contractor.
- 24. All Central/State Government / Semi-Government / Labour laws and acts/Local Bodies Rules and Regulations pertaining to this contract shall be followed and observed by the Contractor without any extra

21

cost to IITH.

25. No accommodation / guesthouse / transportation facility shall be provided by IITH to the Contractor or his representatives. Operation & maintenance staff shall not be given any accommodation facility inside the plant (IITH) premises.

26. The Contractor shall provide the necessary tools and tackles required for day-to-day maintenance during

0& M period.

27. The scope of work also includes up-keep of complete plant area premises, including floor, toilet block, railing, door, windows, light fixtures and ceiling etc. The entire premises of the plant including garden area

shall also be cleaned and maintained by the Contractor regularly.

28. The work shall be done as per specified standard practices and by following labour, factory, electrical,

TSPCB and all statutory rules and regulations as applied of Local, State and Central Government of India

etc..

29. Right is reserved by IITH for suspension, dismissal, termination of any staff employed by Contractor who

are found to be indulging in unlawful, unethical activities.

30. Monitoring of proper functioning of plant shall be done as per approved 0& M manual. Contractor has to

maintain all quality parameters of effluent within stipulated limit or he shall be penalized for not

maintaining the parameters specified in the contract. All expenditure incurred for the same like, suit fee,

court fee, case fee, or the penalty as decided by Engineer-in-Charge and penalty charged by TSPCB or any

other statutory body shall be charged to Contractor and deducted from his security deposit, bills, etc.

31. Contractor shall have to test the effluent / influent at his own cost at the plant laboratory on daily basis.

The same will be verified by and checked by IITH whenever required.

32. No equipment shall remain ideal or unattended or damaged for the period of more than 3 days. If any

equipment is not repaired, rectified and or replaced within 3 days, the Contractor shall be penalized with

no limit at the rate of Rs. 2000/- per day delay per each individual equipment of the plant. In case, the

contractors fails to attend the faults within 3 days, the same shall be attended by IITH at the risk and cost

of the contractor

33. During Operation & Maintenance period, Contractor has to supply all the spares, at his cost during

preventive, major-minor breakdown, replacement and maintenance work. No extra payment shall be made

for such maintenance on any ground. No separate payment for the same shall be made by the IITH

irrespective of the number of such break down / minor, major repairs replacements.

- 34. At the time of handing over of the plant to IITH after the end of 0& M period, all equipment of plant shall be in good working condition.
- 35. Operation and maintenance of PLC based automation system and all instruments installed in the STP shall be the responsibility of the Contractor. All repairs, replacements towards the entire instrumentation works during the O& M period shall be in the scope of Contractor.
- 36. The Contractor shall also dispose off the sludge, screenings, grit and any other material to the satisfaction of IITH at his own cost. However, IITH shall have full rights on the dried sludge for using for its internal purposes.
- 37. At the time of handing over of the plant on completion of O&M period, the contractor shall handover all records pertaining to the plant like Operating Manuals, Warranty Certificates, AMC copies, registers of Tests/flow particulars, charts, third party reports etc. to IITH.
- 38. Output and Operational Guarantees: The Contractor is fully responsible for treating all the Sewage reaching at the Common Collection Sump. The performance of the Contractor shall be treated as unsatisfactory if he fails to treat the complete sewage or does not maintain the guarantees mentioned in the contract excepting in force majeure condition or fails to fulfil other conditions of the contract.
- 39. Treated Effluent Quality: The Contractor shall operate the Sewage Treatment Plant in such a way that the treated effluent quality attains parameters as prescribed in this contract document.
- 40. The scope of O&M Services includes softening of the treated sewage water after the process of Ultra filtration of MBR. The quantity of effluent to be softened per day shall be a minimum of 2,50,000 litres. The hardness of the softened water shall be less than 50 mg/l. The softened water shall be made available in the soft water tank. All equipment, consumables required for softening of the effluent shall be borne by the contractor and nothing extra shall be payable on this count. IITH will utilize this soft water for makeup water of HVAC system.
- 41. Chemical Requirements: All chemicals and other consumables consumed to operate the Sewage Treatment Plant and other facilities under this contract shall be borne by the Contractor.
- 42. Adverse Operating Condition: During which the raw sewage quality deteriorates beyond the Specifications contained in contract, the following provisions shall be applicable:
- a) If the raw sewage can still be treated to meet the Output Standards, the Contractor shall comply with such specifications.
- b) In the event it is not possible to meet the Output Standards, the Contractor shall immediately inform IITH

and take all corrective measures at his own cost and risk to ensure that the prescribed output standards are achieved.

- 43. Test to be carried during 0 & M period: Sampling and testing to be carried out for the parameters given below: This schedule shall also be maintained during the O& M period. Sampling shall be done in accordance with BIS 3025.
- Inlet chamber at sewage treatment plant for flow, BOD, pH, suspended solids(SS), temperature, COD, oil & grease, TDS; Outlet of the sedimentation units for BOD, suspended solids, pH, COD and oil grease, TDS.
- (ii) Inlet of the reactor unit for MLSS, Dissolved Oxygen pH.
- (iii) Outlet of the reactor unit for Dissolved Oxygen, Sludge volume Index pH.
- (iv) Outlet of the secondary treatment units for BOD, Suspended solids, pH, COD and oil grease
- (v) Outlet of the chlorination units for BOD, Suspended solids, pH
- (vi) Excess sludge for Volatile suspended solids, total solids, specific gravity
- (vii) Various parameters to be tested by online monitoring system at these locations as per specific requirements of Instrumentation.
- (viii) Residual Free Chlorine after Chlorination.
- (ix) Hardness of softened water
- Total Coliform
- The Contractor shall get analysed the untreated as well as treated sewage samples once in every three 44. months from TSPCB or any other lab approved by the Engineer- in-Charge for all parameters mentioned in Table 3.1 and Table 3.3 specifying the characteristics of treated sewage. The necessary lab testing charges will be reimbursed by the Institute on actuals. The TSPCB Vigilance testing charges for samples directly collected by TSPCB are also reimbursable to the Contractor. The Contractor shall ensure adherence to standard protocols of collection and storage of samples.

1.1.1 Calibration of Instruments

All the measuring instruments and other devices shall be calibrated regularly as mentioned below:

- The instruments and devices shall be calibrated by the plant Manager or any authorized specialized staff of the Contractor once in every two months.
- (ii) All such instruments shall be calibrated once in every twelve months by approved third party specialized
- (iii) Immediately after calibration, the results/ reports shall be submitted to IITH.

(iv) First calibration by approved third party specialized agency shall be done after twelve months of commencement of 0& M period.

1.1.2 Contractors staff during OM period

Key Staff: a.

The minimum key staff required for 0 & M Services shall be as given below. Non-deployment of the personnel during O&M as per the contract shall lead to imposition of penalty as mentioned in Contract.

1. One Electro-Mechanical Engineer (Plant Engineer)

A Degree in Mechanical or Electrical Engineering or a Bachelor degree in Science (B.Sc.) with chemistry as one of the major subject from a recognized university/ Institute with minimum 06 years' experience in Operation & Maintenance of any STP.

- 2. Plant Operator: One per each shift with minimum 7 years' experience in maintaining STP. CVs of key staff shall be submitted at the commencement of O & M period and shall be subject to approval of E-I-C.
- b. Non Key Staff: The contractor must deploy adequate number of non -key staff comprising of operators, skilled technicians, semiskilled and unskilled labourers to discharge the contractual liabilities of operation and maintenance and other essential activities of upkeep of the plant.
- Institute shall monitor the presence and availability of such key and non-key staff. As specified C. elsewhere in the contract document, the contractor shall maintain the attendance in biometric form for all the staff so deployed.
- d. No labour below the age to 18 years shall be employed on the work. List of all key and non key staff deputed at site along with their ID proofs (Aadhar card/Voter card/DL etc.) is to be submitted by the contractor to IITH and advance intimation to be given before deputing/removing any staff from site during the period of contract. Not more than one of the contractor's key staff shall be absent from the plant premises any given time, the contractor shall provide replacement of equivalent or better qualifications. The CV's of such key staff replacements shall be got approved from E-I-C in advance.
- The contractor shall pay to all the Operation & Maintenance (O&M) staff deployed at IITH, the latest e. applicable minimum rates of wages as prescribed by Ministry of Labour & Employment, Govt. of India for Hyderabad City for Construction or Maintenance works. Any revision in wages as per Govt. of India shall be payable to the 0 & M staff by the contractor during contract period only, without any additional cost implication to IITH. The contractor will be at liberty to pay any deputed 0 & M staff higher wages than the minimum wages rates prescribed by Chief labour Commissioner, Govt. Of India.

Engineer-in-Charge(EIC) shall be empowered to direct the contractor to remove any or all staff f. employed on 0 & M of the plant if in his opinion continued presence of such staff is detrimental to safety or proper O&M of the plant. Whenever the Engineer-in-Charge informs the Contractor in writing that any person on the work is in his opinion unsatisfactory or/incompetent or unfaithful or dishonest, untruthful or disorderly or to be otherwise unsuitable, such person shall be discharged by the Contractor from the work and shall not be employed again on it. The Contractor shall comply with such directions and immediately deploy suitable substitute(s) thereof.

1.1.3 Safety and Security

The Contractor shall take all safety precautions under various Acts/Rules under central/State Govt. from time to time and he shall be responsible for safety of its staff and the consequences thereof. The contractor shall be responsible for the safety of the plant, equipment and personnel during O&M period.

1.1.4 Responsibility for damages

- (a) Safety of the whole of the plant shall remain with the Contractor who shall be responsible for all accidents or damages from whatever cause arising and chargeable for anything that may be stolen, removed, destroyed or damaged to whomsoever belonging and also for making good all defects and damages to the said works or to any property adjoining or any cause whatever, whether such damage or defects were occasioned by the negligence of the Contractor or not or may be or might have been discovered during the progress to be known after the completion whereof or whether payment may wholly or partially have been made or the /works approved as supposed to have been properly done and no certificate of approval of any works by any statutory bodies shall affect or prejudice the right of IITH against the Contractor or be considered or held as at all conclusive as to the sufficiency of any work materials.
- (b) Adequate safety precautions against fire, flooding, lightening, electrical shocks, accident due to moving/non-moving heavy/light equipment shall be strictly taken up by the Contractor at his own cost. Suitable safety measures like gumboots, gloves, safety belts, ladders, safety lamps, gas masks, Oxygen apparatus, insulated tools, alarms etc. shall be provided by the Contractor. Necessary medical first aid kit shall be made available all the time. In absence of observance of above safety precautions, the Contractor shall be responsible for any unforeseen loss of the equipment or persons dealing with it. Special care shall be taken by the Contractor while carrying out the work in sewage gas zone. Any incidence of human life or accident shall be totally Contractor's responsibility.
- (c) The Contractor shall ensure that the staff employed are adequately skilled and trained and takes all necessary precautions while carrying out the work as per Indian Electricity Rules/Factory Act/CPHEEO

Manual/Approved Operation Manual or manufacturer's special instruction for safety / gas handling. The staff should use all protective and safety equipment which should be provided by the contractor during operations.

- (d) In the event of any accident on or off site, in which the Contractor or his personnel are involved, in which an injury occurs to any person whether directly concerned with the project or a third party, the Contractor shall inform IITH within 24 hours of the occurrence of the event. The plant shall be open to local/state/central agencies for verification of safety/emission/acts compliance.
- (e) During night hours, the main gate should be locked. However, shift duty staff should be alert and open the gate during surprise checking of IITH staff or any other Government Authorities or his nominee without any wait. Only bonafide persons shall be allowed in the plant premises being a prohibited area. Smoking and drinking liquor are prohibited in the plant. The staff engaged shall wear common uniform with name plate indicating name and designation during duty hours.
- (f) All staff of the contractor deployed on the plant for O & M shall carry valid identity cards issued by Contractor and duly counter-signed by Engineer-in-Charge.

1.1.5 Reporting

The Contractor shall prepare daily and monthly reports (in approved formats) of pumping/treatment and project performance and submit to IITH and shall assist IITH in preparing the necessary documents for their purpose and record as per Performa given from time to time. The reports shall contain the following:

- Raw Sewage quantity, quality and effluent quality as per the on-line monitoring programme and other tests as specified in this section and print outs of online monitoring shall be submitted to Engineer-in-Charge.
- A description of the maintenance work carried out in the reporting period. A report on major failures, if any, their causes and remedial actions taken.
- Sludge quality and quantity (daily basis) in the reporting period.
- Power and chemicals consumed in the reporting period.
- An inventory of the chemicals and spare parts available at the end of the reporting period.
- 0&M staff deployed by the Contractor during the reporting period.
- Major repair works carried out, if any
- . Near misses and other accidents happened during period under report.

1.1.6 Record Keeping

Contractor is required to maintain separate register as well as computerized records at STP of following information:

- Pumping register
- Quantity of sewage treatment and performance register
- Working hours register
- Electricity break down register
- Maintenance register
- Staff attendance register in the form of computer generated log sheets of biometric attendance.
- Monthly Electricity consumption register
- AMC with OEM register
- Equipment breakdown, repair record and extent of repair
- Chlorination equipment and chlorine toner operating and using register
- Soft water quantity register
- Any other registers/records as may be required by the Engineer-in-Charge.
- In addition to the above, the contractor shall also submit two sets of asset registers containing details of: all major electro-mechanical equipment, instrumentation like various operating machines such as Manual and Mechanical Screens, Mechanical Grit Removers, Pumps, Motors, Scrapers, Air Blowers, Centrifuge, all equipment related to PLC and Automation, etc. The information shall include the make, model number, serial number, book value, warranty, particulars of OEM etc.,

One set of the assets register shall be kept in the control room and maintained by the Plant Engineer.

- Records of effluent quality and other laboratory tests are kept in the laboratory as per testing schedules.
- The record with respect to flow shall be maintained by Contractors as per table below.

The concerned staff passes the daily log sheet to the plant Manager on the subsequent day duly signed. The plant Manager shall verify the daily record as well as the calculations and shall be responsible to generate further data using these.

28

Table 3.5: Hourly Record of Flow

Date/Time	Head Over Notch/ Weir / Meter	Rate of Flow	Average Rate of Flow in past Hour	Flow Quantity
0600				
0700				
0800				
0900				
_				
_				
1400				
1500				
1600				
_				
_				
0000				
0100				
_				
_				

1.1.7 Site Order Book

A Site order Book shall be kept by the Engineer -in-charge at the plant site. Orders entered in this Book by the Engineer-in-Charge or his authorized representative shall be held to have been formally communicated to the Contractor. The Engineer-in- Charge or his authorized representative shall sign each order as it is entered and shall hand over the duplicate to the Contractor or his staff, who shall sign the original in acknowledgment of having received the order.

1.1.8 Operations

- (a) In case, the motor or any other equipment is burnt or damaged due to negligence of the Contractor or due to faulty operation it shall be sole responsibility of the Contractor to rewind/replace/repair it as per standards of the equipment free of cost. In case of any fault in operation and performance of the plant, Contractor or his staff at duty shall immediately report to IITH about it.
- (b) The Contractor shall run the plant after ensuring proper voltage. He shall also record all the power failures and voltage, current, power, KWH in daily log sheet. He shall bring it to the notice of Engineer-in-Charge about the breakdown/power failure. He shall also get the electricity restored simultaneously.
- (c) Any dispute with the workmen shall be Contractors responsibility as per Labour Laws/Govt. Rules and Regulations. In no way IITH shall be responsible for the disputes between them. The Contractor shall follow the rules and regulations as per rules of the Government and applicable laws.
- (d) The Contractor shall arrange all necessary required tools, tackles and instruments in advance for proper operation and maintenance of the entire plant. The Contractor shall operate and maintain all (E&M)

31

equipment as per the recommendations of the respective equipment manufacturer. He shall further maintain and operate the plant, as per CPHEEO manual to obtain the treated effluent results as per approved norms specified in this document elsewhere.

- (e) The floating material/scum, if any, should be collected in bins and dispose the same in open pits away from the plant & machinery which should be dried and disposed off regularly at a location outside the plant and approved by statutory authority. During rainy season, this should be buried after using lime.
- (f) The screened material, grit and the dried sludge cake from the centrifuge should be collected in tractor or by appropriate means and the same shall be disposed off at site /yard within the battery limits, away from the plant. The screened material, grit and any other non-useful material so collected and accumulated over a period of time shall be removed at regular intervals from the STP and IITH premises by transporting the same using mechanical means to approved municipal dumping ground.

1.1.9 Maintenance

- a. The work shall be carried out and completed under the exclusive control direction and supervision and to the satisfaction of Engineer-in-Charge. Engineer-in-Charge shall likewise have full power to reject or condemn any work or material that he may deem unsuitable. In case of any work or material being rejected by the Engineer in-charge, the Contractor shall immediately remove and replace the same to the satisfaction of Engineer-in-Charge or Engineer-in-Charge shall have full powers to get the same removed and replaced and deduct the expenditure incurred in the process from any amount due or that may become due to the contractor.
- b. The Contractor shall use only the original and genuine spares of the original equipment as per recommendations given in the maintenance booklet of the manufactures/as per directions of Engineerin-Charge, Adequate stock of such spares is to be maintained by the Contractor. Test certificate of manufacturer is required for bearings along with supplies. Test certificate of all major equipment shall be submitted from the manufacturer.
- c. If any material brought to the site, be in the judgment of the Engineer-in-Charge, found inferior or improper & not as per described standards, the said materials or workmanship shall, where required by Engineer-in-Charge, shall be removed or amended by the Contractor forthwith.
- d. The Engineer-in-Charge is authorized to remove or cause to be removed the materials and workmanship so objected to or any part thereof and replace the same with such other materials and workmanship as shall be satisfactory to him and there upon the Contractor shall on demand repay to IITH the expenses incurred there by or to which the IITH may be put or be liable in connection therewith, the amount thereof to be certified by the Engineer-in-Charge whose certificate shall be final.

- The Contractor shall also be responsible to maintain cleanliness in around the plant including electromechanical equipment, disposal of floating material removed from the bar screens etc., Grit and other unwanted material and keep the premises in a tidy condition. The terraces of the STP building shall be always kept free of debris, junk, waste material, vegetation etc.
- All leakages should be attended promptly to avoid unhygienic conditions, deterioration of plant and building. Chokages of Electro-Mechanical equipment, sewer lines of STP building, rain water pipes, storm water drains should be removed at once. All the valves/gates which are not used regularly should be operated at least once a week and make sure that they are properly lubricated /greased.
- All safety valves should be checked daily and ensure that they are working properly. In case of any fault the same should be attended immediately without any wait. The maintenance of the plant shall be as per maintenance manuals of the manufacturer for all equipment's. Contractor shall keep all the safety devices in working order.
- The Contractor should make sure that no unwanted material should float/grow in and around different units. In case it is found the same shall be removed /cleaned immediately. He shall also be responsible for cleaning/sweeping the plant buildings inside and outside, roads, foot path etc.
- Weirs of reactors etc shall be maintained clean round the clock. During preventive/ breakdown maintenance, the Contractor shall visit the unit/units as and when needed. The pumping units or any other machinery required, if any, shall be arranged by the Contractor at his own cost for completing the preventive maintenance work. In case of battery operated auto system panels, system alarm etc., batteries are required to be maintained and replaced as and when needed by the Contractor.
- The Contractor shall provide necessary protection systems wherever necessary including alarms. j. Cautionary Sign boards shall be placed at appropriate locations
- The Contractor shall maintain the Supervision Control and Data Acquisition System (SCADA) in working condition for the 5 years of 0 & M period. The Contractor shall not remove/shift any equipment/machinery even temporarily without written permission of Engineer-in-Charge.
- POL (Petrol/Diesel Oil & Lubricants) has to be arranged by the Contractor as and when needed as per manufactures recommendations for periodical maintenance of entire plant. IITH shall not provide such items.
- m. The Contractor shall have to carry out periodical testing of the installations/equipment as per CPHEEO manual and Indian Electricity Rules as amended up to date and shall have to maintain complete record

in the maintenance register.

- IITH shall be at liberty to post its staff for surveillance/ inspection at the plant with access to all units, control room and records, log books, MIS (Management Information system), data etc. round the clock as required. The logbooks will be attested by the authorized IITH Officials and this record shall be open for further inspection/checking by IITH and all other Government Agencies CPCB/TSPCB etc. for further action/improvements/rectifications.
- In case of major repair due to normal wear and tear/break down, the Contractor should bring the same to the notice of IITH immediately and necessary measures for its repair/replacement should be taken simultaneously. Breakdown, all repairs of any kind are to be attended by the Contractor. Any unit/equipment being irreparable in the opinion of IITH shall be replaced by the Contractor at no cost to IITH.
- The Contractor shall give his telephone no., contact addresses, etc. to Engineer-in- Charge as well as shift duty shift staff to contact him/them during emergency/odd hours etc. The mobile number of the authorized representative of the contractor and that of plant manager shall be displayed on notice board placed at a prominent location in the STP building.
- q. The contractor shall arrange a white notice board in the control room of STP and all details like sewage volume handled/treated, treated water volume, test results etc, shall be displayed on daily basis.
- The contractor shall display in the control room a schematic flow diagram and the layout of the plant and equipment.

1.1.10 Routine, Preventive, Minor & Major maintenance

Routine, Preventive, Minor & Major maintenance of all Electrical, Mechanical, hydraulic machines & Equipment of the plant as listed below shall be the responsibility of the contractor.

- Routine & preventive maintenance of electrical /Mechanical/ hydraulic/ machines equipment is to be carried out as per the approved operation & maintenance manual. Minimum oil & grease requirement for one-year Operation & maintenance of the Plant to be procured by the Contractor well in advance.
- The Contractor should prepare schedule of daily maintenance preventive maintenance of all the equipment & machinery operated & run by him in the premises of the plant. The schedule should be as per the guidelines mentioned in the contract & as per the approved O & M manual. The scope covers Routine, Preventive, Minor & Major maintenance of all major minor equipment's, and machines in the Plant like Submersible pumps, blowers, Coarse & Fine screens, Grit Removal Mechanism, Channel gates, Decanters, Sludge pumps, Centrifuge feed pumps, Centrifuges, hollow fibre membranes etc. All dosing

systems including Chlorine Dosing equipment, etc.

c. The scope also covers Routine, Preventive, Minor & Major maintenance of all the instrumentation system installed like PLC, Actuators, Flow meter's level indicators etc. The Contractor should also carry out Routine, Preventive, Minor & Major maintenance of all major minor electrical equipment like Electrical Panels, Switch Gears, Power Cables, Control cables, Changeover switches etc. so as to ensure uninterred round the clock operation of the Plant.

d. The Contractor should maintain all civil structures including office/ Store room, Storm water drains, fencing etc in a neat manner. He should maintain all civil structures of the plant sturdy to complete the natural/designed lifetime. The Contractor should carry out the safety audit of the plant & necessary certificate from the competent authorities must be obtained.

The Contractor should procure and keep stock all the spares required for all types of maintenance in advance in sufficient quantity. The brand/make of the part/equipment/machine to be repaired /replaced should be as per IITH approved list & as per the approved O & M manual or as per the existing manufacturers brand.

1.1.11 Release of Hazardous Substances or waste, if any

(a) The Contractor, after first notifying the IITH/TSPCB shall be responsible for fulfilling all requirements associated with any release of any substance into the environment as required by Applicable law or by any Legal Entitlement including but not limit to the notification or reporting of releases / Hazardous substances or Hazardous Waste. The Contractor shall prepare a memorandum evidence such notification or reporting and pro-vide copies thereof to IITH, along with any documents provided to the relevant regulatory agency regarding such release.

(b) The Contractor shall assist IITH in the process of obtaining clearances of all such agencies as required for the purpose, including all clearances during O&M period. He shall be fully responsible to comply with all requirements of Laws including hazardous substances, emission standards for air, discharge standards for effluent oil, sub-soil pollution. The Contractor shall not release any hazardous/toxic materials inside the premises.

1.1.12 Technical Audit

Engineer-in-Charge has the right to conduct a technical audit of the plant and to perform any analysis or inspection he deems necessary. The Contractor shall at his cost provide all assistance IITH requires to complete these inspections. Such audits may cover all or any of the obligations of the Contractor, including without limitation:

33

- (a) Verification of the system capacity with due allowance for normal wear and tear during the O&M Period.
- (b) Verification of the performance standards and useful life of the individual assets of the Facility, with due allowance for normal wear and tear during the O&M Period.
- (c) Verification of the capacity of the Facility to meet Output Standards during the residual life of the Facility with due allowance for normal deterioration expected during such residual life.
- (d) Sampling, testing and verification of the Output Standards for treated sewage, sewage losses.

1.1.13 Inspection

- (a) At any time or at the end of each twelve-month period, or at the initiative of the TSPCB, a visit shall be organized so that both parties can check the condition of the installations at the facility.
- (b) A report shall be drawn up to record the opinions of the both parties. IITH/TSPCB reserves the right to call the Technology Provider, equipment manufacturers or specialized technicians for these visits.

1.1.14 Taking Over of Plant after Completion of O & M Period

The plant shall be taken over by IITH on satisfactory completion of the Operation & Maintenance of the plant provided:

- The plant /equipment are in good, smooth running condition. The results of the treated waste water quality for the preceding three months of operation of the plant are within the limits specified.
- In case of major repairs /replacement of equipment, the performance guarantee for such unit/equipment shall be extended by six months from the date of putting back in to satisfactory operation of such unit/equipment, in case such putting back is within last three months of the end of completion of operation & maintenance period.
- All records of operation & maintenance are handed over to IITH in proper condition.
- In case taking over of the STP is delayed on account of Contractor's failure, the operation & maintenance period shall be extended further till he meets the requirement without any extra cost to IITH.

1.1.15 Tender Drawings

For better understanding of the bidder, the following tender drawings are enclosed with the tender:

- a) Process Flow Diagram
- b) Piping & Instrumentation Diagram

Form of Performance Security (Guarantee) Bank Guarantee Bond 3.1

Performance Security (Guarantee) Bank Guarantee Bond

In consideration of the Director, IITH (hereinafter called The Government) having offered to accept the terms and conditions of the proposed agreement between and (hereinafter called the said Contractor(s)) for the work (hereinafter called the said agreement) having agreed to production of an irrevocable Bank Guarantee for Rs...... (Rupees only) as a security/guarantee from the contractor(s) for compliance of his obligations in accordance with the terms and conditions in the said agreement.

- 1. We, (hereinafter referred to as the Bank) hereby undertake to pay to the Government an amount not exceeding Rs. (RupeesOnly) on demand by the Government.
- 2. We, (indicate the name of the Bank) do hereby undertake to pay the amounts due and payable under this guarantee without any demure, merely on a demand from the Government stating that the amount claimed as required to meet the recoveries due or likely to be due from the said contractor(s). Any such demand made on the bank shall be conclusive as regards the amount due and payable by the bank under this Guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs. (Rupees only)
- 3. We, the said bank further undertake to pay the Government any money so demanded notwithstanding any dispute or disputes raised by the contractor(s) in any suit or proceeding pending before any court or Tribunal relating thereto, our liability under this present being absolute and unequivocal. The payment so made by us under this bond shall be a valid discharge of our liability for payment there under and the Contractor(s) shall have no claim against us for making such payment.
- 4. We, (indicate the name of the Bank) further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said agreement and that it shall continue to be enforceable till all the dues of the Government under or by virtue of the said agreement have been fully paid and its claims satisfied or discharged or till Engineer- in-Charge on behalf of the Government certified that the terms and conditions of the said agreement have been fully and properly carried out by the said Contractor(s) and accordingly discharges this guarantee.
- 5. We,(indicate the name of the Bank) further agree with the Government that the Government shall have the fullest liberty without our consent and without affecting in any manner

our obligation hereunder to vary any of the terms and conditions of the said agreement or to extend time of performance by the said Contractor(s) from time to time or to postpone for any time or from time to time any of the powers exercisable by the Government against the said contractor(s) and to forbear or enforce any of the terms and conditions relating to the said agreement and we shall not be relieved from our liability by reason of any such variation, or extension being granted to the said Contractor(s) or for any forbearance, act of omission on the part of the Government or any indulgence by the Government to the said Contractor(s) or by any such matter or thing whatsoever which under the law relating to sureties would, but for this provision, have effect of so relieving us.

- 6. This guarantee shall not be discharged due to the change in the constitution of the Bank or the Contractor(s).
- 7. We, (indicate the name of the Bank) lastly undertake not to revoke this guarantee except with the previous consent of the Government in writing.
- 8. This guarantee shall be valid up to.....unless extended on demand by the Government. Notwithstanding anything mentioned above, our liability against this guarantee is restricted to Rs. six months of the date of expiry or the extended date of expiry of this guarantee all our liabilities under this guarantee shall stand discharged.

Dated theday offor.....(indicate the name of the Bank).

NOTES ON PRICE BID

- 1) The bidder is required to quote all-inclusive monthly charges for various years of Operation & Maintenance.
- 2) Rates shall be quoted in both figures as well as words. In case there is any discrepancy between the rates quoted in figures and words, the rates quoted in words will be considered.
- 3) The list of Instruments, equipment's and valves given along with this document is indicative only. Bidders are advised to visit the site thoroughly before quoting rates.
- 4) IITH being educational institution, there will be a variation in the quantity of sewage generated depending upon academic activities. The contractor shall not have any claims if the influent is more than 650KLD on any day on any period. Similarly, there shall not be any recovery from the contractor if the quantity of sewage treated is less than 650KLD on any day or period.
- 5) During the period of Operation & Maintenance of plant, monthly running account bills shall be raised by the contractor by 7th of every month in prescribed proforma (CPWA 27A). IITH shall endeavour to make payment of monthly running bills within 10 working days from the date of receipt of bills complete with all supporting documents/reports etc. in the office of Engineer-in-charge, IITH.
- The tendered amount shall be inclusive of all applicable taxes to this contract.
- 7) Other Taxes: Income tax/surcharge/cess or any other tax as applicable on the amounts paid by IITH shall be recovered at source at applicable rates as notified by Govt. of India and a certificate to this extent shall be issued to the contractor.

39

ANNEXURE-I

FORM FOR CERTIFICATE OF NET WORTH FROM CHARTERED ACCOUNTANT

It is to certify that as per the audited balance sheet and profit & loss ac	count during the financial
year 2020-21, the Net Worth of M/s	(Name & Registered
Address of contractor/ Individual/firm/company), as on	(the relevant date) is
Rsafter considering all liabilities. It is further certified	that the Networth of the
company has not eroded by more than 30% in the last three years endi	ng on (the relevant date).
Signatur	e of Chartered Accountant
organica.	
Nam	e of Chartered Accountant
	Membership No. of ICAI
	Membership No. of Tern
	Date and Seal

40

ANNEXURE-II

INDEMNITY BOND (VIOLATION OF LAWS, NORMS, ACCIDENTS, DAMAGES ETC) (On Non-Judicial Stamp Paper of Rs.100/-only)

Name of the work: 5 Years of Operation and Maintenance of 650 KLD capacity Sewage Treatment Plant-1(STP-1) at IIT Hyderabad campus

KNOW all men by these presents that I/We (Name of Contractor with address) do hereby execute Indemnity Bond in favour of Indian Institute of Technology(IIT) Hyderabad having their office at Kandi, Sangareddy-502284, Telangana, India and for the project IIT Hyderabad under consideration.
On this day of2022
THIS DEED WITNESSETH AS FOLLOWS:
I/We, (Name of Contractor) hereby do indemnify and save harmless IITH having their office at Kandi-502284, Sangareddy, Telangana, India from the following: -
1. Any third party claims, civil or criminal complaints/liabilities/material/life loss during site mishaps and other accidents such as snake bites etc or disputes and/or damages occurring or arising out of any mishaps at the site due to faulty work, negligence, faulty construction and/or for violating any law, rules and regulations in force, for the time being while executing/executed civil works by me/us.
2. Any damages, loss or expenses due to or resulting from any negligence or breach of duty on the part of me/us or any sub-Contractor/s if any, servants or agents.
3. Any claims by an employee of mine/ours or of sub-Contractors if any, under the workman compensation act and employers' Liability act, 1939 or any other law rules and regulations in force for the time being and any acts replacing and/or amending the same or any of the same as may be in force at the time and under any law in respect of injuries to persons or property arising out of and in the course of execution of the Contract work and/or arising out of and in the course of employment of any workman/employee.
4. Any act or omission of mine/ours or sub-Contractor/s if any, our/their servants or agent which

DELIVERED BY THE AFORESAID IN THE PRESENCE OF WITNESSES:

IN WITNESS WHEREOF THE HAS SET HIS/THEIR HANDS ON THIS DAY OF SIGNED AND

may involve any loss, damage, liability, civil or criminal action.

1.

2.

ANNEXURE-III

<u>Proforma for Authorization certificate from Technology Provider</u> (M/s Suez Water Technologies & Solutions(I) Pvt. Ltd.

REF.No		Date	ed		
To, The Executive Engineer-Electrical, Indian Institute of Technology (IIT) Hydo Kandi-502284, Sangareddy, Telangana, I					
Dear Sir,					
We manufacturers/Technology Providers factory/ factories at (Name and add order from you against your Tender enq	of ress of bia	(add	dress of factory ubmit a bid, ne) do hereb gotiate and	having y authorize receive the
5 Years of Operation and Maintenance 1) at IIT Hyderabad campus	e of 650 K	LD capa	city Sewage Tr	eatment P	lant-1(STP-
We ensure that we shall support/ facility technology / product updates for up-gra 01 at IIT Hyderabad during the 05years mentioned in this tender document on d	adation / 1 s contract	maintena : (if awai	ince / repairing rded) as per the	/ servicing e terms and	of the STP- conditions
We hereby extend our full guarantee for	the servi	ces offere	ed by the above	firm.	
				You	rs faithfully,
			(Name		ed signatory h signature)
			(Nam	e of manufa	acturer with stamp)
Note: This letter of authority should be should be signed by an authoris	e on the ed persor	letter-he	ead of the Tec ld be enclosed	hnology P by the Bido	rovider and ler with the

tender documents.



Project No.	6038727
Project	650 KLD STP -1
Customer	IIT HYDERABAD

Doc No. 6038727-AE-01

EQUIPMENT LIST

APPROVED BY TECHNOLOGY PROVIDER



В	JUNE 26, 2018	FOR APPROVAL	SK	SCR	MAB
Rev.	Date	Description	Prepared	Checked	Approved

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Project No.	6038727	
Project	650 KLD STP -1	
Customer	IIT HYDRABAD	

Doc No. 6038727-IK-01

INSTRUMENT LIST

APPROVED BY TECHNOLOGY PROVIDER



A	MAR 30, 2018	FOR INFORMATION	RR	RK	BPU
Rev.	Date	Description	Prepared	Checked	Approved

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16-P-4028-1 PRESSURE NOUCATOR BIOURDON 16-P-4028-1 PRESSURE	-	-PI-402A-1	PRESSURE INDICATOR	BOURDON	PROCESS AERATION BLOWER-1-A DISCHARGE PRESSURE	02 OF 10	NA	0.55	25-90	0.1	0-1	bar		VENDOR SCOPE
16-P5-401A-1 PRESSURE MOLCATOR BIOURDON 16-P5-401A-1 PRESSURE MOLCATOR BIOURDON 16-P5-401A-1 PRESSURE MOLCATOR BIOURDON 16-P5-401B-1 PRESSURE MOLCATOR BIOURDON 16-P5-401B-1 PRESSURE MOLCATOR BIOURDON 20-P5-101A PRESSURE MOLCATOR BIOURDON 0-P5-101A PRESSURE MOLCATOR BIOURDON 0-P5-101A PRESSURE MOLCATOR BIOURDON 16-P5-101A PRESSURE MOLCATOR BIOURDON 16-P5-401-1 TEQP MOLCATOR TILL TO-MONT 16-P5-401-1 TEQP MOLCATOR TILL TO-	-	-PI-4028-1	PRESSURE INDICATOR	BOURDON	PROCESS AFRATION BLOWER-1-B DISCHARGE PRESSURE	02 OF 10	NA	0.55	25-90	0-1	0-1	bar	5.	VENDOR SCOPE
16-PS-A01A-1 PRESSURE NOUTCH COW DAP-HBAGON 16-PS-A01B-1 PRESSURE NOUTCH COW BOURDON 16-PS-A01B-1 PRESSURE NOUTCH COW BOURDON 20-PS-01B-1 PRESSURE NOUTCH COW BOURDON 20-PS-102B-1 PRESSURE NOUTCH COW BOURDON 0-PS-102B-1 PRESSURE NOUTCH COW BOURDON 0-PS-102B-1 PRESSURE NOUTCH COW BOURDON 0-PS-102B-1 PRESSURE NOUTCH COW BOURDON 16-PS-01B-1 PRESSURE NOUTCH COW THAT LO DOWN 16-PS-01B-1 TABLE SWITCH THAT LOOP	-	-PI-401A-1	PRESSURE INDICATOR	BOURDON	PROCESS AERATION BLOWER-1-A SUCTION PRESSURE	02 Of 10	NA	ATM	25-60	NA	NA	bar		VENDOR SCOPE
16-PF-401B-1 PRESSURE BADICATOR BIOURDON 16-PF-401B-1 PRESSURE BADICATOR BIOURDON 20-PF-101B-1 PRESSURE BADICATOR BIOURDON 20-PF-102B-1 PRESSURE BADICATOR BIOURDON 0-PF-101B PRESSURE BADICATOR BIOURDON 0-PF-101B PRESSURE BADICATOR BIOURDON 0-PF-101B PRESSURE BADICATOR BIOURDON 0-PF-101B PRESSURE BADICATOR BIOURDON 16-PF-401-1 T-12-PF BADICATOR BIOURDON 16-PF-401-1 PRESSURE BADICATOR BIOURDON 16-PF-401-1 T-12-PF BADICATOR T-12-PF BADICATOR 16-PF-401-	_	-PS-401A-1	PRESSURE SWITCH LOW	DIAPHRAGM	PROCESS AERATION BLOWER-1-A SUCTION PRESSURE	02 OF 10	NA	ATM	25-35	AN	NA	bar		VENDOR SCOPE
16-P5-001a-1 PRESSURE NONCATOR DAMPHBAGN 20-P5-001a-1 PRESSURE NONCATOR BIOURDON 20-P5-001a-1 PRESSURE NONCATOR BIOURDON 20-P5-101a PRESSURE NONCATOR BIOURDON 16-P4-001-1 TEMP NONCATOR BIOURDON 16-P4-001-1 PRESSURE NONCATOR DAMPHBAGN SEAL 16-P4-001-1 PRESSURE NONCATOR BIOURDON 20-P1-301-1 PRESSURE NONCATOR BIOURDON 20-P1-301-1 PRESSURE NONCATOR BIOURDON 20-P1-301-1 TEMP NONCATOR TILL ID-PONTI 20-P1-301-1 TEMP NOTICE 20	-	-PI-4018-1	PRESSURE INDICATOR	BOURDON	PROCESS AERATION BLOWER-1-B SUCTION PRESSURE	02 OF 10	NA	ATM	25-60	AN	NA	bar		VENDOR SCOPE
20-Pi-201A-1 PRESSURE NOUCATOR BIOURDON	_	-PS-401B-1	PRESSURE SWITCH LOW	DIAPHRAGM	PROCESS AERATION BLOWER-1-B SUCTION PRESSURE	02 OF 10	NA	ATM	25-35	NA	NA	bar		VENDOR SCOPE
20-F-2018-1 PRESSURE INDICATOR BIOURDON		-PI-201A-1	PRESSURE INDICATOR	BOURDON	MEMBRANE AERATION BLOWER-1 - A DISCHARGE PRESSURE	02 OF 10	NA	0.46	25-90	0-1	0-1	bar		VENDOR SCOPE
04-P-102A-1 PRESSURE NOUCATOR BOURDON		PI-2018-1	PRESSURE INDICATOR	BOURDON	MEMBRANE AERATION BLOWER-1-8 DISCHARGE PRESSURE	02 OF 10	NA	970	25-90	0-1	0-1	bar		VENDOR SCOPE
0.4 P. 1.02	_	-PI-102A-1	PRESSURE INDICATOR	BOURDON	MIXING BLOWER-1 -A FOR EQ TANK DISCHARGE PRESSURE	02 OF 10	NA	0.72	25-90	0-1	0-1	bar		VENDOR SCOPE
0.1-P-101A PRESSURE MOLCATOR BIOJEDON	-	-PI-1028-1	PRESSURE INDICATOR	BOURDON	MIXING BLOWER-1-8 FOR EQ TANK DISCHARGE PRESSURE	02 OF 10	NA	0.72	06-52	0-1	0-1	bar		VENDOR SCOPE
01-P-1018 PRESSURE NUDCATOR BELLOW	_	3-PI-101A	PRESSURE INDICATOR	BOURDON	MIXING BLOWER-1-A FOR SLUDGE TANK AND COLLECTION SUMP DISCHARGE PRESSURE	02 OF 10	NA	0.45	25-90	0-1	0-1	par		VENDOR SCOPE
20-151-201-1 FLOW SWITCH BELLOW		3-Pi-1018	PRESSURE INDICATOR	BOURDON	MIXING BLOWER-1-8 FOR SLUDGE TANK AND COLLECTION SUMP DISCHARGE PRESSURE	02 OF 10	NA	0.45	25-90	0-1	0-1	par	94	VENDOR SCOPE
16-14-001-1 TEP-9 INDICATOR BRAMAUC 16-14-001-1 TEP-9 INDICATOR ROTAMETER 16-14-001-1 TEP-9 INDICATOR ROTAMETER 16-14-001-1 TEP-9 INDICATOR TRATIL-POINTI TRATIL-POINT		-FSL-201-1	FLOW SWITCH	MELLOW	MEMBRANE BLOWER COMMON DISCHARGE FLOW	02 OF 10	186	0.46	25-90	TBD	SP=150 L	Nm3/Hr		1.8SP
16-F1-401-1 FLOW MOLGATOR ROTAMETER 16-13-401-1 LEVEL SWITCH TLYTI-POINT 15-F1-401-1 COAMANZER DIPTORE 15-F1-401-1 PRESSURE MOLGATOR DIPTORE 15-F1-401-1 PRESSURE MOLGATOR DIMPREGAL 15-F1-401-1 PRESSURE MOLGATOR DIMPREGAL 20-F1-201-1 PRESSURE MOLGATOR BOUNDON 20-F1-201-1 FLOW TRANSMITTER ELECTROMAGNETIC 20-F1-201-1 TLUBEDITY TRANSMITTER RECERPOWABIET 20-F1-201-1 TLUBEDITY TRANSMITTER RECERPOWABIET 20-F1-201-1 TLUBEDITY TRANSMITTER TLUBEDITY 20-F1-201-1 TLUBEDITY TRANSMITTER 20-F1-201-1 TLUBEDITY TRANS		5-TI-401-1	TEMP INDICATOR	BIMATALIC	PROCESS AERATION BLOWER COMMON DISCHARGE TEMP	02 OF 10	NA	970	06-52	0-150	0-150	Deg.C		WTHTWITHTW
16-136-401-1 LEPEL SWITCH TLUT LI-POINTH 15-47-401-1 DO ANALYZER DIP TYPE 15-67-401-1 PRESSURE INDICATOR DIAPHEACH SEAL 15-67-401-1 PRESSURE INDICATOR DIAPHEACH SEAL 20-41-30-1 PRESSURE INDICATOR BOUNDON 20-67-30-1 REGNER INDICATOR BOUNDON 20-67-30-1 TLUREDITY TRANSMITTER ELECTROMAGNETIC 20-67-30-1 TLUREDITY TRANSMITTER ELECTROMAGNETIC 20-67-30-1 TLUREDITY TRANSMITTER ELECTROMAGNETIC 20-67-30-1 TLUREDITY TRANSMITTER TLUREDITY 20-67-30-1 TRANSMITTER TRANSMITTER 20-67-30-1 TRANSMITTER TRANSMITTER 20-67-30-1 TRANSMITTER TRANSMITTER 20-67-30-1 TRANSMITTER TRANSMITTER 20-67-30-1 TRANSM		6-FI-401-1	FLOW INDICATOR	ROTAMETER	PROCESS AGRATION BLOWER COMMON DISCHARGETEMP	02 OF 10	NA	97'0	25-35	0-500	005-0	m3/hr		19.
15-FF 601-1 DO AMANZER DIP TYPE 15-FF 601-1 FLOW TRANSPHITER ELECTROWAGNETIC 15-FF 601-1 PRESSURE INDICATOR DIAPHRACH'S SAL. 15-FF 601-1 PRESSURE INDICATOR BOUNDON 20-FF 101-1 FLOW TRANSPHITER ELECTROWAGNETIC 20-FF 101-1 TURBOUTY TRANSPHITER TURBOUTH 20-FF 101-1 TURBOUTH 20-FF 101-	_	-LSH-401-1	LEVEL SWITCH	TILT (1POINT)	BIOREACTOR TANK 1 LEVEL	03 OF 10	NA	АТМ	25-50	TBD	HIGH=TBD	MM		4" MS ANSI B 16.5 150 # FLANGE
16-Pi-801-1 FLOW TRANSPHITER ELECTROWAGNETIC 16-Pi-801-1 PRESSURE INDICATOR DIAPHRACHY SEAL 26-Pi-801-1 PRESSURE INDICATOR DIAPHRACHY SEAL 26-Pi-201-1 PRESSURE INDICATOR BOUNDON 26-Pi-201-1 FLOW TRANSPHITER ELECTROWAGNETIC 26-Ai-301-1 TURBOUTY TRANSPHITER ELECTROWAGNETIC 26-Ai-301-1 TURBOUTY TRANSPHITER TURBOUTH 26-Ai-301-1 TURBOUTH TRANSPHITER 26-Ai-301-1 TURBOUTH TRANSPHITER	_	-AIT-401-1	DO ANALYZER	DIP TYPE	BIOREACTOR TANK 1 DO	03 OF 10	NA	АТМ	25-35	5-0	5-0	Ngm		2" PP ANSI B 16.5 150# FF FLANGE
16-P-801A-1 PRESSURE NODCATOR DIAPHRAGNI SEAL 16-P-801A-1 PRESSURE NODCATOR DIAPHRAGNI SEAL 20-P-801A-1 PRESSURE NODCATOR BOUNDON 20-P-101A-1 PRESSURE NODCATOR BOUNDON 20-P-101B-1 TURNONTY PRANSMITTER ELECTROMAGNITIC 20-P-101B-1 TURNONTY PRANSMITTER PRESSURE NODCATOR 20-P-101B-1 TURNONTY PRANSMITTER PRESSURE NODCATOR 20-P-101B-1 TURNONTY PRANSMITTER PRESSURE NODCATOR 20-P-101B-1 TURNONTY PRANSMITTER TURNONTY 20-P-101B-1 TURNONTY PRANSMITTER 20-P-10B-1 TURNONTY PRANSMITTER 20-P-10B-1 TURNONTY PRANSMITTER 20-P-10B-1 TURNOTY PRANSMITTER	_	-FIT-801-1	FLOW TRANSMITTER	ELECTROMAGNETIC	RAS TO SLUDGE LINE FLOW	03 OF 10	12	0.50	25-50	0-15	0-15	m3/hr		2°CS ANSI 816.5 150# FLANGE
1.6-P-8018-1 PRESSURE BIOLATOR DIAPHRAGMY SSAL		-PI-801A-1	PRESSURE INDICATOR	DIAPHRAGM SEAL	RAS TRANSFER PUMP-1-A DISCHARGE PRESSURE	03 OF 10	NA	0.50	52-32	0-1	0-1	bar		1/27MNPT
20-H-201-1 PRESSURE INDICATOR BOUNDON 20-LIT-201-1 LEPAL TAAMSMITTER HYDROSTATIC 20-HIT-201-1 PRESSURE TRAMSMITTER DUBHRAGH 20-HIT-201-1 PRESSURE TRAMSMITTER BOUNDON 20-H-301-1 FLOW TRANSMITTER RECFROMMERTC 20-HIT-301-1 FLOW TRANSMITTER FLOW TRROUGH 20-HIS-301-1 TUBRODITY TRANSMITTER FLOW TRROUGH 20-LIS-301-1 TUBRODITY TRANSMITTER TUT REPORTER		-PI-8018-1	PRESSURE INDICATOR	DIAPHRAGM SEAL	RAS TRANSFER PUMP-1-8 DISCHARGE PRESSURE	03 OF 10	NA	050	25-35	0-1	0-1	bar		1/2"MNPT
20-LIT-201-1 LEPGL TRAMSMITTER		D-PI-801-1	PRESSURE INDICATOR	BOURDON	VACCUM EJECTOR PRESSURE	04 OF 10	AN	NA	25-35	A	NA	bar		VENDOR SCOPE
20-PI-301-1 PRESSURE INDICATOR DIADHRAGH 20-PI-301-1 PRESSURE INDICATOR BOURDON 20-PI-301-1 PRESSURE INDICATOR BOURDON 20-FI-301-1 FLOW TRANSHITER RECFROWAGHTC 30-FI-301-1 TUNBOUTT TRANSHITER FLOW THROUGH 30-S-501 LEMEL SWITCH THI R-POWTH)-UT-201-1	LEVEL TRANSMITTER	HYDROSTATIC	MEMBRANE TANK-1 LEVEL	04 OF 10	NA	ATM	25-35	0-2000	0-4000	MM		SUSPENSION CLAMP 316L
20-P-501A-1 PRESSURE INDICATOR BOURDON 20-P-301B-1 PRESSURE INDICATOR BOURDON 20-FI-301-1 FLOW TRANSMITTER RECETROWAGNETIC 70-AFI-301-1 TURBOUTT TRANSMITTER FLOW THROUGH 20-S-501 LENGEL SWITCH TILT RADONT)-PIT-301-1	PRESSURE TRANSMITTER	DIAPHRAGM	MEMBRANE TANK 'PERMEATE /BACKPULSE PUMP SUCTION PRESSURE	04 OF 10	NA	-1101	25-35	-1101	-1101	bar		1/2" FNPT
20-Ps.018-1 PRESSURE INDICATOR BOURDON 20-Fil-301-1 FLOW TRANSMITTER RECTROWAGNETIC 20-AFI-301-1 TUBRIDITY TRANSMITTER FLOW THROUGH 20-S-601 LEMEL SWITCH TILI REPORT)-PI-301A-1	PRESSURE INDICATOR	BOURDON	PERMEATE / BACKPULSE PUMP 1 - ADISCHARGE PRESSURE	05 OF 10	NA	0.72	25-35	0-2.5	0-2.5	bar		L/2*MNPT
20-FF-301-1 FLOW TRANSMITTER ELECTROWAGNETIC 20-FF-301-1 TURBOUTY TRANSMITTER FLOW THROUGH 20-S-601 LEMEL SWITCH TILI RADWITT		J-PI-3018-1	PRESSURE INDICATOR	BOURDON	PERMEATE / PACKPULSE PUMP 1-8 DISCHARGE PRESSURE	05 OF 10	NA	0.72	55-35	0-25	0-25	bar		1/2-MNPT
20-AT-301-1 TURBIDITYTRANSHITER FLOW THROUGH 20-LS-601 LEVEL SWITCH TILL RE-POINT)-FIT-301-1	FLOW TRANSMITTER	ELECTROMAGNETIC	PERMEATE /BACKPULSE PUMP COMMON DISCHARGE FLOW	05 OF 10	95	0,72	55-35	0-70	02-0	m3/hr		4*CS ANSI B16.5 150# FLANGE
11/10 # 21/11/1 HDW1 19/10 21/11/1 10/10/10/2)-AIT-301-1	TURBIDITY TRANSMITTER	FLOW THROUGH	MEMBRANE TANK PERMEATE / BACKPULSE PUMP DISCHARGE TURBIDITY	05 OF 10	NA	0.72	25-35	9-0	5-0	NTO	×	1/2°FNPT
TMOG 6) THE		20-LS-601	LEVEL SWITCH	TILT (2-POINT)	BACKPULSE TANK LEVEL	06 OF 10	NA	ATM	25-50	180	HIGH=TBD,LOW =TBD	MM		4" MS ANSI B 16.5 150 # FLANGE
TOP-CD-02	36 2	26-LS-101	LEVEL SWITCH	TILT (2-POINT)	FLUSH TANK-1 LEVEL	06 OF 10	NA	ATM	52-35	180	LOW=TBD, LOW LOW=TBD	MM	is .	4" MS ANSI B 16.5 150 # FLANGE

Participation Participatio		- CANDON							-					
Control Cont	10		2										PROJECT 650 KLD \$	TP-1
	Separation of the separate of		ひしつつ		INSTRUMENT LIST		A	30/03/20	318	RR	RK		LOCATION: HYDRAB	AD
CLOS CHANGE CONTINUED CHANGE CONTINUED A 1 MONTAL STATE OF THE PROPRIED TO THE PROPR	- 6	Variet Sections	pers & Soloniens				REV	DATE		P. BV	C 8V		DOC NO : 6038727-1	K-01
14.0.0.001 Contribution Contribution <th>NO. TAGNO</th> <th>10,</th> <th>INSTRUMENT DECRIPTION</th> <th>INSTRUMENT TYPE</th> <th></th> <th>P & ID DRAWING NO.</th> <th></th> <th>Pressure [bar]</th> <th>-</th> <th></th> <th>p e</th> <th>Eng. Unit</th> <th>MAKESMODEL</th> <th>REMARKS</th>	NO. TAGNO	10,	INSTRUMENT DECRIPTION	INSTRUMENT TYPE		P & ID DRAWING NO.		Pressure [bar]	-		p e	Eng. Unit	MAKESMODEL	REMARKS
7.1. A region Control of the control of the control beloaded beloaded by the control of the control o	-	26-L5-102	LEVEL SWITCH	TILT [2-POINT]	FLUSH TANK-2 LEVEL	06 OF 10	NA A	ATM	25-35		HIGH=TBD,LOW =TBD			4" MS ANSI B 16.5 150 # FLANGE
11-4-2-10-10 Control C	-	71-LSL-901	LEVEL SWITCH LOW	MAGNETIC (1-POINT)	BRINE MEASURING TANK LEVEL	07 OF 10	NA	ATM	52-32	180	LOW=TBD	MM		2" PP ANSI B 16.5 150# FF FLANGE
11-1-1-10-11 Control of the control of th	_	71-PI-901A	PRESSURE INDICATOR	BOURDON	SOFTNER FEED PUMP A DISCHARGE PRESSURE	07 OF 10	NA	3.50	25-35	9-0	9-0	bar		1/2.WNPT
14-6-1040 Procession of the control of th	-	71-PI-9018	PRESSURE INDICATOR	BOURDON	SOFTNER FEED PUMP 8 DISCHARGE PRESSURE	07 OF 10	NA	3.50	25-35	9-0	9-0	bar		1/2.MNPT
14-10-104 President including President including COT DIS <	-	71-PI-902A	PRESSURE INDICATOR	DIAPHRAGM SEAL	SOFTNER-A FEED INLET PRESSURE	07 OF 10	NA	3.00	55-35	9-0	9-0	bar		1/2'MNPT
17-14-002 PRESENTATION CONTROL OR CONTROL AL CON		71-PI-903A	PRESSURE INDICATOR	DIAPHRAGM SEAL	SOFTNER-A BACKWASH INLET PRESSURE	07 OF 10	NA	3.00	55-35	9-0	9-0	bar		1/2-MNPT
14-5401 PRESIDE BIOLICON DAVABLES STATES, BACKFORTON RELY PRESIDE BIOLICON 10 of 1	1	71-PI-9028	PRESSURE INDICATOR	DIAPHRAGM SEAL	SOFTMER-8 FEED INLET PRESSURE	07 OF 10	N.A.	3.00	25-35	9-0	9-0	bar	4	1/2-MNPT
71-5-501 CHORNING-STORMER STORMER SPONS CHRICILLE FROM SHARE TREE TO SHARE	-	71-PI-903B	PRESSURE INDICATOR	DIAPHRAGM SEAL	SOFTNER-8 BACKWASH INLET PRESSURE	07 OF 10	NA	3.00	25-35	9-0	9-0	bar		1/2-MNPT
13-15-101 CLOOK MODICIONE PROTORNIO CONTRICTOR SOCIATION CONTRICTOR CATALON CATALON CATALON CATALON CONTRICTOR CATALON CATALON CONTRICTOR CATALON		71-FI-902	FLOW INDICATOR	ROTAMETER	SOFTNER - SERVICE INLET LINE FLOW	07 OF 10	NA	3.50	25-35	0-3	0-3	m3/hr	9	1.
21-15-101 CERT (MER) SAMITIC LOW PROMEDITE LI-TOWITH SOURISH PROCEDING TORSIGN TANK LIPEL CONTACT CASA 1 65-15 TRD CHANNEL PROCESSION TO THE CACOD DOSING TANK LIPEL CONTACT CASA 1 CRAN 1 65-15 TRD CONTACT CONTACT CASA 1 CRAN 1 65-15 TRD CONTACT CRAN 1 CASA 1 CRAN 1	-	71-FI-901	FLOW INDICATOR	ROTAMETER	SOFTNER FEED TO BRINE TANK FLOW	07 OF 10	NA	3.50	25-35	0-18	0-18	m3/hr	,	2 1/2"
2.151.5101 1.100.0000000000000000000000000000		23-151-101	LEVEL SWITCH LOW	MAGNETIC (1-POINT)	SODUIM HYPOCHLORIDE DOSING TANK LEVEL	08 OF 10	NA	ATM	25-35	T8D	LOW=TBD	MM	,	2" PP ANSI B 16.5 150# FF FLANGE
15-15-102 TUNE SWITCH LOWN PARAGRET LI-PORTT SCOUNTH PROSENCE TANKEL PREE. 180 160 150		23-LSL-301	LEVEL SWITCH LOW	MAGNETIC (1-POINT)	CITRIC ACID DOSING TANK LEVEL	08 OF 10	NA	ATM	25-35	180	LOW=TBD	MM	,	2" PP ANSI B 16.5 150# FF FLANGE
21-15-102 LEME, WITCH LOW PARADITIC LEME, WITCH LANDING SODDING HYPOCH LORDE DOSING TANK LEME. OR 07 10 NA ATM CS-53 TOD HIGH-FROM PM CS-53 TOD HIGH-FROM PM CS-53 TOD HIGH-FROM PM CS-53 CS-53 TOD HIGH-FROM PM CS-53 CS-		15-LSL-601	LEVEL SWITCH LOW	MAGNETIC (L-POINT)	CAUSTIC DOSING TANK LEVEL	08 OF 10	AN	ATM	25-35	180	LOW=TBD	MM		2" PP ANSI B 16 S 150# FF FLANGE
RODISTARY LEMELS WITTICE ADMINITED TITLE 2-FORM TITLE 2-FORM SULDGE FRANZER RUMPA A DISCHARAGE RESIDIRE 09 0F 10 NA ATM 25-55 G-4 DATE (FIRED LOW) PROFILE TRANSPER RUMPA A DISCHARAGE RESIDIRE 09 0F 10 NA 200 25-55 G-4 DATE (FIRED LOW) PROFILE TRANSPER RUMPA A DISCHARAGE RESIDIRE 09 0F 10 NA 200 25-55 G-4 DATE (FIRED LOW) PROFILE TRANSPER RUMPA A DISCHARAGE RESIDIRE 09 0F 10 NA ATM 25-55 G-4 DATE (FIRED LOW) PROFILE TRANSPER RUMPA A DISCHARAGE RESIDIRE 09 0F 10 NA ATM 25-55 G-4 DATE (FIRED LOW) PROFILE TRANSPER RUMPA A RESIDIRE 09 0F 10 NA ATM 25-55 TO A DATE (FIRED LOW) NA ATM 25-55 TO A DATE (FIRED LOW) NA ATM 25-55 TO A DATE (FIRED LOW) NA ATM SS-55		23-151-102	LEVEL SWITCH LOW	MAGNETIC [1-POINT]	SODUIM HYPOCHLORIDE DOSING TANK LEVEL	08 OF 10	AN	ATM	25-35		LOW=TBD		3	2" PP ANSI B 16.5 150# FF FLANGE
60-5-10-14 PRESSURE INDICATOR DIAMPHRACE DIAMPHRACE SALL SUDDICE TRANSFER PUMPA A DISCHARGE PRESSURE 09 0F 10 NA 200 55-35 0-4 DAT DAT 80-5-1-018 PRESSURE INDICATOR DIAMPHRACED SALL SUDDICE TRANSFER PUMPA A DISCHARGE PRESSURE 00 0F 10 NA 67-35 0-4 0-4 DAT	-	80-LS-701	LEVEL SWITCH	TILT (2-POINT)	SLUDGE HOLDING TANK LEVEL	09 OF 10	NA	ATM	52-35		HIGH=TBD,LOW =TBD			4" MS ANSI B 16.5 150 # FLANGE
RO-1-701B PRESSURE INDICATOR DIAMBRACK SEQU. SULDGE TRANSFER PLANSF B DECAMAGE PRESSURE 090°F 10 NA 270° 25.35 0.4 DAT DAT 80-15L-BIA LENEL, SWITCH LOW MAGNETIC LL-DOUTH POOVEECTROAT/RE DOSHIC TANKF-A LENEL 0.90°F 10 NA ATM 25.35 150 15	_	80-PI-701A	PRESSURE INDICATOR	DIAPHRAGM SEAL	SLUDGE TRANSFER PUMP-A DISCHARGE PRESSURE	09 OF 10	NA	2.00	25-35	5-0	0-4	bar		1/2'MNPT
ROLEGIA-BIA LEPEL SWITCH LOW MARKETIC LI-DONT PROVEECTROATE TABLE. A RESURE OF 07 10 NA ATM SS-35 TOD TOD PROPER 12-14-BIAS ELERE, WITCH LOW MARKETIC LI-DONT DIAM-HARACH SALL DIAM-HARACH SALL DIAM-HARACH SALL DIAM-HARACH SALL 150 5-35 G-4 TOD PA TO 12-15-BIAS PRESSURE MINICATOR DIAM-HARACH SALL DIAM-H	-	80-PI-701B	PRESSURE INDICATOR	DIAPHRAGM SEAL	SLUDGE TRANSFER PUMP-8 DISCHARGE PRESSURE	09 Of 10	AN	2.00	55-35	7-0	0-4	bar	×	1/27MNPT
Pack	-	90-LSL-801A	LEVEL SWITCH LOW	MAGNETIC (1-POINT)	POLYELECTROLYTE DOSING TANK -A LEVEL	09 OF 10	AN	ATM	52-35	180	TBD	MM	,	2" PP ANSI 8 16.5 150# FF FLANGE
12.4 pg da. PRESSURE RIDICATOR DIAM-HARGAR SEAL DIAM-HARGAR SEAL SEAL SEAL SEAL SEAL SEAL SEAL SEAL	_	90-151-8018	LEVEL SWITCH LOW	MAGNETIC (1-POINT)	POLYELECTROLYTE DOSING TANK -B LEVEL	09 OF 10	NA	ATM	25-35	180	TBD	MM		2" PP ANSI B 16.5 150# FF FLANGE
11-P-10-DLB PRESSURE MIDICATOR DIAMPHRADER SEQUE DEAM PIT TRANSFER PULPA-B PRESSURE 00 of 10 NA 47H 55-55 0-4 0-4 Deam Port 71-L2-DLB LEVEL SWITCH TILT G-POINT DIAMPHRADER DOG 10 NA ATM 67-55 TO 67-50 NA ATM 67-50 NA NA NA NA NA ATM 67-50 NA NA <t< td=""><td></td><td>71-PI-904A</td><td>PRESSURE INDICATOR</td><td>DIAPHRAGM SEAL</td><td>DRAIN PITTRANSFER PUMP-A PRESSURE</td><td>09 OF 10</td><td>NA</td><td>150</td><td>25-35</td><td>9-0</td><td>9-0</td><td>bar</td><td></td><td>1/2'MNPT</td></t<>		71-PI-904A	PRESSURE INDICATOR	DIAPHRAGM SEAL	DRAIN PITTRANSFER PUMP-A PRESSURE	09 OF 10	NA	150	25-35	9-0	9-0	bar		1/2'MNPT
71-15-120 LEVEL SWITCH THE R-POWIN DAMPH AGAN DAMPH AGAN DAMPH AGAN DAMPH AGAN AGAN AGAN AGAN AGAN AGAN AGAN AGAN AGAN	_	71-PI-904B	PRESSURE INDICATOR	DIAPHRAGM SEAL	DRAIN PITTRANSFER PUMP-8 PRESSURE	09 OF 10	NA	1.50	55-35		9-0			1/2:MNPT
90-PSI-JOI PRESSURE PUTICHLOUN DUAPHIAGH AIR RECEIVER TABLE A PRESSURE 10 of 10 NA 70 25-40 NA NO 75-70 25-50 NA NO PER 9-P-1-10 PRESSURE RIDICATOR BOUNDON AIR COMPRESSOR NO 100-F10 NA 700 25-60 0-16 Dol NO 9-P-1-10 PRESSURE RIDICATOR BOUNDON AIR COMPRESSOR NO 100-F10 NA 700 25-60 0-16 Dol NO NO 100-F10 NA 700 25-60 0-16 Dol NO NO 25-50 Dol NO NO NO 25-50 Dol NO	_	71-LS-102	LEVEL SWITCH	TILT (2-POINT)	DRAIN PIT LEVEL	09 OF 10	NA	АТМ	25-35		HIGH=TBD,LOW =TBD			4" MS ANSI B 16 5 150 # FLANGE
90-PI-LOI PRESENTE INDICATOR PRESENTE INDICATOR BOUNDON ARR COMPRISSOR DISCHARGE HAUDER PRESSURE 100 F 10 NA 700 25-S0 0-16 Dor 10 90-PI-LOI PROMINION PRESSURE INDICATOR 100 F 10 NA 700 15-S0 0-16 0-16 br		90-PSL-101	PRESSURE SWITCH LOW	DIAPHRAGM	AIR RECEIVER TANK. A PRESSURE	10 OF 10	NA	7.00	09-52	NA	AN	bar		VENDOR SCOPE
97-51-102 PRESZURE INDICATOR BOURDON AIR COMPRESSOR DISCLARAGE HEADER PRESSURE 10 0° 10 7 00 25-50 0-16 9-16 An ALL OFFIRE STATE IN THE PRESSURE INDICATOR AIR COMPRESSOR DISCLARAGE HEADER PRESSURE 10 0° 10 15-51 0-16 55-55	-	90-91-101	PRESSURE INDICATOR	BOURDON	AIR RECEIVER TANK-A PRESSURE	10 OF 10	NA	7.00	25-60	0-16	0-16	par		VENDOR SCOPE
AR COMPRESSIONE 100 F 10		90-PI-102	PRESSURE INDICATOR	BOURDON	AIR COMPRESSOR DISCHARGE HEADER PRESSURE	10 OF 10	NA	7.00	25-60	0-16	0-16	par		1/2*MMPT
MODIFICACIÓN DISTRICTOR DISTRICTO	62 9	90-PSL-102	PRESSURE SWITCH LOW	DIAPHRAGM	AIR COMPRESSOR DISCHARGE HEADER PRESSURE	10 OF 10	NA	7.00	25-35	91-0	↑ S=dS	par	a.	1/2"MNPT

Project 650 KLD STP -1 Water Technologies & Solutions IIT HYDERABAD	Project No. 6038727
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Doc No. 6038727-PK-01

VALVE LIST

APPROVED BY TECHNOLOGY PROVIDER

MAB	MAB	Approved
SK	LP	Checked
VK	VK	Prepared
FOR APPROVAL	FOR SUBMISSION	Description
JULY 26,2018	MAY 08, 2018	Date
8	A	Rev.

																									CLIENT NAME	IIT HYDERABD			
																									JOB DESCRIPTION.	650 KLD STP-1			
7/1		0																							CUSTOMER DOCU. No.	_			
Holland .	なのが	U													>	VALVE LIST (BOP)	(BOP)								DOCU, No.	6038727-PK-01			
8																									REFERENCE DOC.	6038727-AP-01 RevB	47	MAB	25-348-18
Wate	Water Technologies & Solutions	S. Solu	tions																						Vita	PREPAREDRY	CHKD BY	APPVD	DATE
1	To Book of the Control of the Contro	-	-				OPERA	-							TAM	MATERIAL OF CONSTRUCTION	Notice						L	ACTUA	ACTUATOR DATA	ACTUAT	ACTUATOR ACCESSORIES	SORIES	
		_	_	QUANTIT	GEWPT/			CONDITION	DESIGN CONDITION			VALVE				-	-		END	VALVE PRESURE	RATCHING SE EL SACE DEL MC	TYPE OF OPERATION	DATE	TYPEOP					+
VALVE TAG	DESCRIPTION LOCATION	NO NO NO	MOC NB	(NOS)	DOR	ONOFF	TEMP. DEG.C	PRESSU RE BAR (G)	TEMP. PF	PRESSURE BAR(G)	VALVE TYPE	IDENTIFICATIO N	TO VALVE GROUP	BODY	SEAT	DISC	DIAPHICATE/S PINDLE/SHAFT /SPRING	BALL			drs.		C/ ELECTRK	ELECTRICA (FC/FO/F	ACTU, PR (BAR)	OPENCLOSE FEEDBACK	CK STOP	L SOLENOID VALVE	ALVE Remarks
												-	2	n	4	8	ю	7 8	91		9	-	12		13	\$		2	91
3-HV-101A-1	EQUALIZATION TANK FEED PUMP (03-P-101A-1) (01 OF 10 UPVC	VC 150	-	SUEZ	MANUAL	35-40	2	8	1.7 81	BUTTERFLY	BFV-G2	BUTTERFLY	Cl Grade FG 126 class B	ЕРОМ	MYLON COATED DUCTILE IRON	D STEM SS416	ž	WAFER	DINA	ANSI B 16.5, R 150#	RF. GEAR OPERATED	NA.	¥.	VV.	½	2	NA A	¥
3-HV-101B-1	EQUALIZATION TANK FEED PUMP (03-P-1018-1) (DISCHARGE	01 OF 10 UPVC	VC 150	-	SUEZ	MANUAL	35-40	2	8	1.7 88	BUTTERFLY VALVE	BFV-G2	BUTTERFLY	Cl Grade FG 126 class 8	БРОМ	MYLON COATED DUCTILE IRON	D STEM: SS416	2	WAFER	PN10	AVSI B 16.5, R	RF, GEAR OPERATED	Ā	\$	NA A	¥	2	2	¥
3-CV-101A-1	EGUALIZATION TANK FEED PUMP (03-P-101A-1) DISCHARGE	01 OF 10 UPVC	N 150	-	suez	MANUAL	35-40	Þ	99	7.1	CHECK VALVE	CV-S2	CHECK VALVE	SS316	BUNA-N	\$5316	NA	*	WAFER 1	150#	ANSI B 16.5, R 150#	RF. SINGLE PLATE SMING	\$	\$	NA NA	Ā	2	2	N.
03-CV-101B-1	EQUALIZATION TANK FEED PUMP (03-P-1018-1) (DISCHARGE	01 OF 10 UPVC	VC 150	-	SUEZ.	MANUAL	35-40	5	05	7.7	CHECK VALVE	CV-82	CHECK VALVE	88316	BUNA-N	\$5316	NA.	× ×	WAFER 1	15D#	ANSI B 16.5, R 150#	RF. SINGLE PLATE SWING	¥	Ą.	NA.	¥.	£	2	¥
03-HV-102-1	EQUALIZATION TANK FEED PUMPS (03-P-101AB-1) RECIRCULATION	01 OF 10 UPVC	00 100	-	SUEZ	MANUAL	35.40	p	8	1.7 18 V	BUTTERFLY	BFV-L1	BUTTERRY	Cl Grade FG 126 class B	EPCM	NYLON COATED DUCTILE IRON	D STEM SS416	2	WAFER	PN10	ANSI B 16.5, RF, 150#	F. HAND LEVER	ž	¥	¥	A A	§	2	¥
18-HV-101-1	EGUALIZATION TANK-1 FEED ISOLATION	01 OF 10 UPVC	VC 150	-	SUEZ	MANUAL	35-40	2	82	1.7 19 V	BUTTERFLY	BFV-G4	BUTTERRY	Cl Grade FG 126 class B	ЕРОМ	NYLON COATED DUCTILE IRON	D STEM SS416	2	LUGGED	PNIO	ANSI B 16.5, RF, 150#	F. GEAR OPERATED HAND WHEEL, EXTENDED SPINOLE SHAFT	ž	¥.	¥	*2	2	ž	SPINDLE LENGTH = 900MM
38-HW-102A-1	BIOREACTOR FEED PUMP(08-P-101-A-1) DISCHARGE	01 OF 10 UPVC	- S	-	suez	MANUAL	35-40	82.7	8	F.1	BUTTERFLY	BFV-L1	BUTTERELY	Cl Grade FG 126 dass B	ЕРОМ	MYLON COATED DUCTILE IRON	D STEM SS416	2	WAFER	DING 0	ANSI B 16.5, RF, 150#	F. HANDLEVER	5	¥.	¥	NA	2	ž	¥
3-HV-1028-1	BIOREACTOR FEED PUMP(08-P-101-B-1) DISCHARGE	01 OF 10 UPVC	8	**	SUEZ	MANUAL	35-40	517	88	1.7 W.W.	BUTTERFLY	BPV4.1	BUTTERRY	Cl Grade FG 126 class B	EPDM	NYLON COATED DUCTILE IRON	D STEM SS416	2	WAFER	PNIO	ANSI B 16.5, RF. 150#	F. HANDLEVER	¥	\$	NA	2	2	2	¥
8-14/-103-1	BIOREACTOR FEED PUMPS (08-P-101-A/8-1) RECIRCULATION	01 OF 10 UPVC	99	-	suez	MANUAL	35-40	1.15	8	- E-S	BUTTERFLY	BFV-L1	BUTTERRY	Cl Grade FG 126 class B	EPDM	INCON COATED DUCTILE IRON	D STEM SS416	2	WAFER	PN10	ANSI B 16.5, RF.	F. HANDLEVER	½	<u>\$</u>	Ą	ž	2	ž	Ź
	BIOREACTOR FEED PUMP(08-P-101-A-1) DISCHARGE	01 OF 10 UPVC	08 20	-	suez.	MANUAL	35-40	51.1	99	7.	CHECK VALVE	CV-S2	CHECK VALVE	58316	BUNA-N	\$8316	¥	\$ 2	WAFER	150#	ANSI B 16.5, R 150#	RF. SINGLE PLATE SMING	§.	2	ž	ž	2	2	¥
ΛA	BIOREACTOR FEED PLUAP(08-P-101-B-1) DISCHARGE	01 OF 10 UPVC	8	_	suez	MANUAL	35-40	1,15	9	0 1.7	CHECK VALVE	CV-82	CHECK VALVE	88316	BUNA-N	\$8316	¥	3	WAFER	150#	ANSI B 16.5, R.F., 150#	F. SINGLE PLATE SWING	5	¥	NA	ž	2	2	귈
HΑ	AIR FROM MIXING BLOWERSIG-B-101A/B) TO DIFFUSERS IN COLLECTION SUMP	01 OF 10 GI	52	40	SUEZ	MANUAL	8	0.72	100	1.1	BALL VALVE	BV-L4	BALL VALVE	CF8M	PTFE	ž	STEM SS316	CFBM	BSP(F)	#009	Ā	MARIUAL	5	ž	W	\$	2	2	¥
N	AIR FROM MIXING (08-B- 101AB-1)BLOWERS TO DIFFUSERS IN EQUALIZATION TANK	01 OF 10 GI	1/2	01	SUEZ	MANUAL	81	0.72	120	1.1	BALL VALVE	BV-1.4	BALL VALVE	OF8M	PTFE	ş	STEM SS316	CF8M	BSP(F)	#009	an a	MARKUAL	<u> </u>	2	NA	ž	2	5	¥
KΑ	PROCESS BLOWER (16-B- 4014-1) DISCHARGE DRAIN	2 OF 10 GI	52	-	suez	MANUAL	8	0.55	011	8.0	BALL VALVE	BV-L4	BALL VALVE	СРВМ	PTFE	2	STEM: SS316	CFBM	BSP(F)	600%	A	HANNIAL	ş	¥	NA.	**	2	2	夏
L	PROCESS BLOWER (16-B- 401B-1) DISCHARGE DRAIN	2 OF 10 GI	55		SUEZ	MANUAL	8	0,56	110	8.0	BALL VALVE	BV-L4	BALL VALVE	CF8M	PTFE	<u>\$</u>	STEM: SS316	CF8M	BSP(F)	#009	NA	MANUAL	ş	ž	3	<u>\$</u>	2	2	¥
Digita MAH	PROCESS BLOWER (16-B-401A-1) DISCHARGE	2 OF 10 GI	100		Zans	MANUAL	88	0.55	110	8.0	BUTTERFLY VALVE	BFV-L1	BUTTERFLY	Cl Grade FG 126 class B	ЕРОМ	NYLON COATED DUCTILE IRON	D STEM; SS416	2	WAFER	PNI0	ANSI 8 16.5, F	RF. HAND LEVER	½	2	5	¥4	2	5	¥
ally s	PROCESS BLOWER (16-B-401B-1) DISCHARGE	2 OF 10 GI	100	-	suez	MANUAL	92	0.55	011	8.0	BUTTERFLY VALVE	BFV-L1	BUTTERRLY	Cl Grade FG 126 class B	EPDM	NYLON COATED DUCTILE IRON	D STEM: SS416	2	WAFER	PN10	ANSI B 16.5, F 150#	RF. HAND LEVER	<u>\$</u>	2	Y.	AN.	\$	2	Ē
igne	MEMBRANE BLOWER(29- HV-2014-1) DISGHARGE DRAIN	2 OF 10 GI	ē	-	suez	MANUAL	28	0.46	100	0.7	BALL VALVE	BV-L4	BALL VALVE	CF8M	PTFE	¥	STEM: SS316	CFBM	BSP(F)	#009	Ą	MANUAL	<u>\$</u>	7	¥	½	2	3	Z
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25-Jul-18		/E Remarks	J.	J. N.	J.	¥	륃	NI.	NI.	JI NI	로	¥	뒫	¥	¥	SPINDLE LENGTH= 1050MM	ž	JE Z	뒫	륃	뒫
MAB APPVD BY		SOLENOID VALVE																			
LP CHKO BY APP	CCESSORIES	TRAVEL SOI	ž	2	¥	ž	2	5	2	2	2	2	5	5	2	2	2	2	¥	2	. ₹
	ACTUATOR ACCESSORIES		3	2	ž	ş	ž	2	Ä	N	2	ž	§.	A.	5	A	ž	\$	2	ă	ž
III HYDERABD 650 KLD STP-1 6038727-PK-01 6038727-PK-01 8038727-PK-01 PREPARED BY:	¥	OPENCLOSE FEEDBACK																			
ġ			2	½	<u></u>	<u>\$</u>	½	<u>\$</u>	2	ž	2	2	<u>\$</u>	2	2	2	2	<u> </u>	2	2	2
CLIENT NAME JOB DESCRIPTION, CUSTOMER DOCU, No. DOCU, No. REFERENCE DOC. A	ATA	ACTU. PR (BAR)																			
CUENT COUST COUST PECE	ACTUATOR DATA		ž	ž	ž	ž	NA	¥	Ą	N.	ž.	¥.	\$	\$	ž	2	<u>\$</u>	₹	<u></u>	ž	₹
	L TY	C/ ACTU. ELECTRICA (FC/FO/F	ď	£	12	ž	Ž	¥	ž	¥	2	ž	ž	N/	ž	2	ž	2	ž	¥.	ž
	Z	3	2	2	ž.	Ą	ž	₹	ž	ž	ź	ž	2	<u> </u>	2	-i -8	ž	AN.	ž	2	2
	TYPE OF OPERATION															GEAR OPERATED HAND WHEEL EXTENDED SPINDLE SHAFT				2500	2/02
	TYPE OF		ਰ	AND LEVER	-AND LEVER	¥	¥	AND LEVER	WND LEVER	₹	×	AND LEVER	HANDLEVER	74	MAD LEVER	OPERATED NDED SPIND	3	SEAR OPERATED	SEAR OPERATED	SEAR OPERATED	GEAR OPERATED
	TING		MANUAL	ñ.		MANUAL	MANUAL	P.	35.	MANUAL	MANUAL	#: -		Territory.	*		MANUAL			₩.	
	MATCHING FLANGE DRLLING	STD	e N	ANSI B 16.5, F 150#	ANSI B 16,5, RF, 150#	ă	¥.	ANSI B 16.5, F 150#	ANSI B 16.6, 150#	NA NA	Ā	ANSI B 16.5, 150#	ANSI B 16,5, RF, 150#	ž	ANSI B 16.5, RF. 150#	ANSI 8 16.5, RF. 150#	¥	ANSI B 16,5, RF. 150#	ANSI B 16.5, F 150#	ANSI B 15.5, 1 150#	ANSI B 16.5, RF.
	VALVE PRESURE	SATING																			
			#009	PN10	PN10	#009	#0D9	PNIO	PNIO	#009	800a	g Nd	PN10	457.04	PNI0	0 NA	9009	OLV G	PN10	PNIO	o Na
	QN.		BSP(F)	WAFER	WAFER	BSP(F)	BSP(F)	WAFER	WAFER	BSP(F)	BSP(F)	WAFER	WAFER	B357(5)	WAFER	LUGGED	SOCKET	WAFER	WAFER	WAFER	WAFER
		TE/S HAFT BALL G	SS316 CF8M	SS416 NA	SS416 NA	SS316 CF8M	SS316 CFBM	SS416 NA	85416 NA	316 CF8M	SS316 CF8M	2	SS416 NA	N620 91888	SS416 NA	ž	88316 88316	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	SS416 NA	SS416 NA	3416 NA
(BOP)	стюи	DIAPHIGATE/S PINDLE/SHAFT /SPRING	STEM SS	STEM	STEM	STEM SS	STEM SE	STEM	STEM	STEM: SS316	STEM S	STEM: SS416	STEM	S/EE	STEM) STEM SS416	STEM: S	STEM SS416	STEM	STEM	STEM SS416
VALVE LIST (BOP)	MATERIAL OF CONSTRUCTION	DISC	-	NYLON COATED DUCTILE IRON	NYLON COATED DUCTILE IRON			NYLON COATED DUCTILE IRON	NYLON COATED DUCTILE IRON		ď	NYLON COATED DUCTILE IRON	NYLON COATED DUCTILE IRON	***	NYLON COATED DUCTILE IRON	NYLON COATED DUCTILE IRON	2	NYLON COATED DUCTILE IRON	NYLON COATED DUCTILE IRON	NYLON COATED DUCTILE IRON	NYLON COATED DUCTILE IRON
VALV	MATERIAL	SEAT	A.	28	2.5	\$	2	20	20	¥	\$	20	20	23	20	20	Z				
	-	Вору	PTFE	rade 26 B EPDM	rade 26 B EPDM	PTFE	A PTFE	rade 26 B EPDM	Grade 126 EPDM is B	A PTFE	A PTFE	rade 26 EPDM B	rade 26 EPDM B	FINE	rade 26 EPCM	Grade 126 EPOM st B	PTFE	Grade EPDM is B	srade 26 EPDM 1 B	Grade EPDM 126 EPDM 15 B	Grade EPDM
	ano	-	CF8M	Cl Grade FG 126 class B	Cl Grade FG 126 class B	OF8M	CFBM	Cl Grade FG 126 class B	₽ <u>2</u> 8	CF8M	CF8M	Cl Grade FG 126 class B	Cl Grade FG 125 class B	CF8	Cl Grade FG 126 class B	₽ £ £	8	¤28 ∰	Cl Grade FG 126 class B	Ω 52 gg	₽£-8
	VALVE GROUP		BALL VALVE	BUTTERFLY	BUTTERFLY	BALL VALVE	BALL VALVE	BUTTERRLY	BUTTERFLY	BALL VALVE	BALL VALVE	BUTTERFLY	BUTTERFLY	BATT ANTAG	BUTTERFLY	BUTTERFLY	BALL VALVE	BUTTERRLY	BUTTERFLY	BUTTERELY	BUTTERLY
	VALVE	z	BV-L4	BFV-L1	BFV-L1	BV-L4	BV-1.4	BFV-L1	BFV-L1	BV-L4	BV-L4	BFV-L1	BFV4.1	35.7.6	BFV-L1	BFV-G4	BV-L3	BFV-G2	BFV-G2	BFV-G2	BFV-G2
	VALVE TYPE		BALL VALVE B	BUTTERFLY B	BUTTERFLY B	BALL VALVE B	BALL VALVE B	BUTTERFLY B	BUTTERFLY B	BALL VALVE B	BALL VALVE B	BUTTERFLY B	BUTTERFLY B	BALL VALVE	BUTTERFLY	BUTTERFLY	BALL VALVE	BUTTERFLY	BUTTERFLY	BUTTERFLY EVALVE	BUTTERFLY
		PRESSURE BAR(G)	0.7 BAL	0.8 BUT	0.8 BUT	13 Mg	1,1 BAL	1.1 BUT	1.1 VAU	0.7 BAL	0.7 BAL	0.7 BU	0.7 WAI	7.0	0.7 WA	1.5 WA	1.2 BM	- NBV	- BBU	1.2 BU	1.2 BU
	DESIGN CONDITION	TEMP. PR DEG.C B	100	100	100	120	120	120	62	100	100	100	100	901	100	\$	95	8	8	95	8
	CONDITION	PRESSU RE BAR (G)	0.46	0,5	0.6	0.7	0.7	0.7	0.7	0.45	0.45	0,45	0.45	0.45	0,45	-	0.8	atm	atm	0.8	0.8
		TEMP. DEG.C	8	85	88	110	110	110	110	85	85 85	85 55	8	8	88	35-40	35-40	35-40	35-40	35-40	35-40
	N MANUAL!		MANUAL	MANUAL	MANUAL.	MANUAL	MANUAL	MANUAL.	MANUAL	MANUAL	MANUAL	MANUAL	MANUAL	MANUAL	MANUAL.	MANUAL.	MANUAL	MANUAL	MANUAL.	MANUAL	MANUAL
à	GEMPT/ CLIENT/VEN	PACKAGE	SUEZ	SUEZ	suez	SUEZ	SUEZ	Zans	Zans	SUEZ	SUEZ	SUEZ	SUEZ	SUEZ	SUEZ	Zans	suez	Suez	zans	SUEZ	SUEZ
	QUANTITY		-	-	_	-	-		er.	-	₩-	-	-	-	-		_	-		-	-
tions	PIPE SIZE,		51	001	100	15	\$	08	08	5	5	8	8	-	95	VC 150	19	UPVC 200	00 NC	621	150
& Solu	SHEET	_	2 OF 10 GI	2 OF 10 GI	2 OF 10 GI	2 OF 10 GI	2 OF 10 GI	2 OF 10 GI	2 OF 10 GI	2 OF 10 GI	2 OF 10 GI	2 OF 10 GI	2 OF 10 GI	2 OF 10 GI	2 OF 10 GI	3 OF 10 UPVC	3 OF 10 SS	3 OF 10 UPV	3 OF 10 UPVC	3 OF 10 CS	3 OF 10 CS
Sojes												R(03-8- WRGE TO WG TANK &	R(03-B- VRGE TO NG TANK &	H(03-B- HARGE TO 2 NG TANK	R(03-B- HARGE TO 2			PUMP(16-		PUMP(16.	
SUEZ Water Technologies & Solutions	NOESCRIPTION LOCATION		MEMBRANE BLOWER(20- HV-2018-1) DISCHARGE DRAIN	MEMBRANE BLOWERCO. HV-201A-1) DISCHARGE DRAIN	MEMBRANE BLOWER(20- FW-2018-1) DISCHARGE DRAIN	MIXING BLOWER(08-B- 101A-1) DISCHARGE TO EQUALIZATION TANK -1	MXING BLOWER(08-B- 101B-1) CRSCHARGE TO EQUALIZATION TANK -1	MIXING BLOWER(08-B- 101A-1). DISCHARGE TO EQUALIZATION TANK -1	MIXING BLOWER(08-B- 101B-1). DISCHARGE TO EQUALIZATION TANK -1	MIXING BLOWER(03-B- 101A-1) FOR SLUDGE HOLDING TANK & COLLECTION SLAMP DISCHARGE DRAIN	MIXING BLOWER(03-B- 101B-1) FOR SLUDGE HOLDING TANK & COLLECTION SLAMP DISCHARGE DRAIN	MIXING BLOWER(03-B- 101A-1) DISCHARGE TO SLUDGE HOLDING TANK & COLLECTION SIMP	MIXING BLOWER(03-B- 101B-1) DISCHARGE TO SLUDGE HOLDING TANK & COLLECTION SUMP	MIXING BLOWER(03-B- 10148-1), DISCHARGE TO 3 SLUDGE HOLDING TANK	MIXING BLOWER(03-B- 101AB-1) DISCHARGE TO 3 COLLECTION SUMP	INLET TO BIOREACTOR TANK-I (ANOXIC ZONE)	RAS TRANSFER PUMPS (16-P-801AB-1) DISCHARGE DRAIN	RAS TRANSFER PUMP(16- P-801A-1) SUCTION	AS TRANSFER PUMP(16- -8016-1) SUCTION	RAS TRANSFER PUMP(16- P-801A-1) DISCHARGE	RAS TRANSFER PUMP(16- P-801B-1) DISCHARGE
Water	VALVETAG		20+N-2018-1 HN	204N-202A-1 HN	20+N-202B-1 HN	MI 104A-1 10	MI 108-HV-1048-1 10	MI 08-4/V-105A-1 10 EC	MI 1088-1 10	M 10 10 10 10 10 10 10 10 10 10 10 10 10	MM 254-W-1038 KC	03+N-104A 10			Ι Α Ι			-	1 4 4		ned b
	ON IN		19 Z04N-	20 20+N-	21 20+N-	22 08+fV-	23 06+1/	24 08+NV	25 08-11/	26 0344	27 03+fV	28 03+fV						- M	ÁHAI	NKĂI 2022	LI SA 10.10
	1	*											-13	<u>SA</u>	TE			19):24:(08 IS	T

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	A PARTY	S	9	W I													VALV	/E LIST (B	(AO								JOB DESCRIPTION, CUSTOMER DOCU, No. DOCU, No. REFERENCE DOC. A	650 KLD 51P-1 6036727-PK-01 6036727-PK-01 6038727-AP-01 Rev8 VM	LP APP	MAB WYD BY	
	1	in the second se	5	-	, -			-	OPERATIN	-	NOO NOO	NOTION	-				MATERIAL	OF CONSTRUCTIC	z				-			ACTUATE	OR DATA	ACTUATOR A	CCESSORIE		
	E TAG	DESCRIPTION/ LOCATIO	SHEET			WITH CLIENT. Y DOS 3S) PACKA				2.5		tu				Вору	SEAT	Disc	HAPHIGATE!	BALL	CONNECTION		JRE FLANGE DRL STD		PNEUMATI C, ELECTRICA L	TYPE OF ACTU. (FC/FO/F L)		OPENCLOSE FEEDBACK T	_	DLENGID VALVE	_
	1-905-1	RAS TRANSFER PUMP DISCHARGE HEADER (FOR SLUDGE HOLDING TANK)	3 OF 10		-	Zans	MANU		1 1944		95				OLT	Grade 3 126 ass B			TEM: \$5416	25	VAFER	PMIO	ANSI B 16.5, 1	15.	N.		s				코
	4801A-1		3 OF 10		-	2308	MANU		22.00		99	8			- 0)				€.		WAFER	150#	ANSI B 16.5, 150#	H.	ž		4				Z
	V-801B-1		3 OF 10		-	SUEZ	MANU				95								4		VAFER	150#	ANSI B 16.5, 1		ž		\$				Z
	V-804-1	RAS TRANSFER PUMP RECIRCULATION	0		-	Zans	MANU				95		1		25.2	Grade 3 126 ass B				2	VAFER	PN10	ANSI B 16.5, 1	ñ,	¥		\$				ž
	/-805A-1	RAS TRANSFER PUMP(16 P-801A-1) DISCHARGE FLUSHING	3 OF 10		-	SUEZ	MANU				99				LV&VE CI	3			TEM 55316	33316	NO.	16,11,167	A	1,645.8 .940,	¥.		\$			200.00	Z
Continue	/-B068-1	RAS TRANSFER PUMP(16 P-8018-1) DISCHARGE FLUSHINF	3 OF 10		-	SUEZ	MANU				99			-	1 VALVE G	6. 2.					NOCKIII.	2002	3	Beschick	\$		\$				2
Particular Par	7-403-1 TI		03OF 10		21	SUEZ	MANU				8								TEM: SS316	CFBM	(F) (F)	#009	ą.	MANUAL	\$2		\$				Z
Particularies Particularie	1-301-1		5 OF 10		-	suez	AUTO			-	DG				02.0	Grade 9 126 iss B			TEM SS416	2	VAFER	PN10	ANSI B 16.5, 150#	15	4 & PNEUMATI	ş	9'5			MUR TYPE & ADCIPES HULATION F ASS & SCIRICAL	ž
Participation Participatio	Leot-3	BACKPULSE PUMP (20-P- 301AB-1) SUCTION HEADER	5 OF 10		-	SUEZ	AUTO				96				02.5					2	VAFER	PN10	ANSI B 16.5, I	ñ.	4& PNEUMATI	\$	5.5			MURTYPE & MURTYPE & MULATION F ASS & CTRICAL	ž
Participation of the continue of the continu	V-602-1	BACKPULSE PUMP (20-P- 301AB-1) DISCHARGE HEADER	5 OF 10		-	SUEZ	AUTO				8								TEM: SS416	2	VAFER	PN10	ANSI B 16.5, 1		V& PNEUMATI	ž	5.5			MUR TYPE & TOCIPES TULATION F ASS & COTRICAL	를
Figure Column C	N/I	PERMEATE/BACKPULSE PUMP (20-P-301A-1) SUCTION	S OF 10		-	SUEZ	MANAU				8								TEM: SS416	\$	VAFER	PNIO	ANSI B 16.5,	E.	AN.		VA.				Z
Participation contained by the contain	۸۲	PERMEATE/BACKPULSE PUMP (20-P-3018-1) SUCTION	5 OF 10		-	SUEZ	MANU				96				0 0				ITEM SS416	2	WAFER	PNIO	ANSI B 16.5, 150#	H,	2		VA.				Z
This properties This part	1 / 1	PERMEATEBACKPULSE PUMP (20-P-301A-1) DISCHARGE	5 OF 10		-	SUEZ	MANU				96				020				TEM SS416	2	WAFER	PNIO	ANSI B 16.5, 150#	%F.	\$		VA.				Z
Figure F	\IK	PERMEATERACKPULSE PUMP (20-P-3018-1) DISCHARGE	5 OF 10		41	SUEZ	MANU				8				01.3				TEM SS416	2	WAFER	PN10	ANSI B 16.5, 150#	#.	2		NA.				Z
Fundamental Continuence Fundamental Cont	ΛΙ	PERMEATE/BACKPULSE PUNP (20-P-301A-1) DISCHARGE	S OF 10		-	SUEZ	MANL	200			8								\$		WAFER	150#	AVSI B 16.5, 150#	₩.	NA M		NA				Z
Secondary Seco	Di		5 OF 10		-	SUEZ	MANL				06				2768				\$		NAFER	150#	ANSI B 16.5, 150#	₩.	§.		NA.				Z
FERNETENCHOLDER COLUMN (12) STATE COLUMN (12) ST	gitally		9		-	SUEZ	AUTO				96									2	WAFER	PN10	ANSI B 16.5, 150#	B.	O PAGE	5	5.5			MUR TYPE 8 VDC IP65 SULATION F ASS 8 ECTRICAL	Z
SCHING SSHE IS I SUEZ WANNEL 35-40 0.8 50 I BALLVALVE CRM FITE NA STEM SSHE OFF NA MANAL SCHOOL SSHE IS I SUEZ WANNEL SCHOOL	y sigr		5 OF 10		-	SUEZ	MANE				8				0				3TEM: 85316	OF8M	SOCKET	600#	Ā	MANILIAL	<u>\$</u>		¥				Z
	ned b		5 OF 10		-	SUEZ	MAN		-		8								STEM: 58316	CFBM	SOCKET	#009	NA	MANUAL	ğ		NA.				- 2

П	T	T	П	10		2		£															
				ZS-Jul-18 DATE		VE Remarks	ASTM SCH80 CPVC PIPES, VALVE SHALL E SHALL E	ASTM SCHED CPVC PIPES, VALVE SHALL BE 3	호	Ę.	물	불	Ŋ	¥	¥	NIL	ž	ij	ž	Z	N.	ž	ž
				APPVD BY	9	SOLENOID VALVE	NAMUR TYPE & 24VDC IPSS INSULATION F CLASS & ELECTRICAL CONNECTION PGP PLUG	NAMUR TYPE & 24/DC IP65 INSULATION F CLASS & CLASS & CLASS & CONNECTION PG9 PLUG			0000	338							0,55		80	85	182
			-	'n	ACTUATOR ACCESSORIES	TRAVEL SO STOP				2	\$	2	5	\$	2	. ₹	2	2	2	2	ž	2	2
			8	5	TUATOR A		PRICAL NA	MPT NA	2	2	2	ž.	2	A.	N.	Ä	Ā	ž	2	2	2	2	ž
IIT HYDERABD	6038727-PK-01	6038727.PK.01	6038727-AP-01 RevB	PREPARED BY:	AC	OPENICLOSE FEEDBACK	2 WIRE 24V DC PROXIMITY SWITCHES,ELECTRICAL CONNECTION 1/2" NPT	2 WIRE 24V DC PROXIMITY SMITO-ES,ELECTRICAL, CONNECTION: 1/2" NPT	½	ž	2	2	2	2	2	ž	2	ž	2	½	**	2	*
CLIENT NAME	CUSTOMER DOCU. No.	MEN DOCU, NO.	REFERENCE DOC.		Ā	ACTU. PR (BAR)																	
CLIENT	CUSTO		REFERENCE	Z Z	ACTUATOR DATA		s; 50	16. 16.	¥	ž	ž	ž	ž	2	ž	2	ž	ž	\$	g Z	2	2	2
					AC	PNEUMATI TYPE OF CI ACTU. ELECTRICA (FC/FO/F	ž Ž	ž F	2	2	ž	ž	ž	<u> </u>	ž	2	Š.	ž	2	2	2	2	2
						PNEUP	N & PNEUMATI	N.S. PNEUMATI	2	<u>\$</u>	2	2	\$	ž	<u>\$</u>	2	2	<u>\$</u>	2	Ą.	<u>\$</u>	2	¥
						TYPE OF OPERATION	DOUBLE ACTING MOC-ALMININA BDDY WITH OPEN & CLOSE MAJOCATION & IPSE ENCLOUSER & 5/2 WAY MANIFOLD	DOUBLE ACTING MOC: ALUMINUM BODY WITH OPEN & LOSE MIXICATION & IPPS ENCLOUSER & ST WAY MANIFOLD	ВАІТ СНЕСК	BALL CHECK	GEAR OPERATED	HAND LEVER	HANDLEVER	HAND LEVER	MARKINAL	MANUAL	HAND LEVER	HANDLEVER	HANDLEVER	HANDLEVER	HANDLEVER	SINGLE PLATE SMING	SINGLE PLATE SMING
						MATCHING FLANGE DRLLING STD	NA	NA	NA	A	AVSI B 16.5, RF, 150#	ANSI B 16.5, RF, 150#	ANSI B 16.5, RF. 150#	ANSI B 16.5, RF, 150#	AN A	NA A	ANSI B 16.5, RF. 150#	ANSI B 16.5, RF, 150#	ANSI B 16.5, RF, 15.0#	ANSI B 16.5, RF, 150#	AVSI B 16.5, RF, 150#	ANSI B 16.5, RF, 150#	ANSI B 16.5, RF, 150#
						VALVE PRESURE RATING	SCH80,235 PSI	SCH80,235 PSI	SCH80, 235 PSI	SCH80, 235 PSI	PNIO	PNIO	PNIO	PNIO	SCH60, 235PSI	SCHee, 235PSI	PNIO	PN10	PNIO	PN10	PN10	150#	150#
						CONNECTION		2013					NGGED P										
						BALL	OPVC SOCKET	GPVC SOCKET	CPVC SOCKET	CPVC SOCKET	WAFER	WAFER		WAFER	JPVC SOCKET	PVC SOCKET	WAFER	WAFER	WAFER	WAFER	WAFER	WAFER	WAFER
		30P)			NO	DIAPHIGATE/S PINDLE/SHAFT. E ISPRING	STEM: CPVC OP	STEM CPVC OP	\$	& \$	STEM SS416 NA	STEM: SS416 NA	STEM: SS416 NA	STEM SS416 NA	STEM: UPVC UP	STEM UPVC UP	STEM: SS416 NA	STEM SS416 NA	STEM SS416 NA	STEM: SS416 NA	STEM: SS416 NA	NA NA	NA NA
		VALVE LIST (BOP)			MATERIAL OF CONSTRUCTION	DISC	AN .	5	44	AN.	NYLON COATED DUCTILE IRON	NYLON COATED DUCTILE IRON	NYLON COATED DUCTILE IRON	NYLON COATED DUCTILE IRON	¥	**	NYLON COATED DUCTILE IRON	NYLON COATED DUCTILE IRON	NYLON COATED DUCTILE IRON	NYLON COATED DUCTILE IRON	NYLON COATED DUCTILE IRON	88316	85316
		VAL			MATERIA	SEAT	PTFE	PTFE	PTFE	PTFE	ЕРОМ	EPOW	EPOW	EPDM (PTFE	PTFE	EPDW	EPDM	MOde	EPDM C	EPOM	BUNA-N	BUNA-N
						Вору	DAVC P	3PVC F	PVC	DA/C	Cl Grade FG 126 class B	G 126 dass B	Cl Grade FG 128 class B	Cl Grade FG 126 class B	PVC	JPVC P	Cl Grade FG 126 Slass B	G Grade FG 126 Alass B	Cl Grade FG 126 slass B	G Grade G 126 Hass B	Cl Grade FG 126 class B	35316 B	SS316 B
						VALVE GROUP		- 0	<u> </u>			020	20000		T/VE	EVE.	0 0			>=		VALVE	
							BALL VALVE	BALL VALVE	O+ECK VALVE	CHECK VALVE	BUTTERELY	BUTTERLY	BUTTERFLY	BUTTERELY	BALL VALVE	BALL VALVE	BUTTERLY	BUTTERFLY	BUTTERFLY	BUTTERFLY	BUTTERFLY	CHECK VALVE	CHECK VALVE
						VALVE VALVE N	BV-DAZ	BV-DA2	VE CV-82	WE CV-82	BFV-G2	BFV-L1	BFV4L5	BFV-L1	BW-L2	BV-L2	BFV-L1	BFV-L1	BFV-L1	BFV-L1	BFV-L1	WE CV-S2	WE CV-52
						VALVE TYPE	BALL VALVE	BALL VALVE	CHECK VALVE	CHECK VALVE	BUTTERLY	BUTTERFLY	BUTTERLY	BUTTERFLY VALVE	BALL VALVE	BALL VALVE	BUTTERFLY	BUTTERFLY	BUTTERFLY	BUTTERLY	BUTTERFLY	CHECK VALVE	CHECK VALVE
					DESIGN CONDITION	PRESSURE BAR(G)	۰	ų,	ω	ω		-	-	~	7	α ,	971	1,5	5.25	5.25	5.25	5.25	5.25
						TEMP.	8	S	S	8	95	8	8	95	8	8	8	SS	8	8	8	S	8
					OPERATING	PRESSU DEG.C (G)	35.40 2	35-40 2	35-40 2	35-40 2	35-40 ATM	35-40 ATM	35-40 ATM	35-40 5	35-40 5	35-40 1	35-40	35-40	35-40 3.5	35.40 3.5	35-40 3.5	35-40 3.5	35-40
						MANUAL/ ON OFF TEN																	
						CLIENTIVEN MAN DOR ON PACKAGE	ez AUTO	Z AUTO	ZZ MANUJAL	ZZ MANUAL	ZZ MANUAL	ZZ MANUAL	ZZ MÁNUAL	Z MANUAL	EZ MANUAL	EZ MANUAL	EZ MANUAL	EZ MANUAL	EZ MANUAL	MANUAL MANUAL	EZ MANUAL	EZ MANUAL	EZ MANUAL
						QUANTIT CLII	SUEZ	SUEZ	SUEZ	SUEZ	SUEZ	suez	Zans	SUEZ	SUEZ	SUEZ	SUEZ	SUEZ	SUEZ	suez	SUEZ	SUEZ	SUEZ
				ns		SIZE,	-	5	5	5	150 1	80	1 20	50	28	8	-	1 09	50	50 4	-	99	50
	•	V		olutio	_	MOC	CPVC	OPVC	CPVC	SAC GB	SS316	2	2	PVC	UPVC	UPVC	P.C.	SA.	PVC	PAC S	PA C	PVC	No.
	9	りつ		es & S	_	NO NO	5 OF 10	E 50F 10	0 E 5 OF 10	E 50F 10	6 OF 10	R 6.0F 10	TK- 6 OF 10	6 OF 10	7 OF 10	*K 7.0F 10	A 7 OF 10	8 7.0F.10	A 7.0F.10	8 7.0F10	7 OF 10	A 7.0F 10	8 7.0F.10
		うでは		Water Technologies & Solutions		DESCRIPTION/ LOCATION	CITRIC ACID DOSING TO BACKUPLSE DISCHARGE HEADER	SORIUM HYPOCHLORITE DOSING TO BACKUPLSE DISCHARGE HEADER	CITRIC ACID DOSING TO BACKUPLSE DISCHARGE HEADER	SODIUM HYPOCHLORITE DOSING TO BACKUPLSE DISCHARGE HEADER	BACKPULSE WATER TO PERMEATE /BACKPULSE PUMP-1	PERMEATE TO SOFTNER FEED PUMP	BACKPULSE TANK 920-TK- 601 DRAIN	SERVICE WATER TO BACKPULSE TANK	SERVICE WATER TO BRINE MEASURING TANK	BRINE MEASURING TANK DRAIN	SOCTION SUCTION	SOFTNER FEED PUMP-B SUCTION	SOFTNER FEED PUMP-A DISCHARGE	SOFTNER FEED PUMP-8 CHSCHARGE	SOFTNER FEED PUMP RECIRCULATION	SOFTNER FEED PUMP-A DISCHARGE	SOFTNER FEED PUMP-B DISCHARGE
	U)	Water		VALVETAG	CI 23-FV-301 BV	23-FV-101 DX	23-CV-302 BV	23-CV-102 DO	20+W-602 Pt	71+W-901 FE	So-W-con 60			MA							signe KALI
						SLNO	29	\$	85	8	19	62	8	26	8	IS	ΑT	E	ΞS	Н	Date	e: 20 24:08	22.1

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			25-Jul-18	DATE		Remarks	∄	₫.	Ħ	ASTA- SCHOOL URVC PIPES- VALVE	d	-	<u> </u>	₫.	1	ž	#	₫	1	∄	₹	# #	∄	1 2	¥	6038727-PK-01,
			MAB	APPVD BY		SOLENDID VALVE		NAMER TYPE & 2AVDC-1955- INBULATION & CLASS & BLECTRICAL		AURTYPE & DC IPES ULATIONE SSS & CCHICAL	NAMURITARE E. SAUDCIPES. INSULATIONE. CLASS.2. ELECTRICAL.	MAKUR TYPE 3. 24VDCIPGE. PRSULATIONE CLASS 3. RECTRICAL	MALLATIONE CASSS. GLASS. ELECTRICAL	NAMUR TYPE & SAUDCIPES INSULATION E. GLASSE.	MURTYPE & MOCIPES - SULATIONE - ASSA	MURITYRE & OCIPRS- ULATIONE ASS & SCIRCAL	MURTYPE-4. VDCIPSE SUATIONE- ASS-4. ECTRICAL	MURITYPE 2. ACCIPES. ALATIONE ASS 3. ECTRICAL	MURITYPE L. ADCIDES. HUATION F. ASSEL. SCIRICAL.	MURITYPE & UDCIPUS.	NAMURITARE & SAUDCIPES INSULATIONE. GASSA. BLECTRICAL	NAMER TYPE & SAUGEDRE INSULATIONE CLASS.L RECTRICAL				
			d)	CHKD BY APP	CCESSORIE	STOP SO	1		4		326228	11131	141318	# # # # # # # # # # # # # # # # # # #	111333	448988	111313	111010	13100	111000	12100	1	1	4	NA NA	
			lev8		ACTUATOR ACCESSORIES		- 2	CTRICAL NA	2	CIRICAL							CTRICAL PARTECULAR PAR					ECTRICAL P				
IIT HYDERABD 650 KLD STP-1	6038727-PK-01	38727-PK-01	6038727-AP-01 R	PREPARED BY:		OPENCLOSE FEEDBACK		2.WHE.24V.DG. PROXIMITY. SWITCHES.ELECTRICAL. CONNECTION-1/2-NPT		AMPRESIVES SMICHES ELECTRICAL CONNECTION LIGHTER	2-WIRE 24/LDC PROXIMITY SWITCHES, ELECTRICAL CONNECTION 1/2-NPT	SWINE SWIDG PROXIMITY SWITCHES, ELECTRICAL CONNECTION LIZITET	2 WINE 24V DC. PROXIMITY. SWITCHES, ELECTRICAL. CONNECTION 1/2" - IPT -	DECKNOTY. SWICHERECTRICAL CONNECTION 1/2" NET	2 WRE 24V.DC. PROXIMELE, SWICHES, ELECTRICAL, CONNECTION 1/2" NET	2 WIRE 200 DC. PROXIMILY. SWITCHES, ELECTRICAL. CONNECTION - 1/2" - 1921	AWINE AND PROXIMITY SWITCHESTELECTRICAL CONNECTION 107-101	2MRE2M/DG PROXIMITY SWITCHESEECTRON- CONNECTION 1/21/201	SWITCHES ECTRICAL CONNECTION 1/2-1-PT	AWIRE SAVICE. PROXIMITY. SWITCHES, ELECTRICAL. COMMECTION LICE NOT	PARTE SAV DC SHOKIMITY. SHATCHES, ELECTRICAL CONNECTION - 1/2"-NET	AMPRIANTS. SWITCHES, ELECTRICAL. GORNECTION, 102-1971	5	\$	ž	
	CU. No. 6D	09	90.	Hd.			3	7888	2	2444	1243	2222	and	4840	8860	4240	4880	4 11 04 0	- H E U O	16 at 08 G	4 6 9 9	n a w u		2	2	
CLIENT NAME	STOMER DO	CU, No.	FERENCE DO	REV	R DATA	ACTU. PR (BAR)							ua ua	40	uş.	99	9	19 18	95	979	9.9	ig is	প্র	1	₹V	
리 역	5	8	x <	<u> </u>	ACTUATOR DATA	ACTU. (FC/FO/F L)	4	94	44	FG Selection of the selection of the sel	5.6 8.6	and	AM 3.8	8.65 8.65	# #	4	1	4	4	1	4	4	4	2	<u>4</u>	
						PNEUMATI 1 C/ ELECTRICA (\$	PNEUMATE	½	PASEUMATI	FNEUMATI	PNELMATI	PNEUMATH	PNELIMATI	PAREMANTE	PNEUMATI	PNEUMATH	PNEUMATE	PNEJMATI	PNEUMATI	L PNEUMATI G	PNEUMATH G	\$	\$	2	
						TYPE OF OPERATION		DOUBLE ACTING MOC. ALAMINIAN BODY WITH OPEN & CLOSE BENCATION - 8-IPSE. ENCLOUSER & 5/2 WAY MANIFOLD		SINGLE ACTING MCC. ALIMINIM BOOK WITH CHEN E CLOSE HIDICATION - 3.1PKS. BNG, GUSER E-3/2-WAY HWAFGED	SWGLE ACTING MCC. ALMINIUM SODY WITH OPENA. GLOSE HURCATION - LINES. ENCLOUSER & 27 WAY MANIFOLD	SINGLE ACTING CLOSE INDICATION—& IPSE CLOSE INDICATION—& IPSE CLOSE INDICATION—& IPSE	DOUBLE ACTIVIC MOC. ALMINUM BODY WITH OPEN A CLOSE MOXCATION - & IPES BIYCLOUSER & 50 WAY MANIFOLD	DOUBLE ACTING MOC. ALUMINIUM BODY WITH OPEN 8 CLOSE NEXICATION - & IPSE ENCLOISER & SQ WAY HAWSFOLD	DOUBLE ACTING MOC. ALAMININ BOOK-WITH OPENAL GOSE INDUSTRIAL ALPRE- GACLOUSER A GLAWKY MANIFOLD- TRAVEL STOP REGURED	DOUBLE ACTING MOC. ALAMBALM BODY WITH OPEN E CLOSE MINDSTRON * LIPES ENCYCLESEA S SZWAY MANIFOLD. TRAVEL STOR REQUIRED	DOUBLE ACTING MOC. ALIMINIAN BODY WITH OPEN I CLOSE INCKATION - & IPIG. ENCLOUSER & 6/2 WAY MANIFOLD	DOUBLE ACTING MOC: ALMINIAM BODY WITH OPEN A CLOSE INDICATION - & 1965 BACLOUSIER & 67 WAY MANIFOLD	DOUBLE ACTING MCC. ALMINUM BODY WITH OPEN E. GLOSE BUILDCATON 8 IPSG. ENCLOSER E. STAWA MANIFOLD. TRAVEL STOP REGURED	COURTE ACTING MOC. ALMINIAM BODY WITH OPENA, paragrees, a traffic construction. A traffic executions at a traffic court of the way way wanted. TRAVEL STOP REGURED	DOUBLE ACTING MOC. ALABINIAN BODY WITH OFFINE GLOSE HISTORIAN & 1PS6 ENCLOUSER & 5/2 WAY MANIFOLD	BOURIE ACTING MOC. ALLINBATIN BODY WITH OPEN & CLOSE NICKCHION & LIPSG. ENCLOUSER & STRWAY MANHOLD				
							TATACAN	DOUBLE AC MOC. ALUN CLOSE BUD ENCLOUSE	марилаг	SNOTE AC MOC: ALLA CLOSE IND ENCLOUSE	SHGLE AC MOC: ALUB GLOSE BLD ENCLOUSE	SHOLEAG MOC. ALU CLOSE IND ENCLOUSE	F. MOC. ALUI CLOSE IND ENCLOUSE		POUBLE AL CLOSE IND ENCLOUSE TRAVEL ST	MOC. ALLI CLOSE HID ENCLOUSE TRAVEL ST	DOUBLE ALL CLOSE INC ENCLOUSE	POUBLE A MOC. ALU CLOSE INC ENCLOUSE	POUBLE AL MOC. ALU GLOSE BIC ENCLOUSE TRAVEL ST	POUBLEA MOCHALI MOCHALI BACHOUSE TRAVELST			MANUAL	PANNAL	MANUAL	
						MATCHING FLANCE DRLLING STD	\$	4	4 4	NA A	4	1	AMSLB-16.6, RF 160#	ANSI B.16.6, RF.	Aust B-18.6, Pl	ANSI B.16.6, RI	ANSI B. 16.5, R	ANSI B-16.6, RF.	AUSLB-16,6; RF;-	AW81 B 16.6, R	ANSLB-16.6, RF	ANSI-B-16.5, RF.	\$	\$	2	
						VALVE PRESURE RATING	arco	***************************************	CH60_236PSI	18d-9ec-08H0	CH80,236 PSI	CH80,236 PSI	Divis	othe	O SHIED	Othus	ome	Philo	PN10	9	grad	D1110	1000	#009	SCH80, 235PSI	
						CONNECTION	19000	BOCKET B	192008	8	192009	192008	WASER	WAFER	WASER	WAFER	WASER	WATER	WASER	WASER	WASER	WAFER	SOCKET	800XE1	SOCKET	
						JS FT BALL	*	983316	nevic	9	O Carlo	ohen :	<u>\$</u>	<u>\$</u>	<u>\$</u>	<u>\$</u>	<u>\$</u>	<u>\$</u>	<u>\$</u>	1	\$ 9	4 4	16 CF8M	16 CF8M	c nevc	
		(BOP)			истюм	DIAPHICATES PINDLESHAFT ISPRING	TESS WELLS	STEM SS316	STEM-UPVC	STEM: UPVC	STEM_L/PUG	STEM-UPVG	P STEM SS416	D STEM+S8416	P STEM-SS416	D STEM-58416	D STEW -\$5416	D STEW SS416	D STEM SS416	STEM SS416	D STEM::SS416	SHEM -88116	STEM:-SS316	STEM-SS316	STEM UPVC	
		VALVE LIST (BOP)			MATERIAL OF CONSTRUCTION	DISC	1	2	\$	1	5	1	NY CONCONTED DUCTILE IRON	INTON COATED DUCTILE HOW	WLON COATED DUCTILE-IRON	NYLON COATED DACTILE IRON	NYLON COATED DUCTILE IRON	NYLON COATED DUCTILE IRON	NYLON COATED DUCTRE-IRON	HYLOH COATED DUCTILE IRON	NYLON COATED. DUCTLE IRON	NYLON COATED BUCTLE-IRON	\$	ş	ž	S after
		A\			MATER	SEAT	9	pite	9414	#IFE	Pitte	#	EPDM	EPCM	WOD!	-ЕРОМ	wd d3	жон	- Върми -	#DD#	ЕРОМ	mo _d	PTFE	P1F6	PTFE	
						BODY	CESM	91035	DEVC	neve	upuc	Photo	GL-Grade- FG-126- elate-B	CL Grade- FG-126- date-8	G-Grade- FG-126- classe-B	Gl-Grade FG 126 class B	Cl. Grade. FG 128 date 8	CL-Grade- FG 126- elasse-8	Gl-Grade FG-134 class-8	Cl-Guido- FG-126- duct-8	G-Grade- FG-136- class-B	G-Grade FG-124 data 8	3	СЕВИ	UPVC	
						VALVE GROUP	BALL-VALVE	BALLVALVE	BALLVALVE	BALLVALVE	BALL-VALVE	SALL VALVE	MITERALY	виневых	BUTTERRY	BUTTERRY	WITERALY	BUTTERRY	BUTTERRY	витевку	BUTTERRY	BUTTERRY	BALL-VALVE	BALLVALVE	BALL VALVE	
						VALVE IDENTIFICATIO N	87748	3v.Dat	8413	84.5A1	BV-SA1	BV SA1	BDV-DA1	BFV-DA1	BEV DAM	вирм	BPVDAt	BRVDAL	BDCDAG	малав	BEV-DA1	BFV-DA1	84413	871.13	BV-L2	
						VALVE TYPE	ALL VALVE	MILVALVE	ALL VALVE	BALL VALVE	BALLVALVE	BALL VALVE	WALVE WALVE	BUTTERFLY.	BUTTERRY	BUTTERELY	BUTTERFLY.	BUTTERRIY	BUTTERFLY	BLITERELY. VALVE	BUTTERRY.	BUTTERRIZE	BALLVALVE	BALL-VALVE	BALL VALVE	
					CONDITION	PRESSURE BAR(G)	92-9	82.9	25	85.3	95.5	18	3	9 9	86.9	18	56-79	55.05	86-9	8	3	8	85.9	6536	5.25	
					DESIGN CC	TEMP.	3	3	3	8	3	9	3	3	8	23	9	8	3	3	3	3	3	3	8	
					OPERATING	PRESSU DEG.C (G)	\$ e	25 25	35.40	35-40	35.40	35.40	3	36.40	35.40	35.40	36.40	36-40	95-40	36.40	95.	97	35-40	35.40	35-40 3.5	
					0.0	MANUAL/ ON OFF TEN	4 8 8	24.8									1						4			_
						GEWPT/ CLIENT/VEN MAN DOR DOR PACKAGE	MANUAL	AUTO	Termove	AUTO	AUTO	ANTO	MUT OTT	AUTO	AUTD	AUTO	AUTO	AUTO	AUTO	AUTO	AUTO	АИТО	NOW	WANTER	MANUAL	
						QUANTIT GEN Y DC (NOS) PACI	25/16	2976	8792	\$1PEZ	29ne2	25/15	2975	8162	3762	8998	2978	2978	2978	2905	S167	2978	ZSINS	SPEZ	SNEZ	
				us		SIZE, OU.	*	+	9	*	**	*	7 9	9		3	9		3	9	3	9	97	91	1 25	
	and the same of	Ņ		Solution		MOC	MASED	SS	UPVC	96	MSEP	9	MSEP 9	desm	MSER	disw	desw	MSSP	MSEP	мавы	MSEP	-10 MSEP	D MASER	изви	10 UPVC	
		SCON		Water Technologies & Solutions		CRIPTION/ LOCATION NO NO	SOFINER FEED PUMP. 10F-10 20F-10	SOFTNER FEED FUND. DISCHARGE TO ELECTOR	BRINE MEASURING TANK. 7-OF-10	BRISE MEASURING TANK. TO EJECTOR((†1.6J.601)	EJECTOR(Z1-EL-801) TO. ZOF-10	Elector(71-E1-801)-TOF-10 SOFTNER(71-IX-801A)	GSOFTHER ZOF	FEED INVEST TO SOFTMER, 7-OF-10 (71 IX 9018)	BACKWASHINETTO 2-OF-10 SOFINER (21-1X-801A)	BACKWASHINLETTO 7-0F-10	BACKWASH QUITET. FROM SOFTNER (711X- 7-OF-10 bota)	-BACKWASH OUTLET. FROM SOFTNER (711X: 2-OF-10 9018)	NE OUTLET FROM. Z.OF-10	RECUTETEROM 2.0F.10	COUCT OUTET FROM 2 OF 10	ROWCI CUTLET FROM. 1-OF-	SOFTNER (711X 801A). RHNSESSINE OUTLETTO: 7-OF- DRAM	SOFTMER (714X-8018). RIVES/BRINNEL-OUTLETTO. 7-OF-19 DROMN	SOFTNER FEED PUMP TO SOFT WATER TANK (71-TK- 7 OF: 902)	
	1)	/ater Tec		TAG DES						LeolA SOFTNE	DSA FEEDINIET						# 9	4 3	4.8	DL 49	1			by
				\$		SL'NO VALVE TA	24 21-16/1006	75 74-54-802	300774112 92	21-FV-803	78 71.50.9048	97472	80 71.57/.90	81 71 57 6068	82 71-EV-BOSA	5 4		AF SA				Da	ate: 2	2022.	10.1	by ATEESH 0
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	(JOB DESCRIPTION.	650 KLD STP-1			
*100	るして	1	٨																						CUSTOMER DOCU, No.	6038727-PK-01			
	1)	J													VAL	VALVE LIST (BOP)	30P)							DOCU, No.	6038727-PK-01			
																									REFERENCE DOC.	6038727-AP-01 RevB	I.P.	MAB 25-	25-Jul-18
Wat	Water Technologies & Solutions	ss & St	olutio	suc																					REV	PREPARED BY:	CHKD BY APP	APPVD BY DA	DATE
			1					OPERATING		DESIGN CONDITION	MOTTION					MATERI	MATERIAL OF CONSTRUCTION	NOI						,	ACTUATOR DATA	ACTUATOR A	ACTUATOR ACCESSORIES		
/ALVE TAG	DESCRIPTION/ LOCATION	SHEET NO NO	MOC	SIZE, NB	(NOS) PA	CLIENTVEN MAN DOR ON PACKAGE	MANUAL/ ON OFF TE	PRE DEG.C (PRESSU TEI	TEMP. PRES	PRESSURE BAR(G)	VALVE TYPE II	VALVE IDENTIFICATIO N	VALVE GROUP	BODY	SEAT	DISC	DIAPHIGATE/S PINDLE/SHAFT /SPRING	BALL	CONNECTION RATING	RESURE FLANGI	MATCHING FLANGE DRLLING STD	TYPE OF OPERATION E	PNEUMATI TYPE OF C/ ACTU. ELECTRICA (FC/FO/F L L)	PE OF CTU, ACTU, PR (BAR) L)	OPENCLOSE PEEDBACK	TRAVEL SO STOP	SOLENOID VALVE R	Remarks
AD10-74-1	AR RELEASE LINE FROM. SOFTNER (71-LX-601A)	2.05.16	9 055W	9	2978	ZZ AMTO		9 4	4	9	6-76 WALT	BUTTERFLY. BY	BEV SAL	BUTTERRY	Cl. Grade. FC-126- class-B	Евом	NYLON COATED DUCTHE IRON	STEM -85416	WASER	9	ANSI B-	ANSI B-16.6-RF. MOC1	SHCIE ACTING MOC. ALMHRIM BODY MTH OPEN & P GLOSE MINGATION - & 1966 GRACOUSER & AT WAY AWARCALD	PNEUMATH F.O.	g-19	SWINE SAV DC. SPROXIMETA. SWITCHES, ELECTRICAL. GORNEGTION - JZ-NAT.	44444	MANUETYPE & HILL STATES HILL S	
B0187411	AIR RELEASE LINE-FROM. SOFTNER (711X-8018)	205.10	MSEP	3	29/18	NAUTO NAUTO		95.40	9.5	3	6.26 BUT	BUTTERLY. BI	BEVSAL	BUTTERREY	G Grade FG 126 date B	жы	ичсисомер. вистеняем	MH 91755 WHIS	A WASER	PARTO	ANSL B-	ANSI B.16.6, RF., MOC	SHALE ACTING GOOD WITH OPENE P GOOSE MINCATION - 8-1965 GOOGLUSER 8-37-WAY MANIFOLD GOOGLUSER 8-37-WAY MANIFOLD	PHEUMATI FO	9.9	SWITCHES ECTRICAL SWITCHES, ELECTRICAL CONNECTION 1/2 1/2 1/2	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	MANUATYRE & 24VDC1P6S. INSULATION & CLASS & ELECTRICAL.	
1-FV-901	SOFTWER FEED PUMP RECIRCULATION	7 OF 10	MSEP	1	SUEZ	ez AUTO		35-40	3.5	9	6.25 VAL	BUTTERFLY BI	BFV-DA1	BUTTERFLY	Cl Grade FG 126 class B	ЕРОМ	NYLON COATED DUCTILE IRON	STEM SS416 NA	A WAFER	PNIO	ANSI B 1	B 16.5, RF, MOC. / CLOSE ENCLO	DOUBLE ACTING MOC. ALLMMINIM BODY WITH OPEN 8, P CLOSE INDICATION A, IPPS ENCLOUSER 8, 5/2 WAY MANIFOLD	PNEUMATI NA	10. 10.	2 WIRE 24V DC PROXIMITY SWITCHES, ELECTRICAL CORNECTION 1/2" NPT	NA NAS	NAMUR TYPE 8 24VDC IP65 INSULATION F CLASS 8 ELECTRICAL	
9-10-812A	PROCNCT OUTLET DRAIN FROM SOFTNER (7-11X- 7 901A)	97 40 Z	WSEP #	99	ZENS .	MANUAL.		35-40	2	9	98 9W	BALL VALVE B	BVL13	BALL VALVE	CFBM	9316	1	STEM-SS316 CF	CF8M SOCKET	#009	**	POPPORTOR		an an	4	7	#	Ť	
9747-9158	PRODUCT OUTLET DRAIN. FROM SOFTNER (714X- 8018).	2 OF 10	MSEP	99	t suez	MANUAL.		95-40	9.6	9	92.0	BALLVALVE	87713	BALLVALVE	76-88.	PIFE	1	STEM-SS316 CG	SOCKET	2009 ±	2	Territorer		44	44	# #	1	1	
214V 813A	DRAIN ON BACKWASH INLET LINE TO SOFTINER. (71-10:014)	205-16	distri	99	3	WWW.		g.	*	3	**	BALL VALVE	BW113	SATA THE	1	the state	\$	SHEW SELLS	FBW SOCKE	#005 #	1	Torridorn		4	ąą.	1	1	#	
810/8138	DRAIN CREACOWASH IMEETING TO SOFTNER (711X-8018)	20F.10	MSER	91	\$ 8mez	MANUAL SE		96.40	2	2	8-36 8-36	BALLVALVE	87113	BALLVALVE	СЕВМ	RIFE	\$	STEM-S8316 CI	GRBM SOCKET	#0009	2	MANAGE		AN AN	ęą.	7	2	H.	
E-59-741	ASSECTABLE SOCIARIA	97107	dis.59	9	1	7		3 4	4	3	***	BLITEGALY B	. Fringe)-hardesteine	G Gaste. Routes	200,000	CALCALOMETER CALCALE PROM	9199699919	Hildren Me	ossed .	AASH E 18,6.	4	4	Spid.	rige.	7	4	inte	
55	4880 past. 10.808738.6.	B-X72	NASCE.	9	7972	**************************************		Ottordo	3.5	2	6.28 BUH	BUTTERBULE B	Physical Phy	Wisebbaff)	CL-Quade FQ-128. tdstee-9	7900ses	Security.	Pe 9575317882.8	Million Manual Control	Perra	August 6-1	-56.185-	n deriga Carele	450	***	4	45	ig.	
4-15/201383	SCHTTER AR VEST (FLIX.)	7 011 10	Maelik	99	1 1842	(2) MANALAI		35-40:	\$ 6	3	N. S.	MALME BALVE B	BPVL1	BUTTERELY	CI Gram Fts 12# chass B	PACHE	DLC THE INDA	SIEK SEAR	WAREH	e in	25.55 57.55	1508 8 55.5 KF. HENOT	diken ones	52	N. S.	2	5	78	
MA	SCETNER AP VENT 7543.	D-7.07.13	W65EP	86	2# S	MARSIN		8	3.5	8	18 8 W	BUTTERRI * B	BPV4,1	SLATERSLY	Cr Crass PC 133 slava 8	EPTON	NYCCH-COATHD CACTHE PROV	2003 7018	WASER	0,044	A-200 B	ANN BISC. PR. 16MD3	PHIDLINER P	2	154	20	*	₹	
١Н	MILIZA TEAP CEDAN	7.01	\$531d	2	9062	62 AMV&161.		35.40	5	8	85	BALL VALVE S	87578	BALL VALVE	CECK	Виле	97	D 91686 36318	CF8W 855UF)	9009	ž	RATHER		- FA	*2	M M	Y1	P.11.	
A۸	EJECTOR CUTLET (71-EL. 801) SAMPLING JALVE	20540	MASER	4	Zignes +	Terrorw 25		95-20	3.6	3	6.26 BAL	8 SALVALUE 8	27.48	BALL VALVE	g	#	4	91EW-85116	SS116 SOCKET	#009	4	Terthope		\$ \$	\$	3	1	#	
IK	FEED INLET TO SOFTMER. (714X-8018)-PG- ISOLATION VALVE	R. 7.0F.10	- 855	97	73PS †	EZ MANUAL		04-26	3.6	3	6.26 BAL	BALLVALVE	BV-L4	BALL VALVE	CF8M	PIFE	\$	STEM SS316	FBM BSP(F)	#009	ş	MADALAL		44	헣	24	4	d	
41	FEED HILET TO SOFTHER (711X 901A) PG. ISOLATION VALVE	7.0F.10	мави	9	t sucz	EZ MANUAL		35-40	98	2	6,26 BAL	BALL-VALVE	BVLA	BALLVALVE	CF8M	PIFE	4	STEMSE316	CF8M BSP(F)	#0009	¥	TUTTOOM		44	AN AN	2	a	ž	
Digi	BACKWASHINLET TO- SOFTNER (711X-9018). P. ISOLATION VALVE	2G 2-OF-10	03811	9	THE THE		e torror	94 84	92	8	84 84	BALL VALVE B	BV1.4	BALLVALVE	CFBIL	3	\$	9168 WHIS	Heen Heepfel	***************************************	¥	Turnesse		1	\$	a 2	1	i	,
tally -IANI	BACKWASH BLEFTO SOFTNER (711X-801A) PG ISOLATION VALVE	3G- 7-OF-10	d-Sept	9	29082	EZ MANULAL		35-40	99	8	92-9 92-9	BALL VALVE B	BV14	BALLVALVE	CF8M	3914	\$	STEM SEGIE	скам вяя(п)	#009	¥	MANUAL		4	NA.	7	1	ž	
sign	SOFTENER FEED PUMP.A DISCHARGE DRAIN	7 OF 10	UPVC	5	1 suez	EZ MANUAL		35-40	3.5	8	5.25 BAI	BALL VALVE B	BV-4.2	BALL VALVE	UPVC	PTFE	NA	STEM: UPVC U	UPVC SOCKET	SCH80, 235PSI	SPSI	MANUAL		AN AN	¥2	AN N	NA NA	- N	
e																													

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														CLIENT NAME JOB DESCRIPTION. CUSTOMER DOCU, No.	650 KLD STP-1 6038727-PK-01			
							VALVE LIS	T (BOP)						DOCU. No. REFERENCE DOC.	6038727-PK-01 6038727-AP-01 RevB	an an	MAB	25-Jul-18
														REV	PREPARED BY:	-		DATE
	GEWPT/						MATERIAL OF CONST	RUCTION			MATCHING			ACTUATOR DATA	ACTUATO	ACTUATOR ACCESSORIES	ES	
March 194 11 11 11 11 11 11 1	CLIENTNEN DOR PACKAGE	TEMP. DEG.C	TEMP. DEG.C	VALVE TYPE	1001			DIAPH/GATE/S PINDLE/SHAFT /SPRING			STD STD		PNEUMATI TYPE OF C/ ACTU. ELECTRICA (FC/FO/F L L)	OF U. ACTU. PR (BAR)	OPEWCLOSE FEEDBACK	TRAVEL	SOLENOID VALVE	Remarks
March 12 12 12 13 14 15 15 15 15 15 15 15		35-40	95	BALL VALVE	BALL VALVE		¥	UPVC		SCH80, 235PS		MARUAL		A4	2	2		JH.
Montrol Seal 1 10 11 11 10 11	3	36-36	3	\$50,000 to 000 t	SALLA VALUE.		र्थन र	3.1	0.00	W(02)	**	Methodisks	¥	44	ž	44.	744	d.
MARCHAN, 1946 1		35-40	S	Services			BIA		93000	10000E	ž	MANGRACAL	yre vre	લું	472	AN AN	5	ž
1 252 100.04 256 1 10 101.0400 10.04 20.04 20.05			95	BALL VALVE			2	CPVC		SCH80, 235PS		MARNIAL	AN AN	¥	ž	2	20	ž
1 125			99	BALL VALVE				CPVC		SCH80, 235PS		MANUAL	¥.	NA	\$	2	25	ž
1 2022 MARCHA 25-01 1 10 11 11			09	BALL VALVE			¥2	UPVC		SCH80, 235PS		MASTLAL	45 45	Ą	\$	2 <u>\$</u>	5	뒫
1 2622 MATCHAL 25-6 15 10 1.5 10 1.0 1.0 1.5 10 1.0 1.5 10 1.0 1.5 10 1.0 1.5 10 1.0 1.5 10 1.0 1.5 10 1.0 1.5 10 1.0 1.5 10 1.0 1.5 10 1.0 1.5 10 1.0 1.0 1.5 10 1.0 1.5 10 1.0 1.5 10 1.0 1.5 10 1.0 1.5 10 1.0 1.5 10 1.0 1.5 1.5 1.0 1.			99	BALL VALVE				OPVC	1000	SCH80, 235PS		MANUAL	¥.	NA.	NA A	2	72	¥
1 5162 MANUAL 55-0 5 50 7 MALVALLE PICE			8	BALL VALVE				CPVC		SCH80, 235PS		MARILIAL	NA NA	NA	NA A	2	¥1	¥
1 SEC MANING 35-00 1 50 1.5 BULLVAVE BYLL			8	BALL VALVE					1000	SCH80, 235PS	1000	MANUAL	¥2	Ä	<u></u>	2	NA.	¥
1 SEZ MANUAL, SS-40 5 50 7 BALLVALVE BYA 2 BALLVALVE BYA 2 BALLVALVE BYA 3 BALLVALVE BYA 3 BALLVALVE BYA 4 BALLVALVE BYA 5 BALLVALVE BYA 5 BALLVALVE BYA 6 BALLVALVE BYA 7 BALLVALVE BYA 6 BALLVALVE BYA 7 BYA 7 BALLVALVE BYA 7 BALLVALVE BYA 7 BYA			8	BALLVALVE				CPVC		SCH60, 235PS		MANYUAL	¥2	¥	2	2	NA.	JE .
1 Siezz MANIAL, Siezo 1 Sio 15 BALL VALVE BYA-1 BALL VALVE GPAC FIFE NA SIEZA FIRE NA SIEZA GARGA 25898 NA MANIALA Sieza Sie			8	BALL VALVE	BALL VALVE					SCH80, 235PS	928	MARKUAL	4 Z	NA NA	\$2	2	5	Ę
1 SIEZ MANIAL, SS-40 5 50 7 BALL VALVE BVL2 BVL		-	09	BALL VALVE				CPVC		SCH80, 235PS		Макты	NA NA	N.	*2	ž	2	ź
1 SIGEZ MANALAL 35-40 5 70 CECYVALVE CYCZ COCCYALVE SSTIFE BUTTERTY PROTES COCCYALVE SSTIFE BUTANT CYCLOR CONTROL TO THE BUTANT SSTIFE SSTIFE BUTANT CYCLOR CONTROL TO THE BUTANT CYCLOR CYCLOR TO THE BUTANT CYCLOR CONTROL TO THE BUTANT CYCLOR TO THE BUTANT CYCLOR CONTROL TO THE BUTANT CYCLOR TO THE BUTANT CYCLOR CYCLOR TO THE BUTANT CYCLOR TO THE BUTA			OŞ.	BALL VALVE	BALL VALVE					SCHB0, 235PS	200	Martua	NA	NA.	N.A.	5	**	뉟
1 SHEZ MANUAL, 35-40 15 50 2.25 GHETEVILVE BYALT BLITTERILY FR. 136 ETCH DUCTHERROY RISHER IN WHER PIND AND BLEART PIND PIND PIND PIND PIND PIND PIND PIND			25	BUTTERFLY				STEM SS416		PNIO	3 16.5	I	NA	ž	ž	ž	NA.	TE.
1 SINEZ MANALAL SE-40 1.5 50 2.25 GEOVIANE CAST CHECKVANE CAST CHECKVANE SSTIF BLANAL SSTIF NA			8	BUTTERFLY VALVE				STEM: 85416		PNIO	ANSI B 16.5, RI 150#	-	NA NA	ž	¥.	2	2	Ĭ
1 SINEZ MANUAL 35-40 15 20 225 DHEDVIANE CHRS DECKNAVE SSS16 BLANN SSS16 NA NA NA NA SSS16 NA NA NA SSS16 NA NA NA NA NA NA SSS16 NA			95	BUTTERFLY				STEM: SS416		PN10	9 16.5		NA NA	¥	NA	2	2	JE
1 SIF7 MANUAL 35-00 15 50 2.25 IDECKVAVE CNS? IDECKVAVE SSS16 BADA-N SSS16 NA NA NAFER 150# ARREST 150			8	CHECK VALVE	CHECK VALVE	<u> </u>				#20#	B 16.5,		NA NA	¥.	<u> </u>	2	5	불
BOXT INDICATE TO THE PARTY OF T	1 SUEZ MANALIAL.	35-40	1.5 50 2.25	S CHECK VALVE CV-S2	CHECK VALVE	SS316 BUNA	N SS316	Ā	NA WAFER	150#	ANSI B 16,5, RI	SINGLE PLATE SWING	NA NA	42	ž	2	244	¥
25 2 SUEZ NAMAN, 85 0.45 100 0.635 BALLVALVE BY LA BALLVALVE CFBM FTFE NA STEM SST)5 CFBM BSPPF) 600# NA WANAL	snez	85	100	BALL VALVE				STEM: SS316		#009	NA	MANJAL	NA NA	\$	NA.	ž	2	¥

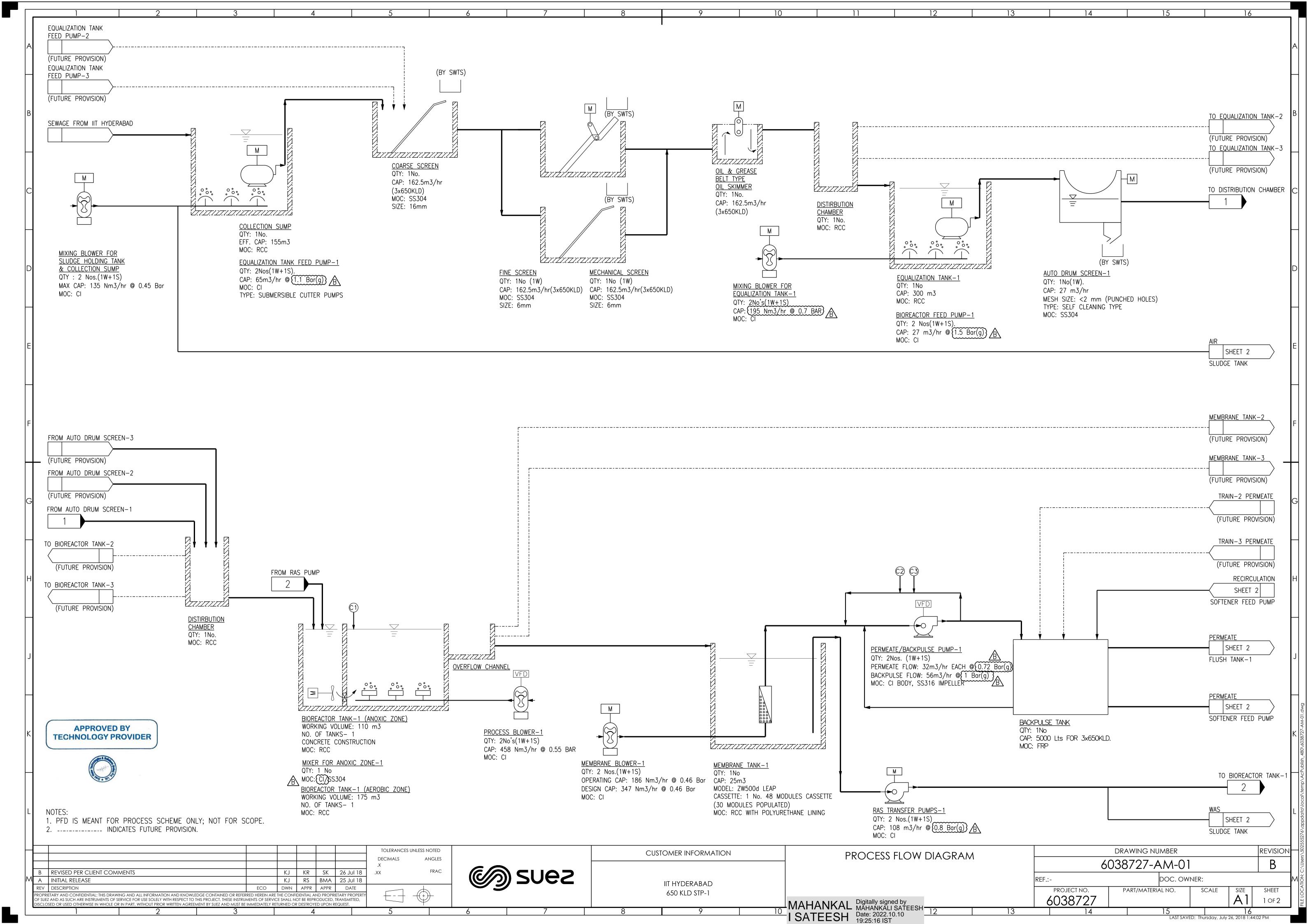
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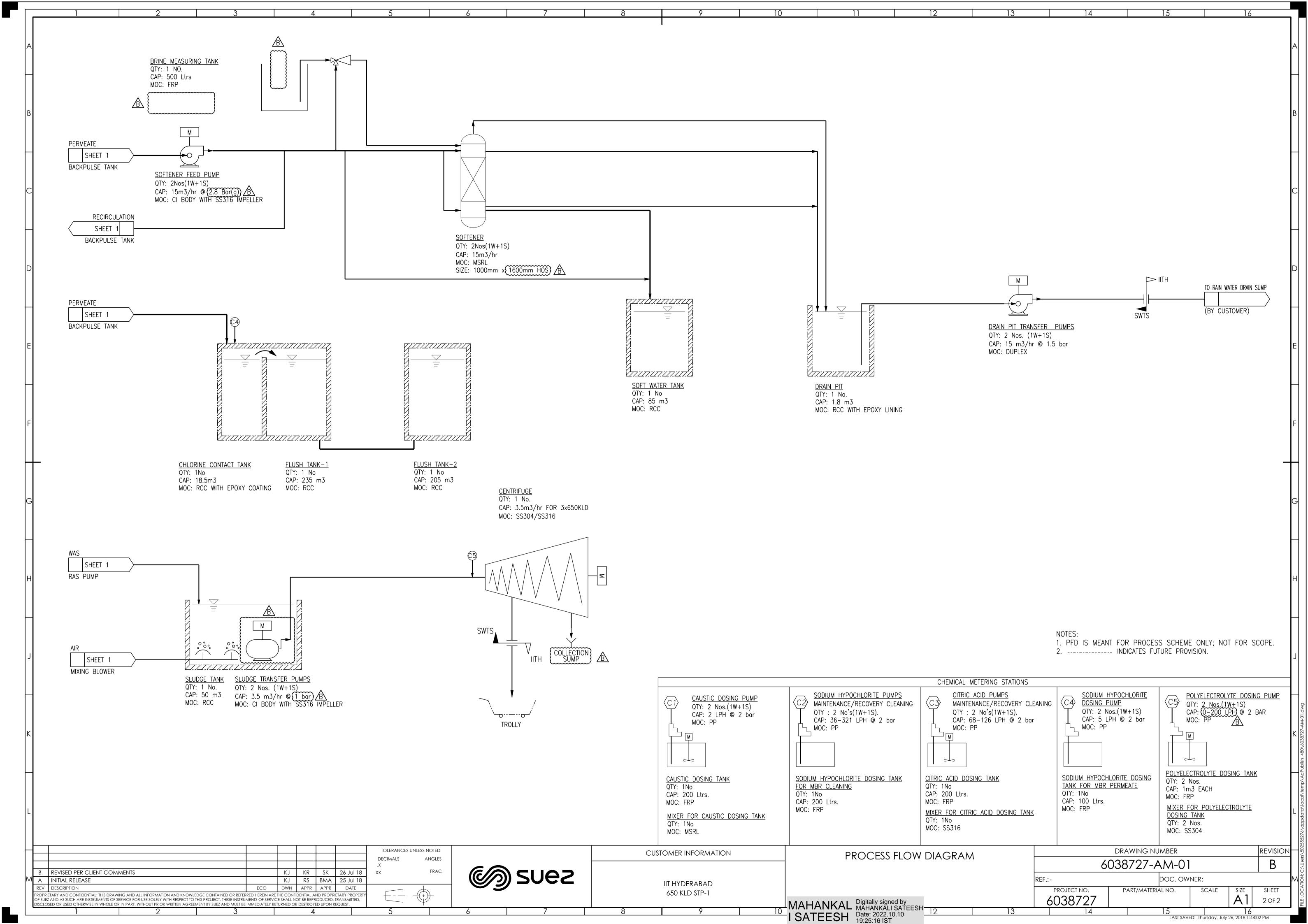
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6		(CUSTOMER DOCU, No.	6038727-PK-01			
The state of the s	ないない	D	. 2												VALV	VALVE LIST (BOP)	(AC							DOCU, No.	6038727-PK-01			
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Wate	Water Technologies & Solutions	& Sol	utions																	-				REV	PREPARED BY:	CHKD BY AP	APPVD BY	DATE
	_				GEWPT/		CONDITION		DESIGN CONDITION					+	MATERIAL	MATERIAL OF CONSTRUCTION	-	2		N	MATCHING			ACTUATOR DATA	АСТЛА	ACTUATOR ACCESSORIES	S	
VALVETAG	DESCRIPTION LOCATION	NO M	MOC NB	, (NOS)	DOR	ON OFF	TEMP. P	RE BAR (G)	TEMP, PRE	PRESSURE BAR(G)	VALVE TYPE ID	IDENTIFICATIO V	VALVE GROUP	Вору	SEAT	DISC PIN	DIAPHIGATE/S PINDLE/SHAFT BA ISPRING	BALL		RATING	FLANGE DRLLING STD	TYPE OF OPERATION	PNEUMATI TYPE OF C / ACTU. ELECTRICA (FC/FO/F L L)	ACTU. ACTU. PR (BAR) L)	OPENCLOSE FEEDBACK	TRAVEL	SOLENOID VALVE	Remarks
Selection of	SLEDCE TRANSSING FEBRES	Services limit	301257		a section of	Makestra	97-97	225	ß	ing sees	BUTSARIA 34	Aleke Ashion	C) Co	CtGrade. F44-199- sloca-8		ANTE EIRON	\$4 - \$5554 B	Herican	tea.	8 1994 1995	E.S. Billy	HENNEHOR	1	1	49	Pers, such		other net to system
240-7058	SLADOUS SPOASSUSANIAME.	9-09-10 19-09-10	98 270%	-	2979	Managha	38-35	26	3	70 / S	MATTERNALIN SE	tive silvo	(C)		200	AVACING SHOW	April States	tilisere.	PARTS	#55+ 18:00	B-task Key-Feller	Fig.Vine.	4	app.	597	ALM ALM		Netternal in
28467034	STEENSTEIN STEENSTEIN STEEL ST	8-0F-15 USP	also de	*	on Monte of	Messins	38-40	a	3	17/2	BALLA AMALANS BY	SV-1/15	au section de	Sittle Contr	254 254	*	AND COMMUNICATION	FVC 800,007	S.	SC-23SKVB NA.	Nere	descent.	1	\$4.	wh:	VPP VAG		भ्योभ्य गाउँ य
Beconstate	STEDOS TRANSSESS PLACES	97 DE-2016	an one	-	29-7-2	Tallegraph	36-45		3	- 10	Se. 24.004.144	inter the second	20170172	24	¥.	188	AND CARROLL OF THE CA	2572008	S-1555-15645-05	# 134566	7758	Terre	1	\$70 (de	***	44		Table Age for
SHV-701A	SLUCGE TRANSFER PLANS HI-P-201A CRSZ-AAR3E	9 OF 15	3	-	i,	Mes.A.	35.40	.70	S		BUTTERRLY BE	#V-L 1 9UT	D PG PG PG PG PG PG PG PG PG PG PG PG PG	CJ 513400 FG 128 desy 3		MY CALTED STE	TEM. SS416 NA	Манен	0.72	2001 2001	ANNEL E ES SE HAN	857.5. EV57.	2	144	NA.	A.M. MA		7
805296	SLEDGE TRANSFER FORP	80 B 30 B	08 X		TH SS	Nove a John	35-40	.0	8	88	BUTTERS. (BE	Th/US	25 VINNERALIN	Orisk 1135 EFCto		NYLON CONTED STE EXCOTE BROAT	STEM SERVE NAM	WAFER	Partic	20-23 1502	25 25 26 27	W.D.III.GER	1/2	ñ.	<u>\$</u>	44		aj.
\$474-7056	SLECCE TRAUBUIR PLIAS.	ogh dressed a	000	47	* *************************************	Se Productido.	38-62	rk .	3	- 11	SCX MALVE	3	WAS VALVE.	British Day	974 B2	3		50xx03	BN40	1	798	ALCO RECT.	3	\$	\$	41.5		outhore 1947 ist spiletern
9181-1016	64,437,08,178,446,659,479,142, 80,47,40,88,63,90,46,496,8	4.05.44 1,52	250,000		279875	MadellAti	36-46	o	28	*	O SAWAYE	24.81	971 SEASAN SOSSI	91112	99	**	3)	ANC SACCHET	9 H 2 4	2	98	-9623945-40	4	170	4	ALA CAN		value net as system
94,9-705A	SLEGGE HAMBEER PARC BD-P-701A CHGLG-ARGSE	9.	06 0048	ę	8.472	Markel 164.	35-58	~	3	ő	O ECKAVIAE O	NS SS A	ECS WAVE OS	6	593 W.K.	P0.555	5	ana a	900	18/20/2	8 14.5, 4F.	HOSE STATE SWIND	2	*	15	2		ij.
5.7	SELITONE WANGERH PURP.	97 G 30 6	98 SAM	-	THE STATE OF THE S	Medica	35.40	g v	2	8	O BOX WAVE O	875	CHICK VALVIII CE	2	PCAR 35	AT MESS	2	SIIIVZA V	S NOB	76-48 135-4	B 16 5, PF.	NGLE PLATE SMING	2	vets save	45	NA NA		Ħ
N/I	SULCOE TRAUBERS PARK	9) 0:406	SWC NO	-	BAEZ s	SCHOOL S	75-82	~	8	200	BALL VALVE: 81	27568 27568	BOT ANAE	THE SAME	STTE IN		STEM LPAC UP	The SOCKET	F 873480, 235048	Asi Sape		MOVERLISE	2	325	1 5	**		7
Αŀ	FLUEDA LINE TO SLUEDOS.	20F50 187	marue.			Manual Int.	27-75		8	97	E SWIW TO	344.2	איני האינה פויה	24124	25	*	NACTOR OF STREET	AVE SOCKET	PD 8	100-100 100 100 100 100 100 100 100 100		*terit tor	425	rejs yak	⁹ रर	***		wake net in system
ΙΔΙ	PELSHLING-TO SLADGE. TAXABLER PLANT 80-9. (7219.14210N-1438)	9.08.10	SS CYNE	-	SALES	Maradakha.	36-40	13	g.	\$1.5 \$1.5	SALL-VALLES	SALAS SALAS	edianostas	aveave	ele elektri		Samo amus um	MAG SECKES	492480, 2205781	AM SZECHSS	*	Gholathi	4	**	592	4		Tables nost in systation
NIK	FLISH SING TO SLIDOS TRA SCRIR PLAIR SOLD.	80,619	51 51	4	4	100 Care	35.46	4	3	976	Mis VALVE BY	200	377	244	444	u u	di didi na	PAC SOCKET	PC#	50,-388488		apple set.	1	\$ \$	\$	44		vallove rich er
ΊΔΙ	FLUSHLIBELTO-RUNGS. TRANSER FLUSHD-SO-E. 1	व्या का उठि ह	345	,	256.74	*arraces	97-98	u)	8	\$ \$ £	8 34794-178	29106 29106	SALANAWE LOS	the see	NA STEE	ěţ	HALLENCE UR	ANC SOCKET	800180,000150	1841000	*	440,004	4	ž.	N.	NA PA		SHADO ASS IN SHADOT
Di	FLUSH LINE TO SLUDGE TRANSFER PLMP 80-P- 701A/B DISCHARGE HEADER	9 OF 10	UPVC 15	-	Zans	MARKUAL	35-40	6	8	7.5 BM	BALL VALVE B'	BV-L2 BA	BALL VALVE UF	PVC	PTFE		STEM UPVG UP	UPVC SOCKET	T 8CH80, 235PSI	235PSI NA		MANULAL	5	NA NA	¥	*		¥
gitall	SERVICE WATER HEADER ISOLATION TO PLUSH LINES	3 OF 10	UPVC 15	-	ZEIOS	MANUAL	35-40	v3	99	7.5 8.4	BALL VALVE B	BV-L2 BA	BALL VALVE UF	Pvc PTI	PTFE		STEM: UPVC UP	JPVC SOCKET	T SCH80, 235P98	235PSI NA		MANUAL	2	NA NA	¥	AN AN		¥
y sigi	SERVICE WATER INLET TO POLY ELECTROLYTE DOSING TANK 80-TK-801A	9 OF 10	UPVC 28	-	SUEZ	MANUAL	35-40	vi .	99	7.5 BA	BALL VALVE B'	BV-L2 BA	BALL VALVE UF	PVC PT	PTFE		STEM UPVC UP	UPVC SOCKET	T SCH60, 235PSI	235PSI NA		MARLIAL	2	NA NA	2	AN AN		7
ned I	SERVICE WATER INLET TO POLY ELECTROLYTE DOSING TANK 80-TK-801B	9 OF 10	UPVC 25	-	ZENS	MANUAL	35-40	6	95	7.5 BA	BALL VALVE B	BV-L2 BA	BALL VALVE UF	PVC PT	PTFE		STEM UPVC UP	UPVC SOCKET	T SCH00, 235PSI	Z35PSI NA		MANUAL	5	NA NA	¥	4 4	4	- N
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Page 8

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		(3)	U	0	n																					CUSTOMER DOCU, No.	6038727-PK-01			
		D)	n N	5	. 1												۰	ALVE LIST	(BOP)							DOCU, No.	6038727-PK-01 6038727-AP-01 RevB			
																										REFERENCE DOC.	6038/21-eP01 KRVB	d)	MAB	25-Jul-18
		Water	Technologie	ss & So	lution	S																				REV	PREPARED BY:	CHKD BY	APPVD BY	DATE
					-	_		_	8 8	ERATING	DESIGN	V CONDITION				L	MA	TERIAL OF CONSTRU	стюн						AC	TUATOR DATA	ACTUAT	OR ACCESSO	ORIES	
		0130	DESCRIPTION LOCATIO	SHEET			TITT CLIENTIN DOR S) PACKAG		Fa				100						DIAPHIGATE: PINDLE/SHAF /SPRING	BALL	VALVE PRESURE RATING	MATCHING FLANGE DRLLIN STD			MATI TYPE		OPENICLOSE FEEDBAC	TRAVEL STOP		
	1		POLY ELECTROLYTE YOSING TANK 80-TK-80:A RAIN	9 OF 10		-	svez	MANUAL			S	7.5	BALL VALVE		BALL VALVE	CPVC		42	STEM: CPVC	CPVC	CH80, 235PSI	Ā	MANUAL	2	2	ž	2	5	¥	MI
		7,000	POLY ELECTROLYTE OCSING TANK 80-TK-801E RAIN	9 OF 10			suez	MANUAL			8	7,5	BALL VALVI	0000	BALL VALVE	cevic	PTFE	2	STEM: CPVC	CPVC	CH80, 235PSI	N	MANUAL	¥	2	ž	2	2	2	볼
			POLY ELECTROLYTE SOSING TANK 80-TK-801/ SOLATION	9 OF 10		-	SUEZ	MANUAL			8	7	BALL VALW	1007	BALL VALVE	CPVC	PTFE	¥.	STEM: CPVC	CPVC	CH60, 235PSI	¥.	MANUAL	¥	2	¥2	3	ž	2	M
			POLY ELECTROLYTE SOSING TANK 80-TK-801E SOLATION	9 OF 10		-	SUEZ	MANUAL			8	1	BALL VALVI	9789	BALL VALVE	CPVC		Ą.	STEM CPVC	CPVC	CH80, 235PSI	ž	MANJAL	ž	2	ž	<u> </u>	ž	2	¥
	-		POLY ELECTROLYTE XOSING PUMP XISCHARGE HEADER	10		-	SUEZ	MANUAL			95	7	BALL VALVA		BALL VALVE	CPVC		A50	STEM: CPVC	CPVC	CH80, 235PSI	¥2	MANUAL	ž	2	ş	\$	\$.	NA	¥
			POLY ELECTROLYTE XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX		100	-	SUEZ	MANUAL			8	۲	CHECK VAL		CHECK VALVE	CPVC		AN.	¥	1 10000	CH80, 235 PSI	2	BALL CHECK	ž	2	NA.	<u> </u>	ğ	3	逆
		V 2	COMPRESSED AIR RECEIVER OUTLET	10 OF 10 (-	suez	MANUAL			8	10.5	BALL VALM		BALL VALVE	CF8M	PTFE	Ā	STEM SS316	CF8M	#00	NA	MANIJAE	2	2	NA A	½	ž	ž	ž
			NR DRIER INLET	10 OF 10 C		-	suez	MARINE			8	10.5	BALL VALVI	200	BALL VALVE	CF8M	PTFE	NA	STEM: 85316	CF8M	#0D	NA	MANUAL	\$	ž	NA A	¥	5	ž	¥
			NR DRIER OUTLET	10 OF 10 (2000	-	2308	MANUAL			95	10.5	BALL VALV		BALL VALVE	CF8M	PTFE	\$	STEM SS316	CF8M	#00	¥.	MANUAL	Ā	2	¥2	3	ş	<u> </u>	¥
			AR DRIER BYPASS	10 OF 10 (SUEZ	MANUAL			95	10.5	BALL VALV.		BALL VALVE	CFBM	PTFE	¥	STEM: SS316	CF8M	200	ş	MANUAL	ž	2	W.	<u> </u>	ş	2	뒫
			TO INSTRUMENT WAMFOLDS	10 OF 10 (SUEZ	MAREJAL			25	10.5	BALL VALV		BALL VALVE	CF8M	PTFE	¥.	STEM: SS316	CF8M	ODer	NA NA	MANUAL	5	<u>\$</u>	VV.	<u>ş</u>	<u>ş</u>	2	ž
			SPARE VALVES			vi	SUEZ	MANUAL			15	7.5	BALL VALV		BALL VALVE	UPVC		Ā	STEM; UPVC	UPVC	ICH80, 235PSI	Ą	MANUAL	2	2	4 Z	2	\$	½	¥
			SPARE VALVES			4	SUEZ	MARILIA			15	7.5	BALL VALV	56	BALL VALVE	UPVC		Ā	STEM: UPVC	UPVC	KCH80, 235PSI	NA	MANUAL	2	2	<u>\$</u>	¥	¥.	5	¥
			SPARE VALVES				SUEZ	MANUAL			22	7.5	BALL VALV		BALL VALVE	OPVC		ž	STEM: CPVC	CPVC	3CH80, 235PSI	¥	MANUAL	ğ	2	NA.	\$	\$	2	ijΨ
		ДΙ				-																								
	_		Manul, PSV, PRV etc.) univalves are not covered in 1	ider equipment this valve list	wendor packs	age are not cov	ered in this valve	s list(eg. dosin	ng skids, ejech	Aguassa Jo	& blowers as	s shown in PIC	D) . Details for t	he same will be taken.	from repective equi	sment vendor														

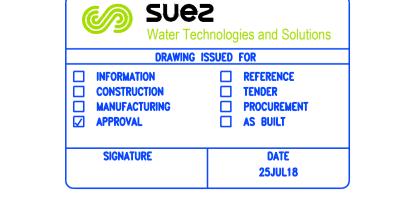
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PIPING & INSTRUMENT DIAGRAM IIT HYDERABAD 650 KLD STP-1





REVISION

								TOLERANCES (unless noted	
								DECIMALS	ANGLES	l
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	В	REVISED PER CLIENT COMMENTS		KJ	KR	SK	26 Jul 18	.XX	FRAC	
M	Α	INITIAL RELEASE		KJ	KR	SK	24 Jul 18			
	REV	DESCRIPTION	ECO	DWN	APPR	APPR	DATE		<u></u>	l
	OF SUEZ	ETARY AND CONFIDENTIAL: THIS DRAWING AND ALL INFORMATION AND KNOWLEDGE CONTAINED OR REFER AND AS SUCH ARE INSTRUMENTS OF SERVICE FOR USE SOLELY WITH RESPECT TO THIS PROJECT. THESE INSTRUI SED OR USED OTHERWISE IN WHOLE OR IN PART, WITHOUT PRIOR WRITTEN AGREEMENT BY SUEZ AND MUST BE	ments of servic	E SHALL N	OT BE REPR	ODUCED, 1	ransmitted,	+		ĺ

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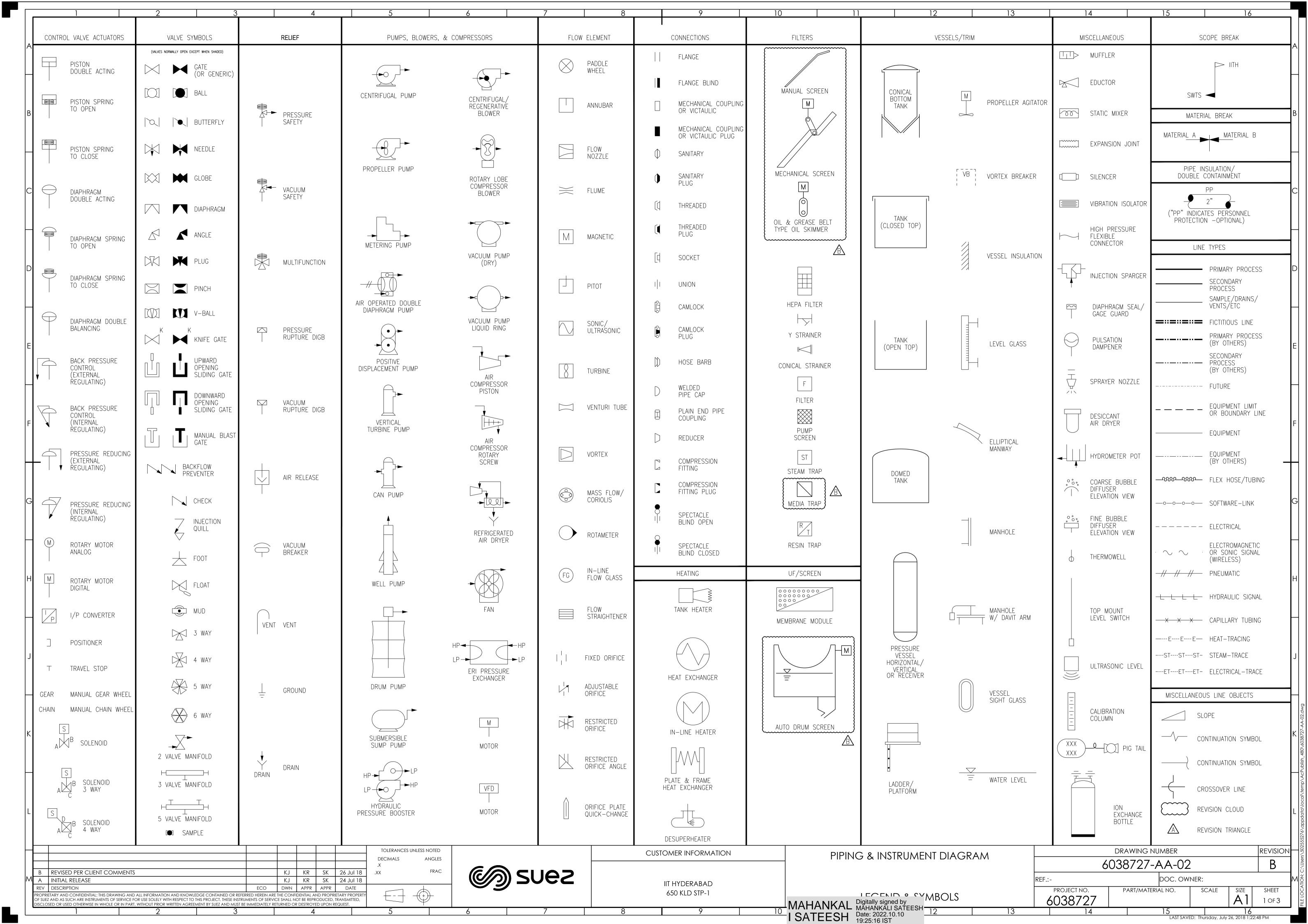
TECHNOLOGY PROVIDER

CUSTOMER INFORMATION Suez (Signature) IIT HYDERABAD 650 KLD STP-1

DRAWING NUMBER PIPING & INSTRUMENT DIAGRAM 6038727-AA-01 PROJECT NO.

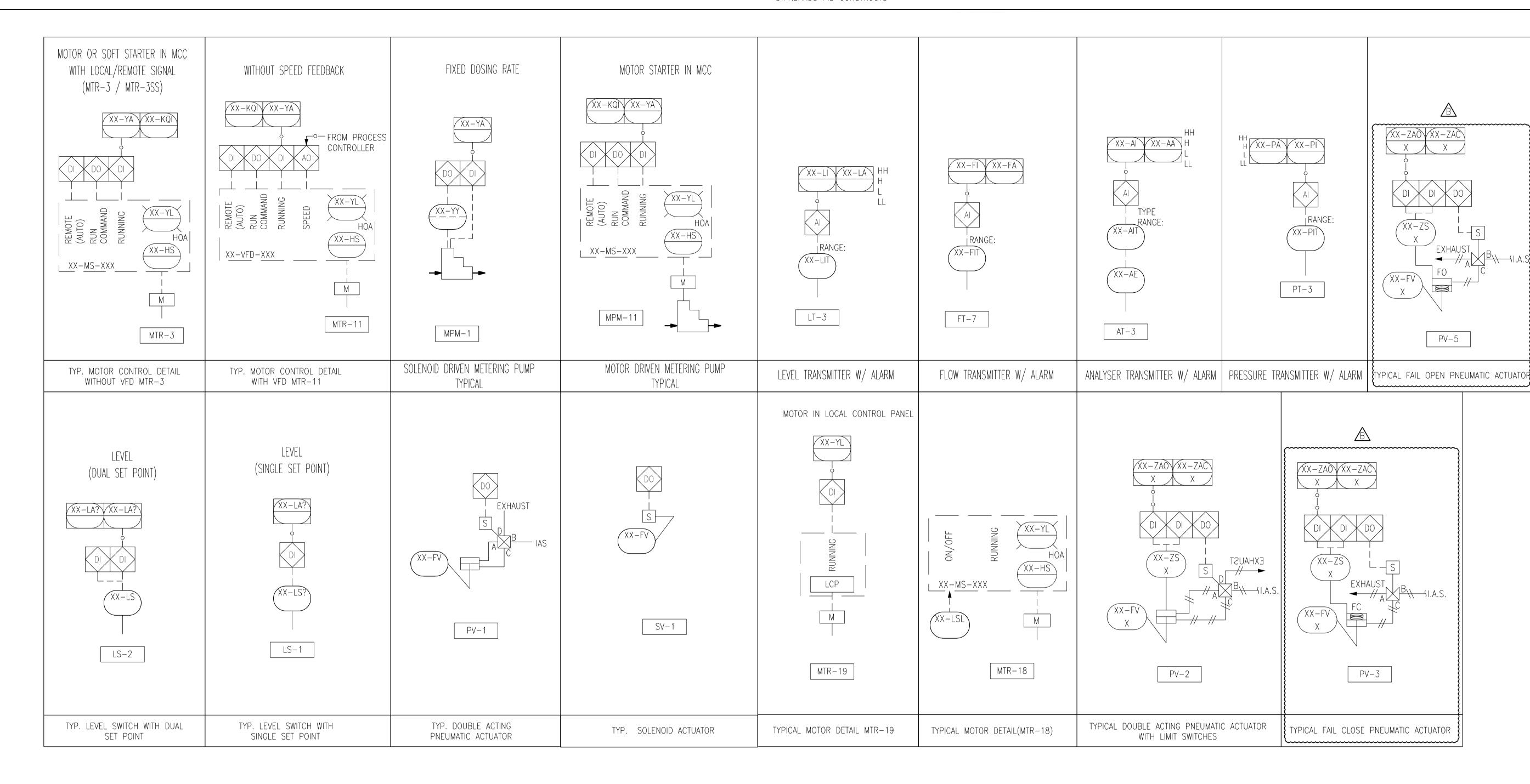
PART/MATERIAL NO. 6038727

DOC. OWNER:



1 2 3 4 5 6 7	8	9 10	11	12 13	14	15 16
A INSTRUMENT FUNCTIONS			INSTRUMENT SYMBOLS	EQUIPMENT / INSTRUMENT TAGGII	NG SCHEME	EQUIPMENT ABBREVIATIONS
SUCCEEDING LETTER A C E G I L Q R S T Y	V,Z		PANEL MOUNT	11-XXX-222A-3	/TRAIN	AB ABSORBER AC AIR COMPRESSOR ACF ACTIVATED CARBON FILTER
			INSTRUMENT	IDENTIFIER (IF MULTIPLE INSTE	NECESSARY) RUMENT	AER AERATOR ARV AIR RELEASE VALVE
		CDEOLA	FIELD MOUNT OR PRIMARY	IDENTIFIER (IF EQUIPMENT NU INSTRUMENT LO	MBER/	B BLOWER BF BAG FILTER C CENTRIFUGE, CYCLONE
TER TER TOT),	H H	SPECIAL IDENTIFICATION	INSTRUMENT	EQUIPMENT ABE	JNCTION	CD CONDENSER CDM CATALYTIC DESTRUCT MODULE
ALARM MITCH MARY EL MA	VE DL ELEME		BEHIND PANEL INSTRUMENT	PROCESS AREA LINE IDENTIFIER		CF CARTRIDGE FILTER CH CHILLER CHL CHLORINATOR
RST LETTE RST LETTE RST LETTE WEARING SOR FAUL SOR FAUL SOR FAUL SOR FAUL CATING CC CATING CC CATING TR SOR FAUL CATING TR SOR FAUL SOR FAUL CATING TR SOR FAUL CATIN	SOL VAL		DILOT LIGHT	LINE CLASS SP	ECIFICATION	CIP CLEAN-IN-PLACE CL CLARIFIER CONV CONVEYOR
FIRS ALARM HIGH—HIGH—HIGH—SENSO SENSO SENS	CONVE		PILOT LIGHT	-XXPPPA-SNN		CONV CONVEYOR CORS CATALYTIC OXYGEN REMOVAL SYSTEM CP CONTROL PANEL
			PLC FUNCTION WITH DISPLAY	SERVICE DIFFER PR CODE (OPT MATERIAL CODE	IONAL)	CR CRYSTALIZER CS CHEMICAL SYSTEM CT COOLING TOWER, CARBON TOWER
		SYMBOL DESCRIPTION		PIPE SIZE		CV CHECK VALVE DC DISTRIBUTION CHAMBER
A ANALYSIS AA AAHH AAH AAL AALL AAT AC AIC AE AI AR AS ASHH ASH ASL ASLL AT AIT AY	Y ACV AV AZ		PLC FUNCTION, BLIND	MATERIAL CODE MATERIAL		DO DISSOLVED OXYGEN DMF DUAL MEDIA FILTER DR AIR DRIER
B BURNER, COMBUSTION			PLC	CC CONCRETE METALLIC AUSTENITIC STA	AINII ECC CTEEI	E EDUCTOR EAF ENTRAPPED AIR FLOATATION
C USER'S CHOICE			INPUT/OUTPUT	AUST AUSTENITIC STA AY ALLOY 20 CI CAST IRON	MINLEOO SIEEL	ED ELECTRODIALYSIS EDI ELECTRODEIONIZATION EDR ELECTRODIALYSIS REVERSAL
D USER'S CHOICE			DI _ DISCRETE INPUT DO _ DISCRETE OUTPUT	,	RUBBER LINED	EV EVAPORATOR F FILTER FAN FAN
E VOLTAGE EAHH EAH EAH EAL EALL EAT EC EIC EE EI EL ER ES ESHH ESH ESL ESLL ET EIT EY F FLOW FA FAHH FAH FAL FALL FAT FC FIC FE FG FI FL FQI FR FS FSHH FSH FSL FSLL FT FIT FY		FO ORIFICE PLATE	AI _ ANALOG INPUT AO _ ANALOG OUTPUT	DL PVDF LINED DUPL DUPLEX STAINL	DN, CLASS B (MEDIUM)) ESS STEEL	FC FAIL CLOSE
	FY FFCV	OMITICE FEATE	FUNCTIONS	HC HASTELLOY C PL POLYPROPYLEN	E LINED	FO FAIL OPEN FL FAIL LAST FP FILTER PRESS
G USER'S CHOICE			UNDEFINED INTERLOCK	SA 304, 304L STA SB AL-6XN SC 254-SMO	IINLESS STEEL	GF GRAVITY FILTER H HEATER
F H HAND HA HA HC HIC HL HS	HCV HV	HMS PUSHBUTTON SWITCH	LOGIC	SD 2205 SE 2507		HF HEPA FILTER HMI HUMAN-MACHINE INTERFACE HOA HAND-OFF-AUTO
I CURRENT (ELECTRICAL) IA IAHH IAH IAL IALL IAT IC IIC IE II IL IR IS ISHH ISH ISL ISLL IT IIT IY	IY IZ		\summing	SF 904L SG ZERON 100 SS 316, 316L STA	JINLESS STEEL	HPB HYDRAULIC PRESSURE BOOSTER HV HAND OPERATED VALVE
JA JSHH JAH JAL JAL JAT JC JIC JE JI JL JQI JR JS JSHH JSH JSL JSLL JT LIT JY	JZ JZ		CONTINUATION ARROWS	SUAU SUPER AUSTEN TL PTFE LINED PLASTIC	ITIC STAINLESS STEEL	HX HEAT EXCHANGER IAS INSTRUMENT AIR SUPPLY IQ INJECTION QUILL, INJECTION CHECKVALVE
K TIME SCHEDULE KA KI KI KI KS KY	Y		SERVICE	CP CPVC FR FIBER REINFOR	CED PLASTIC	IX SOFTENER LS LIME SOFTENER M MOTOR
KQAKQAHH KQAH KQAL KQALL KQI KQL KQL KQR KQS KQSHH KQSH KQSL KQSLL			FLOW:	PE POLYETHYLENE PP POLYPROPYLEN PV	Г	MBR MEMBRANE BIOREACTOR MCC MOTOR CONTROL CENTER
L LEVEL LA LAHH LAH LAL LALL LAT LC LIC LE LG LI LL LR LS LSHH LSH LSL LSLL LT LIT LY	Y LCV LV		PRESSURE: TEMP: FLOW-SINGLE DIRECTION	PV PVC PD PVDF PT PTFE		MD MEMBRANE DEGASIFIER MF MICROFILTRATION ML MUFFLER, SILENCER
M MOTOR CONTROL MS MS			SERVICE	PR CODE CLASS		MMF MULTIMEDIA FILTER MX MIXER
H O USER'S CHOICE			A SHEET X FLOW:	METALLIC 125 ANSI CLASS 125		NF NANOFILTRATION OC OXYGEN CONCENTRATOR ORP OXYGEN—REDUCTION POTENTIAL
P PRESSURE OR VACUUM PA PAHH PAH PAL PALL PAT PC PIC PI PL PR PS PSHH PSH PSL PSLL PT PIT PIT	IT PY PV	PSV PRESSURE SAFETY VALVE	PRESSURE: TEMP:	150 ANSI CLASS 150 300 ANSI CLASS 300		OZ OZONATOR OZG OZONE GENERATOR
PD PRESSURE DIFFERENTIAL PDAPDAHH PDAH PDAL PDALL PDAT PDC PDIC PDI PDL PDR PDS PDSHH PDSH PDSL PDSLL PDT PDI PDN		THEOGOTIE OF WELL WILLE	FLOW-BOTH DIRECTIONS	400 ANSI CLASS 400 600 ANSI CLASS 600 900 ANSI CLASS 900		P PUMP PD PULSATION DAMPENER PLC PROGRAMMABLE LOGIC CONTROLLER
Q QUANTITY QQI			TRANSFER ARROW	PLASTIC O40 SCHEDULE 40		PSE RUPTURE DISC PUV MULTIFUNCTION VALVE PX PRESSURE EXCHANGER J
R RADIATION			TO SAME SHEET SERVICE	080 SCHEDULE 80 120 SCHEDULE 120 D64 SDR 64		RO REVERSE OSMOSIS RP ROTARY PRESS
S SPEED OR FREQUENCY SA SAHH SAH SAL SALL SAT SC SIC SE SI SL SR SS SSHH SSH SSL SSLL ST SIT SY	Y SCV SZ	GB SPEED CONTROL STATION	TLOW: PRESSURE:	D41 SDR 41 D32 SDR 32.5		RT RESIN TRAP SC SCRUBBER SCP SCRAPER
T TEMPERATURE TA TAHH TAH TAL TALL TAT TC TIC TE TI TL TR TS TSHH TSH TSL TSLL TT TIT TY	Y TCV TV TZ	TW THERMOWELL	TEMP: ELECTRICAL TRANSFER ARROW	D26 SDR 26 D21 SDR 21 D17 SDR 17		SCR SCREEN SFT SOFTENER
K U MULTI-VARIABLE			TO DIFFERENT PID DOCUMENT	D13 SDR 13.5 <u>MULTIPLE</u>		GBM GBIMMER SM STATIC MIXER, INLINE MIXER ST STEAM TRAP
V VIBRATION OR MECH. ANALYSIS VA VAHH VAH VAT VE VI VL VR VS VSHH VSH VT VIT VY			OFD//OF	P06 PN6 P10 PN10		STK MEMBRANE STACK (ED,EDR, EDI, E—CELL) STR STRAINER SV SAMPLE VALVE
	Y WCV WV WZ		SERVICE X SHEET X	P16 PN16 P20 PN20 P50 PN50		SV SAMPLE VALVE TK TANK TOC TOTAL ORGANIC CARBON
L Y EVENT, STATE OR PRESENCE YA YI YI YL YR YS			FLOW: PRESSURE: TEMP:	P68 PN68 P100 PN100		TRB TURBINE UF ULTRAFILTRATION UPS UNINTERRUPTIBLE POWER SUPPLY
Z POSITION OR DIMENSION ZA ZAO=OPEN ZAC=CLOSE ZAT ZC ZIC ZE ZG ZI ZL ZR ZS ZSO=OPEN ZSC=CLOSE ZT ZIT ZY	Y ZCV ZV ZZ		ELECTRICAL TRANSFER ARROW TO SAME PID DOCUMENT	A00 ATMOSPHERIC VACUUM		UV ULTRAVIOLET IRRADIATOR VB VACUUM BREAKER
TOLERANCES UNLESS NOTED DECIMALS ANGLES		TOMER INFORMATION	PIPING & INSTRU	MENT DIAGRAM		DRAWING NUMBER REVISION
B REVISED PER CLIENT COMMENTS KJ KR SK 26 Jul 18 KJ KR SK 24 Jul 18 REV DESCRIPTION ECO DWN APPR APPR DATE **TOLES** **TOLES**	2			 - F	REF.:-	DOC. OWNER:
REV DESCRIPTION ECO DWN APPR APPR DATE PROPRIETARY AND CONFIDENTIAL: THIS DRAWING AND ALL INFORMATION AND KNOWLEDGE CONTAINED OR REFERRED HEREIN ARE THE CONFIDENTIAL AND PROPRIETARY PROPERTY OF SUEZ AND AS SUCH ARE INSTRUMENTS OF SERVICE FOR USE SOLELY WITH RESPECT TO THIS PROJECT. THESE INSTRUMENTS OF SERVICE SHALL NOT BE REPRODUCED, TRANSMITTED, DISCLOSED OR USED OTHERWISE IN WHOLE OR IN PART, WITHOUT PRIOR WRITTEN AGREEMENT BY SUEZ AND MUST BE IMMEDIATELY RETURNED OR DESTROYED UPON REQUEST.		IIT HYDERABAD 650 KLD STP-1	I ECENID O I AHANKAL Digitally signed by MAHANKALI SATE	CYMBOLS	PROJECT NO. 6038727	PART/MATERIAL NO. SCALE SIZE SHEET A 1 2 OF 3
1 2 3 4 5 6 7	8	9 10 1V	SATEESH Date: 2022.10.10 19:25:16 IST	12 13	14	15 16 LAST SAVED: Thursday, July 26, 2018 1:22:48 PM





PROCESS	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	CLASSIFICATION
FIVOCESS	AILLA	CLASSII ICATION

03 - INFLUENT COLLECTION, PUMPING & TRANSFER

08 - PRETREATMENT SYSTEM

15 - BIOTREATMENT CHEMICALS

16 - BIOLOGICAL SYSTEM 20 - MBR SYSTEM

23 - MBR CLEANING CHEMICALS

71 – SOFTENER 80 – SLUDGE HANDLING SYSTEM

90 – COMPRESSED AIR SYSTEM 92 – SERVICE WATER SYSTEM

								tolerances u	JNLESS NOTED	
								DECIMALS	ANGLES	
								.X		
	В	REVISED PER CLIENT COMMENTS		KJ	KR	SK	26 Jul 18	.XX	FRAC	
Λ	Α	INITIAL RELEASE		KJ	KR	SK	24 Jul 18			
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CUSTOMER INFORMATION
IIT HYDERABAD
650 KLD STP-1

PIPING & INSTRUMENT DIAGRAM	

	DRAWING NUM	BER			REVISION
6	038727-A	A-02			В
Ε F.: -	DC	OC. OWI	NER:		
PROJECT NO.	PART/MATERIAL 1	NO.	SCALE	SIZE	SHEET
6038727				A	3 OF 3

MAHANKAL Digitally signed by MAHANKALI SATEESH Date: 2022.10.10
1 SATEESH Date: 2022.10.10
19:25:16 IST

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