GOVERNMENT OF ANDHRA PRADESH
RURAL WATER SUPPLY & SANITATION DEPARTMENT

Memo. No. AEE / DEE / CE -IV / O&M of CPWS Schemes / 2024, Dt.05.06.2024

Sub: RWS&S Dept-O&M of CPWS Schemes –Modified Detailed Model Estimate of O&M of CPWS Scheme - For preparation of O&M Detailed Estimates for implementation of uniform procedure – Communicated - Reg.

Ref: 1.T/o Circular memo. No. AEE-I/DEE-I/ State plan / O&M Plans/2013, dated:22.04.2013.
2.Minutes of the meeting on O&M of Rural Water Supply Scheme held by the Chief Secretary to Govt, PR&RD on Dt.28.12.2023.
3.Minutes of the meeting of the Committee of Chief Engineers, held on dated:24.05.2024.

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Vide reference 2nd cited, as per the minutes of the meeting on O&M of Rural Water supply Schemes held by the Special Chief Secretary to the Government, PR&RD and observations of QA & QC suggestions & recommendations of SEs/ DREOs, representation of the Water supply contractors association and Contractors , vide ref 3rd cited the Technical committee meeting of Chief Engineers headed by the Engineer - In - Chief has finalized the guide lines for preparation of **Modified Detailed Model Estimates on O&M of CPWS Schemes for uniform procedure**.

In view of the above, in continuation of the reference 1st cited, the modified detailed model estimates are communicated to all the Superintending Engineers /Member Secretary, SSSWSP Board, District RWS Engineering Officers and Executive Engineers, RWS&S in the State and instructed to implement uniform procedure for preparation of O&M estimates, Calling of tenders and entrustment of O&M works for all CPWS Schemes (inclusive of Satya sai water supply projects). Further, they are instructed to prepare O&M Manual for each scheme i.e., layout drawing with location of Valves, bends etc., pump sets description with all details and periodical maintenance details as prescribed by manufactures for calling tenders.

The Superintending Engineers, RWS&S /Member Secretary, SSSWSP Board, District RWS Engineering Officers and Executive Engineers, RWS&S in the State are informed that these are for guidance and they are requested to prepare the documents for each scheme based on the requirement, local and site conditions.

All the Superintending Engineers, RWS&S /Member Secretary, SSSWSP Board, District RWS Engineering Officers and Executive Engineers, RWS&S in the State are requested to follow the guide lines scrupulously

Encl:- 1.Soft & Hard copies of
Modified Detailed Model Estimates
2. 3rd Reference

Sd/- R.V.Krishna Reddy
Engineer-in-Chief,
RWS&S, Vijayawada.

To,
All the Superintending Engineers, DREOs and Executive Engineers, RWS&S in the State.
The Member Secretary, SSSWSP Board, East Godavari, West Godavari and Ananthapuram Districts.
Copy to the Chief Engineer -II, Chief Engineer –III & Chief Engineer & PD, APDWSC, RWS&S, Vijayawada for favour of information.
Copy Submitted to the Commissioner, PR&RD, Tadepalli for favour of information.

//True Copy//

5/6/24
Deputy Executive Engineer
o/o the Engineer -In- Chief, RWS&S, Vijayawada.

5/6/24

Modified Detailed Model Estimate

Operation & Maintenance of C.P.W.S Scheme

				Est.Cost Rs.			lakhs
S.No.	Description of the item	No	Qty	Unit	Rate	Per	Amount
I	Operation and Maintenance of Multi Village Scheme for Supply of potable (chlorinated) drinking water at the specified quantity as per drinking water quality standards to all the habitations mentioned in the schedule through the existing network system comprising of infrastructure viz. RSF, OHBR, , Service Reservoirs i.e. OHSRs, GLSRs etc., including all operating expenses like wages to the system staff and other amenities applicable as per the labour act, Mobility/transportation facilities etc., for the designated qualified Pump operators, Electricians, Fitters, Helpers, Watchmen etc. for carrying out of all operations involved in drawing of raw water from source, treatment and supply of drinking water as per the guidelines of CPHEEO manual / Department at the rate of ----------LPCD with relevant IS specifications wherever applicable and with highest quality standards. The scope of work also includes routine, periodic, breakdown and preventive maintenance, staffing and engaging manpower under Operation & Maintenance. The turbidity of supplied water shall be maintained below 1 NTU and should not exceed 5NTU by mixing alum in raw water duly arriving the Alum dosage by jar test. Disinfection with Bleaching Powder / Liquid Chlorine / Gas Chlorination shall be taken up to maintain Residual Chlorine not less than 0.2ppm in pipe lines at last FHTC in the tail end habitations. The scope of work includes taking up of all other incidental activities pertaining to the Operation and Maintenance of MVS and to follow all standard procedures by the agency as directed by the Employer / Engineer of the department. The Rate per KL is applicable to supply potable (chlorinated) drinking water by engaging system staff for Operation & Maintenance of said MVS (The rate is excluding cost of consumables, power consumption charges, Repairs and Renewals and GST).**For all 0 to 5 MLD, 5 to 25 MLD, 25 to 50 MLD , 50 to 100 MLD and Sources having large dia High yielding tube wells (Annexure is enclosed for the System staff.)**						
A	(Population x LPCD x365/1000) from **01.04.2024 to 31.03.2025**	1		KL		1KL	
B.	Supply, delivery and staking of Chlorine Gas as per I.S 646:1986 in cylinders including cost of material, conveyance , stacking at the location specified by the Department and all taxes, duties and levies etc., complete. **(Gas Chlorination rate may be adopted as per District Level Purchase Committee approved rate / Through Tenders.)**						
a	No of Gas Chlorination 1000kg Cylinders - '((Present Population- x LPCD x 365 days x 2 mg/lt) / 10^6) - kgs - say kgs/ 1000 - Nos - say nos			Nos		No	
	Extra 10% dosage @ intermediate pumphouse - Gas Chlorination 1000kg Cylinders - Nos, if necessary to maintain residual chlorine @ 0.20 PPM at tail end			Nos		No	
	OR						

S.No.	Description of the item	No	Qty	Unit	Rate	Per	Amount
b	Supply, delivery and staking of Sodium Hypo Chlorite Solution (Grade-I)) Available Chlorine (as Cl-) Present Mass by Volume (Liquid Chlorin) as per I.S 11673-1992 including cost of material, conveyance , stacking at the location specified by the Department and all taxes, duties and levies etc., complete. (Liquid Chlorin may be adopted as per District Level Purchase Committee approved rate) Dosage: 40ml /1000Lits						
	Population x LPCD x 365 days x 40 ml/1000) / 10^3) = - Lits			Lt		Lt	
	OR						
c	Supply, delivery and staking of Bleaching Powder as per I.S 1065-1989, Table - 1, Grade - I, including cost of material, conveyance , stacking at the location specified by the Department and all taxes, duties and levies etc., complete. (Bleaching powder may be adopted as per District Level Purchase Committee approved rate) (Available Chlorine percent by mass 34%)						
	Population x LPCD x 365 days x 4 mg/lt) / 10^6) = - kgs						
II	Supply, delivery and staking of Alumino-Ferric **(ALUM)** as per I.S 299:2012 including cost of material, conveyance , stacking at the location specified by the Department and all taxes, duties and levies etc., complete. **(Alum rate may be adopted as per District Level Purchase Committee approved rate)(Dosage of Alum shall be based on the Jar Test)**						
a	**Normal days**: ((Present Population -) x LPCD x (5mg/lt to 20 mg/lt) x 245 **days** / 1000000) = kgs say kgs **(As per site condition)**			**Kgs**		**Kg**	
b	**During rainy season**: Per day KL= ((Present Population -) x LPCD x 50 mg/lt) x 120 **days** / 1000000) = kgs say kgs			**Kgs**		**Kg**	
III	**Repairs and Renewals**						
	Repairs and Renewals shall be as per G.O.Rt.No.2290, Dt.20.12.2012 of PR& RD (RWS.I) Department.). Separate sub estimates should be prepared as per actuals based on the last three years experience. The provision for Repairs and Renewals should be within the limit of Max Amount shown in Annexure-II of GO MS No 2290. (Annexure -II enclosed)						
a	Repairs to the HDPE 6Kg/cm2 Pipe Line from 63 mm dia to 315 mm diameter.			**As per Approved Data**			
b	Repairs to the PVC 6Kg/cm2 Pipe Line from 63 mm dia to 280 mm diameter			**As per Approved Data**			
c	Repairs to A.C. Pressure pipe line (Mazza process) from 100 mm dia to 450 mm diameter			**As per Approved Data**			
d	Repairs to M.S pipe line from 80 mm dia to 450 mm dia			**As per Approved Data**			

S.No.	Description of the item	No	Qty	Unit	Rate	Per	Amount
e	Repairs of DI Sluice Valves (80 mm dia to 700mm & Air Valves (40 mm dia to - 100 mm dia)			As per Approved Data			
f	Rewinding of three phase motor from 3 HP to 15 HP			As per SSR Rates			
g	HT Yard maintanance (**with in the ceiling of R&R amount**)						
IV	**Annual maintenance of Gas Chlorination Plant** per year						
V	Labour charges for cleaning of sumps/GLBR including cleaning and removal of algae,calcinations,sludge, dirt deposition from side walls and bottom portion of the container by disinfection with bleaching powder with all necessary tools, plants labour charges and cost of disinfectant etc. **As per Approved Data (Annexure - VIII) Shall not exceed 4 times**						
	Sumps			sqm		sqm	
VI	Provision for Capacitors (as one time Provision, If required as per Field Conditions. **As per Approved Data ((Annexure - IX)**			KVAR		KVAR	
VII	Provision for Flow Meters as one time Provision If Required as per Field Conditions						
VIII	Provision for GST @ 18%						
IX	Provision for Nac @ 0.1 %						
X	Provision for QC @ 0.5 %						
XI	Provosion made towards **Lab Equipment, Lab Chemicals and filling of SS Tank** other items if any required as per field conditions and as per G.O. MS. No. 94, dated:01.07.2003.						
	Grand Total						

Note:

The rates for non SoR items shall be approved by District Level Purchase Committee /Quotation / Tenders as per departmental procedure in Vogue.

Sd/- R.V.Krishna Reddy
Engineer- In- Chief
RWS&S, Vijayawada

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5/6/24
Dy. Executive Engineer
o/o Engineer- In Chief, RWS&S, Vijayawada

5/6/24

Annexure for System Staff

S.No.	Description	Pump House/ IW/CW (Excluding in village / Minor / local Pumping Stations)	Treatment works and Clear water pump (head Works)	Raw / Clear water rising main	Gravity / Distribution mains
		Recommended as per site condition	Recommended as per site condition	Recommended as per site condition	Recommended as per site condition
1 a	Typical staff pattern (Up to 5MLD system) with conventional treatments				
	Supervisor (Min Q. ITI)	-	1	-	-
	Operators	2	2	-	
	Helpers / Fitters	1	1	1 (For every 10 KM)	Fitter - 1 , Helper - 1 (Upto 15 KM)
	Electrician (Min Q. ITI)	-	1	-	-
	Watchman	1	1	-	-
1 b	Typical staff pattern (for SSF/Micro filters) with conventional treatments (As per Recommended by SEs &DREOs)				
	Supervisor (Min Q. ITI)	-	-	-	-
	Operators	2	2	-	-
	Helpers / Fitters	1	-	1 (For every 10 KM)	Fitter - 1 , Helper - 1 (Upto 15 KM)
	Electrician (Min Q. ITI)	-	-	-	-
	Watchman	1	1	-	-
2	Typical staff pattern (For 5 - 25 MLD system) with conventional treatments				
	Supervisor (Min Q. ITI)	-	1	-	-
	Operators	2	2	-	-
	Helpers / Fitters	1	2+1(Lab)	1 (For every 10 KM)	Fitter - 1 , Helper - 1 (Upto 15 KM)
	Electrician (Min Q. ITI)	-	1	-	-
	Watchman	1	1	-	-

S.No.	Description	Pump House/ IW/CW (Excluding in village / Minor / local Pumping Stations)	Treatment works and Clear water pump (head Works)	Raw / Clear water rising main	Gravity / Distribution mains
		Recommended as per site condition	Recommended as per site condition	Recommended as per site condition	Recommended as per site condition
3	Typical staff pattern (For 25 - 50 MLD system) with conventional treatments				
	Supervisor (Min Q. LCE)	-	1	-	-
	Operators	2	6	-	-
	Helpers / Fitters	2	2+ 1 (Lab)	1 (For every 10 KM)	Fitter - 1 , Helper - 1 (Upto 15 KM)
	Electrician (min. Q. ITI)	-	1	-	-
	Watchman	1	1	-	-
4	Typical staff pattern (for 50 to 75MLD / 100 MLD system) with conventional treatments				
	Supervisor (Min Q. LCE)	-	1	-	-
	Operators	3	6	-	-
	Helper / Fitter	3	4+ 1 (Lab)	1 (For every 10 KM)	Fitter - 1 , Helper - 1 (Upto 15 KM)
	Electrician (min. Q. ITI)	-	1	-	-
	Mechanic (min. Q. ITI)	-	1	-	-
	Watch man	1	1	-	-

5. Recommended minimum Staffing pattern for O&M of source having large dia High Yielding Tube wells

S.No.	Description	Water Works		Pump House	Rising main	Service Reservoir	Gravity Main	Distribution
		Less Than 5 wells	5 Wells & above					
		Recommended as per site	Recommended as per site condition	Recommended as per site condition	Recommended as per site condition	Recommended as per site condition	Recommended as per site condition	Recommended as per site condition
1	Supervisor (Min Q. ITI)	-	1	1	-	-	-	-
2	Asst. Supervisor	-	-	-	-	-	-	-
3	Operators	-	-	1 for ever addl 5 wells/shift		-	-	
4	Helpers Fitters	-	-	1 for ever addl 5 wells/shift	1 (For every 10 KM)	-	-	Fitter - 1 Helper - 1 (Upto 15 KM)
5	Electrician / Mechanic	-	-	1 for ever addl 5 wells/shift	-	-	-	-
6	Chowkidar / Watchman	-	-	1 for 5 wells	-	-	-	-
7	Chemist	-	-	-	-	-	-	-
8	Lab. Assistant	-	-	1	-	-	-	-

Sd/- T.Gayatri Devi
Chief Engineer-IV,
RWS&S, Vijayawada

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5/6/24
Deputy Executive Engineer,
O/o.Engineer-In-Chief, RWS&S, Vijayawada.

5/6/24

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III. G.O.Ms.No: 2290, Dt: 20.12.2012, of PR&RD(RWS-I) Dept

ANNEXURE-II

Periodical Maintenance of CPWS Schemes

S. No	Period	For Scheme Costing Rs 0 Crores to 10 Crores	For Scheme Costing 10 Crores and upto 50 Crores	For Scheme Costing 50 Crores and upto 100 Crores	For Scheme Costing 100 Crores and above (600 crores)
1	For 5 years periodical Maintenance:- Replacement of All Valves inside Pump house, Spares of Transformer, Renewals of Media	0.3% of Project Cost + 6% Growth rate for every year (Max Rs 4.02 Lakhs)	0.15% of Project Cost + 6% Growth rate for every year (Max Rs 10.05 Lakhs)	0.10% of Project Cost + 6% Growth rate for every year (Max Rs 13.40 Lakhs)	0.10% of Project Cost + 6% Growth rate for every year (Max Rs 80.40 Lakhs)
2	For 10 years periodical Maintenance:- Replacement of Filter Medical Valves inside Pump house, Spares of Transformer and Air Valves in pipe line	0.4% of Project Cost + 6% Growth rate for every year (Max Rs 7.16 Lakhs)	0.20% of Project Cost + 6% Growth rate for every year (Max Rs 17.90 Lakhs)	0.20% of Project Cost + 6% Growth rate for every year (Max Rs 35.80 Lakhs)	0.15% of Project Cost + 6% Growth rate for every year (Max Rs 161.10 Lakhs)
3	For 15 years periodical Maintenance:- Replacement of Filter Media, Valves inside Pump house, Spares of Transformer and pump sets	1.00% of Project Cost + 6% Growth rate for every year (Max Rs 24.00 Lakhs)	1.00% of Project Cost + 6% Growth rate for every year (Max Rs 120.00 Lakhs)	1.00% of Project Cost + 6% Growth rate for every year (Max Rs 240.00 Lakhs)	1.00% of Project Cost + 6% Growth rate for every year (Max Rs 1440.00 Lakhs)

The above amounts are indicative and provision should be made as per actual requirements.

VIKAS RAJ
SECRETARY TO GOVERNMENT

	Sub-estimate: Repairs and Renewls					
	(ssr 2023-24)					
SNo	Description of Materials	Qty	unit	Rate	Per	Amount
1	Manufacture, Supply, & Delivery of HDPE Pipes conforming to IS 4984 - 2016 including transportation to anywhere in A.P, excluding all taxes (Supply up to 90 mm dia. in coil & above 90 mm dia. straight length.) (As per SOR & Monthly approved Resin Rates)					
	63mm dia HDPE Pipes 6 Kg/Cm2		Rm		Rmt	
	75mm dia HDPE Pipes 6 Kg/Cm2		Rm		Rmt	
	90mm dia HDPE Pipes 6 Kg/Cm2		Rm		Rmt	
	110mm dia HDPE Pipes 6 Kg/Cm2		Rm		Rmt	
	125mm dia HDPE Pipes 6 Kg/Cm2		Rm		Rmt	
	140mm dia HDPE Pipes 6 Kg/Cm2		Rm		Rmt	
	160mm dia HDPE Pipes 6 Kg/Cm2		Rm		Rmt	
	180mm dia HDPE Pipes 6 Kg/Cm2		Rm		Rmt	
	200mm dia HDPE Pipes 6 Kg/Cm2		Rm		Rmt	
	225mm dia HDPE Pipes 6 Kg/Cm2		Rm		Rmt	
	250mm dia HDPE Pipes 6 Kg/Cm2		Rm		Rmt	
	280mm dia HDPE Pipes 6 Kg/Cm2		Rm		Rmt	
	315mm dia HDPE Pipes 6 Kg/Cm2		Rm		Rmt	
2	**Manufacture, Supply and Delivery of Unplasticised PVCs Pipes for potable water supplies conforming to IS : 4985/2000 (3rd revision) with bell ends (Socket) as per specification in light Grey/Natural Ivory Grey/ Any other Color (except White) inclusive of transportation to the sub-divisional stores anywhere in AP excluding all taxes. (As per SOR & Monthly approved Resin Rates)**					
	63mm dia PVC Pipes 6 Kg/Cm2		Rm		Rmt	
	75mm dia PVC Pipes 6 Kg/Cm2		Rm		Rmt	
	90mm dia PVC Pipes 6 Kg/Cm2		Rm		Rmt	
	110mm dia PVC Pipes 6 Kg/Cm2		Rm		Rmt	
	125mm dia PVC Pipes 6 Kg/Cm2		Rm		Rmt	
	140mm dia PVC Pipes 6 Kg/Cm2		Rm		Rmt	
	160mm dia PVC Pipes 6 Kg/Cm2		Rm		Rmt	
	180mm dia PVC Pipes 6 Kg/Cm2		Rm		Rmt	

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	200mm dia PVC Pipes 6 Kg/Cm2		Rm		Rmt	
	225mm dia PVC Pipes 6 Kg/Cm2		Rm		Rmt	
	250mm dia PVC Pipes 6 Kg/Cm2		Rm		Rmt	
	280mm dia PVC Pipes 6 Kg/Cm2		Rm		Rmt	
3	**Manufacture, Supply of A.C. Pressure pipes (Mazza process) as per BIS No: 1592/2003 as amended from time to time duly marked with BIS mark, including cost of material, incidental handling, loading and packing charges, but exclusive of transportation, unloading, stacking at departmental stores, and excluding all taxes. The pipes shall be tested at factory premises confirming to IS Code 1592/2003. (As per SOR)**					
	80 mm AC pipe Class		Rm		Rmt	
	100 mm AC pipe Class		Rm		Rmt	
	125mm AC pipe Class -15		Rm		Rmt	
	150 mm AC pipe Class -15		Rm		Rmt	
	200 mm AC pipe Class -15		Rm		Rmt	
	250 mm AC pipe Class -15		Rm		Rmt	
	300 mm AC pipe Class -15		Rm		Rmt	
	350 mm AC pipe Class -15		Rm		Rmt	
	400 mm AC pipe Class -15		Rm		Rmt	
	450 mm AC pipe Class -15		Rm		Rmt	
4	**Manufacture, supply and delivery of MS pipes (As per Monthly Steel plate approved rate)**					
	80-6mm thick		Rm		Rmt	
	100-6mm thick		Rm		Rmt	
	125-6mm thick		Rm		Rmt	
	150-6mm thick		Rm		Rmt	
	200-6mm thick		Rm		Rmt	
	250-6mm thick		Rm		Rmt	
	300-6mm thick		Rm		Rmt	
	350-6mm thick		Rm		Rmt	
	400-6mm thick		Rm		Rmt	
	450-6mm thick		Rm		Rmt	
	500-8mm thick		Rm		Rmt	
	600-8mm thick		Rm		Rmt	

	700-8mm thick		Rm		Rmt	
	700-10mm thick		Rm		Rmt	
	800-8mm thick		Rm		Rmt	
	800-10mm thick		Rm		Rmt	
	800-12mm thick		Rm		Rmt	
	900-8mm thick		Rm		Rmt	
	900-10mm thick		Rm		Rmt	
	900-12mm thick		Rm		Rmt	
	1000-8mm thick		Rm		Rmt	
	1000-10mm thick		Rm		Rmt	
	1000-12mm thick		Rm		Rmt	
	1000-14mm thick		Rm		Rmt	
5	**Labour Charges for leakage in PVC Pipe line** of following diameter of different places including necessary excavation manually or by machinery, dewatering, removing of mud, cleaning of pipe nd leakage portion, cutting the pipe line, jointing & replacing using CID joint including CID Joint inclusive of using all required machinery, lobour, D.G set, fuel, operator, CID Joints, rubber rings, nuts bolts etc complete(but excluding cost of Pipe) **As per Annexure - I&II**					
	63mm dia PVC Pipes 6 Kg/Cm2		Nos		No	
	75mm dia PVC Pipes 6 Kg/Cm2		Nos		No	
	90mm dia PVC Pipes 6 Kg/Cm2		Nos		No	
	110mm dia PVC Pipes 6 Kg/Cm2		Nos		No	
	125mm dia PVC Pipes 6 Kg/Cm2		Nos		No	
	140mm dia PVC Pipes 6 Kg/Cm2		Nos		No	
	160mm dia PVC Pipes 6 Kg/Cm2		Nos		No	
	180mm dia PVC Pipes 6 Kg/Cm2		Nos		No	
	200mm dia PVC Pipes 6 Kg/Cm2		Nos		No	
	225mm dia PVC Pipes 6 Kg/Cm2		Nos		No	
	250mm dia PVC Pipes 6 Kg/Cm2		Nos		No	
	280mm dia PVC Pipes 6 Kg/Cm2		Nos		No	

6	**Labour Charges for leakage in HDPE Pipe line** of following diameter of different places including necessary excavation manually or by machinery, dewatering, removing of mud, cleaning of pipe nd leakage portion, cutting the pipe line, jointing & replacing using CID joint including CID Joint inclusive of using all required machinery, lobour, D.G set, fuel, operator, CID Joints, rubber rings, nuts bolts etc complete(but excluding cost of Pipe) **As per Annexure - I&II**					
	63mm dia HDPE Pipes 6 Kg/Cm2		Nos		No	
	75mm dia HDPE Pipes 6 Kg/Cm2		Nos		No	
	90mm dia HDPE Pipes 6 Kg/Cm2		Nos		No	
	110mm dia HDPE Pipes 6 Kg/Cm2		Nos		No	
	125mm dia HDPE Pipes 6 Kg/Cm2 V		Nos		No	
	140mm dia HDPE Pipes 6 Kg/Cm2		Nos		No	
	160mm dia HDPE Pipes 6 Kg/Cm2		Nos		No	
	180mm dia HDPE Pipes 6 Kg/Cm2		Nos		No	
	200mm dia HDPE Pipes 6 Kg/Cm2		Nos		No	
	225mm dia HDPE Pipes 6 Kg/Cm2		Nos		No	
	250mm dia HDPE Pipes 6 Kg/Cm2		Nos		No	
	280mm dia HDPE Pipes 6 Kg/Cm2		Nos		No	
7	**Labour Charges for leakage in AC Pipe line** of following diameter of different places including necessary excavation manually or by machinery, dewatering, removing of mud, cleaning of pipe nd leakage portion, cutting the pipe line& removing piece of pipe of pipe from trench with inclusive of mechanical deviced JCB, Hydralic Crane if necessary & lobours required with providing material such Turened CID joints with nut bolt, ribber rings etc., comp (Inc all material, but excluding cost of Pipe) **As per Annexure -III**					
	80 mm AC pipe Class -15		Nos		No	
	100 mm AC pipe Class -15		Nos		No	
	125mm AC pipe Class -15		Nos		No	
	150 mm AC pipe Class -15		Nos		No	
	200 mm AC pipe Class -15		Nos		No	
	250 mm AC pipe Class -15		Nos		No	
	300 mm AC pipe Class -15		Nos		No	
	350 mm AC pipe Class -15		Nos		No	
	400 mm AC pipe Class -15		Nos		No	
	450 mm AC pipe Class -15		Nos		No	

8	**Labour Charges for leakage in MS Pipeline** of following diameter of different places including necessary excavation manually or by machinery, dewatering, removing of mud, cleaning of pipe nd leakage portion, griding,cutting the pipe line or joint if necessary, incl welding rods duly approved by EIC of approiate numbe and size inclusive of excatvator, Hydralic Crane, D.G set, weldingmchine, Gas cutter with LPG cylinder, Oxygen cylnder, Grinding machine etc., with fuel, opertor & labour as requried (Inc all material, but excluding cost of Pipe) **As per Annexure - IV**					
	300-6mm thick		Nos		No	
	350-6mm thick		Nos		No	
	400-6mm thick		Nos		No	
	450-6mm thick		Nos		No	
9	Supply and delivery of "Resilient Seated Soft Sealing" Gate Valves (Sluice Valves) with Body and Bonnet of Ductile Iron GGG-40/SG-400/15 or GGG-50/SG-500/7 or Equivalent as per IS1865, IS:3896-2 and Wedge fully Rubber Lined with food grade quality grade W270 grade EPDM, Replaceable Spindle Nut without gland packing with 3-O ring protection system on the Shaft and Seals of NBR. The Valves should be Vacuum tight and 100% leak proof with face to face dimensions as BS:5163 Type A/IS:14846. All the valves should be with fusion bonded Electrostatic Powder coating both inside and outside (Min 250 Microns)- RAL 5005 with Pocket Less Straight through body Passage conforming to Design standards of DIN-3202F4/BS:5163 Type A Flange drilling as per IS - 1538 excluding all taxes, duties and transportation. **As per Annexure - V & VI**					
	80 mm Dia to 700 mm dia DI Sluice Valve PN 1.6 (13 Nos)					
10	Resilient Seated Soft Sealing" Scour Valves with Body and Bonnet of Ductile Iron GGG-40/SG-400/15 or GGG-50/SG-500/7 or Equivalent as per IS1865, IS:3896-2, without bypass upto 400mm dia and with bypass above 400mm dia **As per Annexure - V & VI**					
	80 mm Dia to 700 mm dia DI Sluice Valve PN 1.6 (13 Nos)					
11	Tamper Proof DI Flanged Single Chamber Air Release Valve with Body and cover made of Ductile Iron Grade GGG-40/SG-400/15 or GGG-50/SG-500/7 or Equivalent as per IS1865, IS:3896-2 with Food Grade Epoxy Powder Coating(EP-P) (Min:250 Micron) inside and Outside of Color Blue RAL 5005 and subsequent revisions **As per Annexure - VII**					
	40 mm Dia DI Air Valve PN 1.6 on 80 MM to 110 MM Dia HDPE Line (4 Nos)		Nos		/No	
	50 mm Dia DI Air Valve PN 1.6 on 125 MM to 225 MM Dia HDPE Line (6 Nos)		Nos		/No	
	80 mm Dia DI Air Valve PN 1.6 on 250 MM to 315 MM Dia HDPE Line (3 Nos)		Nos		/No	
	100 mm Dia DI Air Valve PN 1.6 on 355 MM to 450 MM Dia HDPE Line (3 Nos)		Nos		/No	
12	Rewinding of three phase motor of 1400 to 2800 RPM including all necessary material and of the same characteristics as original with required size of super enameled wire 'E' class insulation material and testing etc. as required. (**As per Building SOR - ELEC- 5.9.14**)					
	3.0 H.P		No		1 No.	
	5.0 H.P		No		1 No.	
	7.5 H.P		No		1 No.	

	10.0 H.P		No		1 No.	
	12.5 H.P		No		1 No.	
	15.0 H.P		No		1 No.	
				Total		

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5 & 6 - R&R - Annexure-I

1	**a) Excavation in Cutting in Soil by manual means with lead upto 50 m**

Excavation for Pipe line in soil using manual means for carrying of cut earth to embankment site **with initial lift of 3 mts** and lead upto 50 m as per Technical Specification Clause 302.3 MORD

Unit = cum

Taking output = 10 cum

a) Labour

Mate	day	-	Rate As per SOR LAB-00120	
Mazdoor (Unskilled)	day	3.640		
Cost of 10 cum = a+b+c				
Rate per cum = (a+b+c)/10				

Weight of CID joints

As per SSR				Rate of CI - MAT-07982				Rate of Bolts & Nuts MAT-08262			
Sno.	Dia	Wt. of cid joint in kgs	size of bolt & nut	no of bolt & nut	WT of bolt & nut	total wt of bolt &nut in kgs	cost of CID joint = Wt of CID Joint x Rate of CI Joint	cost of bolt &nut = Total Wt of olt & Nut in Kgs x Rate of Bolts & Nuts	cost of rubber rings set = As per SOR - MAT 06041 to MAT 06058	total cost	Total Cost for 2 Nos
	mm										
1	2	3	4	5	6	7	8	9	10	11	12
1	80	3.00	12x90	3	0.130	0.39					
2	100	3.80	12x100	3	0.145	0.44					
3	125	4.80	12x100	4	0.145	0.58					
4	150	6.10	12x110	4	0.155	0.62					

Sno.	Dia	Wt. of cid joint in kgs	size of bolt & nut	no of bolt & nut	WT of bolt & nut	total wt of bolt &nut in kgs	cost of CID joint = Wt of CID Joint x Rate of CI Joint	cost of bolt &nut = Total Wt of olt & Nut in Kgs x Rate of Bolts & Nuts	cost of rubber rings set = As per SOR - MAT 06041 to MAT 06058	total cost	Total Cost for 2 Nos
5	**200**	9.00	16x120	4	0.290	1.16					
6	**250**	12.20	16x120	4	0.290	1.16					
7	**300**	14.90	16x120	5	0.290	1.45					
8	**350**	24.80	16x150	6	0.325	1.95					
9	**400**	30.10	16x150	6	0.325	1.95					
10	**450**	35.70	16x150	7	0.325	2.28					
11	**500**	50.30	20x180	8	0.620	4.96					
12	**600**	80.80	20x190	9	0.660	5.94					

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5 & 6 - R&R DATAS BASED ON COMMON SSR - for HDPE & PVC Pipes Annexure-II

As SSR Earth work manual 203.84

1	Repairs to Existing Mains, interconnections, including cutting , jointing, bailing of water and 'Earth work excavation of the trench etc completeand filling with excavated soils including laying jointing testing of pipe line including cost of materials etc. complete													
	HDPE PE 100 Class													
	Trench size	0.70 x 1.00m						0.80 x1.10m			0.90 x 1.20m			
	Length of Earth Work Excaveted Strech	2.00 Mts Length			3.00 Mts Length			4.00 mts Length			4.50 mts Length			
	Pipe dia in mm =	63 mm	75 mm	90 mm	110 mm	125 mm	140 mm	160 mm	180 mm	200 mm	225 mm	250 mm	280 mm	315 mm
	Cost of CID Joints - 2 Nos (As per SOR & Annexure-I)													
	Earthwork Excavation,including refilling for each repair by Manual (Length of E.W X Size of the Trench X E.W Rate per Cum)													
	Add extra 75% for narrow trench													
	Add 100 % extra for Earth work(SSR)													
	Total Amount													

2	Repairs to Existing Mains, interconnections, including cutting , jointing, bailing of water and 'Earth work excavation of the trench etc completeand filling with excavated soils including laying jointing testing of pipe line including cost of materials etc. complete												
	PVC Pipe												
	Trench size	0.70 x 1.00m						0.80 x1.10m			0.90 x 1.20m		
	Length of Earth Work Excaveted Strech	2.00 Mts Length			3.00 Mts Length			4.00 mts Length			4.50 mts Length		
	Pipe dia in mm =	63 mm	75 mm	90 mm	110 mm	125 mm	140 mm	160 mm	180 mm	200 mm	225 mm	250 mm	280 mm
	Cost of Sockets - 1 No & Gum (Rates as per approved DPC / Quotation)												
	Cost of CID Joints - 1 No (As per SOR & Annexure-I)												
	Earthwork Excavation,including refilling for each repair by Manual (Length of E.W X Size of the Trench X E.W Rate per Cum)												
	Add extra 75% for narrow trench												
	Add 100 % extra for Earth work(SSR -												
	Total Amount												

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7- R&R Data for Each Repair of AC PIPE LINE - Annexure-III

ssr 23-24 Earth work manual

Repair to AC Pipe lines including joints specials as per requirement trench excavation by manual in all soils except rock requiring blosting ,lowering,laying and jointuing of pipeline to allgnment and grodient refilling trench with excavated earth as per specification ,watering and tampering and removing surpules earth from site work,filling pipe line as per specification etc. complete the rates are inclusive of cost,conveyence of all materiels and all labour charges etc,complete finished itemof work (Excluding Cost of Pipe)

AC PIPE												
Trench size	← 0.9 x 1.2 →				← 0.9 x 1.3 →			← 1.0 x 1.4 →			1.1 x 1.6	1.2 x 1.7
Pipe dia in mm =	*80 mm*	*100 mm*	*125 mm*	*150 mm*	*200 mm*	*250 mm*	*300 mm*	*350 mm*	*400 mm*	*450 mm*	*500 mm*	*600 mm*
Trench size - Length	*2.00 m length*				*2.50 mt length*			*3.00 mt length*			*4.00 m length*	
A) Labour component												
Earthwork Excavation,including refilling for each repair by Manual (Length of E.W X Size of the Trench X E.W Rate per Cum)												
Extra allowance 75% for Narrow trenche												
Lowering, Laying, jointing, testing HFT pressure including cost of ruuber rings, cost of transportation of water and emptying pipe line after completion of field testing.- 2 Nos (2X SSR Rate)												
Sub Total												
Add 100% Extra for earth work excavation and jointing for Repairs as per SSR item no.39(b) of Public health												
Sub Total (A)												
B) Materiel component												
Cost of CID Joints - 2Nos *(As per SOR & Annexure-I)*												
Total Rs(A+B)												

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OBSERVED DATA

8 - R&R DATA SHEET Annexure - IV

for MS major leaks (above ground level)

Material																
DI pipes / MS Pipes	**450mm dia**				**400mm dia**				**350mm dia**				**300mm dia**			
a) gas cutting sections																
i) Acetylene gas @0.8cum/t SSR Rate - MAT-00001	0.8		per cum		0.8		per cum		0.8		per cum		0.8		per cum	
ii) oxygen gas cylinder @2.4cum/t SSR Rate - (MAT-00059)	2.4		per cum		2.4		per cum		2.4		per cum		2.4		per cum	
b) Welding Electrodes (4*300mm) SSR Rate - (MAT-00082)	5		per no		4		per no		3		per no		3		per no	
i) welding set SSR Rate (HIR-00065) + (HIR - 00199)	1.5		per hr		1.5		per hr		1		per hr		1		per hr	
c) Generator (7.5KVA)-up to 30KVA SSR Rate - (HIR - 00023)+ (HIR - 00157) + (LAB-00336)	1.5		per hr		1.5		per hr		1		per hr		1		per hr	
d)welder SSR Rate (LAB-00041)	1		per no		1		per no		1		per no		1		per no	
TOTAL Amount																

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9 & 10 - R&R Data for CI Fixures-Per Each Joint Annexure-V

2023-24

Sl no.	Description of CI Fixture	Labour charges for Joint including jointing materials as PHSSR 23-24	Cost of Synthetic 6mm thick rubber sheet 12kg/sqm - PHSSR				Cost of nut bolts including vauchers - PHSSR				Total Cost of Jointing Metrials (G7+K11)
			Size	Wieght Kgs	Rate per Kg Aper SOR (MAT-08260, MAT-08261)	Amount	No of bolts	Weight Kgs	Rate Rs. As per SOR (MAT-08262)	Amount Rs.	
1	2	3	4	5	6	7	8	9	10	11	12
	CI PIPE LINE	Jointing CI D/F pipes	Size considered from AP standard PH data upto 750mm dias (above 750mm - from SSR directly)								
1	1000mm dia D/F Joint	11165.00	1.215x1.215	10.500			51.80	51.80			
2	900mm dia D/F Joint	9696.00	1.115x1.115	9.450			40.60	40.60			
3	800mm dia D/F Joint	8244.00	1.015x1.015	8.400			27.36	27.36			
4	750mm dia D/F Joint	4359.67	0.965x0.965	7.843				26.04			
5	700mm dia D/F Joint	4062.44	0.915x0.915	6.891				24.48			
6	600mm dia D/F Joint	3198.83	0.815x0.815	5.171				19.20			
7	500mm dia D/F Joint	2309.92	0.670x0.670m	3.819				13.40			
8	450mm dia D/F Joint	1995.30	0.615x0.615m	2.266				12.30			
9	400mm dia D/F Joint	1711.76	0.565x0.565m	2.764				9.84			
10	350mm dia D/F Joint	1093.98	0.505mx0.505	2.126			16nosx0.39 Kg	5.44			
11	300mm dia D/F Joint	767.66	0.45mx0.45m	1.028			12nosX0.39Kg	3.96			
	AC PIPE LINE										
11	250mm dia D/F Joint	728.12	0.40mX.040m	0.85			12nosX0.39Kg	3.96			
12	200mm dia D/F Joint	511.60	0.35mX0.365m	0.62			8nosX0.39Kg	2.52			
13	150mm dia D/F Joint	468.18	0.30mX0.30m	0.43			8nosX0.39Kg	2.40			
14	125mm dia D/F Joint	312.43	0.26mX0.26m	0.31			8nosX0.297Kg	1.36			
	PVC PIPE LINE										
15	100mm dia D/F Joint	301.35	0.23mX0.23m	0.25			8nosX0.297Kg	1.36			
16	80mm dia D/F Joint	185.46	0.21mX0.21m	0.21			4nosX0.297Kg	0.68			
17	50mm dia D/F Joint	185.46	0.20mX0.20m	0.15			4nosX0.297Kg	0.43			
18	40mm dia D/F Joint	185.46	0.13mX0.13m	0.13			4nosX0.21Kg	0.34			

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9 & 10 - R&R Data Sheet for Fixing sluice valves / Scour Valves - Annexure-VI

PN-1.6

SL No.	Discription of Item/ Dia of Sluice valve	without bypass upto 400mm dia									DI Double flanged sluice valves				DI Double flanged sluice valves				
		80 mm	100 mm	125 mm	150 mm	200 mm	250 mm	300 mm	350 mm	400 mm	450 mm	500 mm	600 mm	700 mm	800 mm	900 mm	1000 mm	1100 mm	1200 mm
	Size of pipeline	on 80mm dia line	on 100mm dia line	on 125mm dia line	150mm line	200mm line	250mm line	300mm line	350mm line	400mm line	450mm line	500mm line	600mm line	700mm line	800mm line	900mm line	1000mm line	1100mm line	1200mm line
	Size of Valve chamber	0.90x0.75x 1.05m	0.90x0.90x 1.40m	0.90x0.90x 1.40m	0.90x0.90x 1.40m	0.90x0.90x 1.40m	1.05x1.20x 1.70m	1.05x1.20x 1.70m	1.05x1.20x 1.70m	1.05x1.20 x 1.70m	1.20x1.20x 2.10m	1.20x1.20x 2.10m	1.70x1.20x 2.10m	1.70x1.20x2.1 0m	3.00x2.00x2. 50m	3.00x2.00x2.5 0m	3.00x2.00x2.50 m	*3.00x2.00x2 .50m*	*3.00x2.00x 2.50m*
	Class of valve	PN-1.6	PN-1.6	PN-1.6	PN-1.6	PN-1.6	PN-1.6	PN-1.6	PN-1.6	PN-1.6	PN-1.6	PN-1.6	PN-1.6	PN-1.6	PN-1.6	PN-1.6	PN-1.6	PN-1.6	PN-1.6
1	Resilient Seated Soft Sealing" Gate Valves (Sluice Valves) with Body and Bonnet of Ductile Iron GGG-40/SG-400/15 or GGG-50/SG-500/7 or Equivalent as per IS1865, IS:3896-2, without bypass upto 400mm dia and with bypass above 400mm dia **As per SSR Rate (up to 400 mm dia (MAT-08068 to MAT-08075)) and (450mm dia to 1200 mm dia (MAT-08004 to MAT-08012)**																		
2	Transportation chargers (5% of basic cost) **AS per SSR**																		
3	Cost of Jointing materials for valve fixing (Bolts nuts, rubbersheet) (2 joints) (As per SOR & Annexure -V)																		
4	**Grand total**																		

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11- R&R Data - Air valves PN-1.6 on HDPE Mains Annexure-VII

PN 1.6 2023-24

SL No.	Discription of Item	PN 1.6								PN 1.6							
		40mm dia air valve				50mm dia air valve				50mm dia air valve		80mm air valve			100mm air valve		
	Size of Pipeline	63mm	75mm	90mm	110mm	125mm	140mm	160mm	180mm	200mm	225mm	250mm	280mm	315mm	355mm	400mm	450mm
	Size of A/F tee	80x40mm	80x40mm	80x40mm	100x40mm	125x50mm	150x50mm	150x50mm	150x50mm	200x50mm	200x50mm	250x80mm	250x80mm	300x80mm	350x100mm	400x100mm	450x100mm
	Size of Valve Chamber	0.90x0.75x 1.05m	0.90x0.75x1.05m	0.90x0.75x 1.05m	0.90x0.90x 1.40m	0.90x0.90x1.40m	0.90x0.90x 1.40m	0.90x0.90x 1.40m	0.90x0.90x 1.40m	0.90x0.90x 1.40m	0.90x0.90x 1.40m	1.05x1.20x 1.70m	1.05x1.20x 1.70m	1.05x1.20x 1.70m	1.05x1.20x 1.70m	1.05x1.20x 1.70m	*1.20x1.20x 2.10m*
1	Tamper Proof DI Flanged Single Chamber Air Release Valve with Body and cover made of Ductile Iron Grade GGG-40/SG-400/15 or GGG-50/SG-500/7 or Equivalent as per IS1865, IS:3896-2 with Food Grade Epoxy Powder Coating(EP-P) (Min:250 Micron) inside and Outside of Color Blue RAL 5005 and subsequent revisions As per SSR Rate **(up to 400 mm dia (MAT-08094 to MAT-08097))**																
2	Transportation charges(5%)																
3	**Jointing materials** such as bolts nuts and rubber vouchers for Air valve fixing **(As per SOR & Annexure-V)**																
4	Total																

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Cleaning of Sumps					
919	MAT-01509 & BMT-S.12	Through scraping of old plastered surface			/10 Sqm
920	MAT-01510 & BMT-S.13	Washing of plastered surface with soap, soda and water (or with soda lime and			/10 Sqm
			Total		/10 Sqm

per Sqm

S.No	Size of the Sump	Area of the Sump	Rate	Per	Amount
1	20 KL Flat Slab	37.91		10 Sqm	
2	30KL Flat Slab	49.01		10 Sqm	
3	40 KL Flat Slab	58.53		10 Sqm	
4	50KL Dome Slab	74.46		10 Sqm	
5	60 KL Dome Slab	84.14		10 Sqm	
6	80 KL Dome Slab	100.14		10 Sqm	
7	90 KL Dome Slab	107.68		10 Sqm	
8	100 KL Dome Slab	114.82		10 Sqm	
9	120 KL Dome Slab	129.66		10 Sqm	
10	150 KL Dome Slab	152.01		10 Sqm	
11	200 KL Dome Slab	185.08		10 Sqm	
12	250 KL Dam Slab	215.57		10 Sqm	
13	300 KL Dome Slab	244.95		10 Sqm	
14	350 KL Dome Slab	267.79		10 Sqm	
15	400 KL Dome Slab	298.2		10 Sqm	
16	450 KL Flat Slab	443.34		10 Sqm	
17	500 KL Flat Slab	509.25		10 Sqm	
18	600 KL Flat Slab	608.4		10 Sqm	
19	750 KL Flat Slab	725.55		10 Sqm	
20	900 KL Flat Slab	839.4		10 Sqm	
21	1000 KL Flat Slab	957.84		10 Sqm	
22	1250 KL Flat Slab	1103.04		10 Sqm	
23	1800 KL Flat Slab	1654.44		10 Sqm	
24	2000 KL Flat Slab	1704.54		10 Sqm	
25	2300 KL Flat Slab	2018.7		10 Sqm	
26	2700 KL Flat Slab	2381.4		10 Sqm	
27	3300 KL Flat Slab	2803.08		10 Sqm	
28	4000 KL Flat Slab	3278.16		10 Sqm	
29	5000 KL Flat Slab	4219.5		10 Sqm	

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VI - Annexure - IX

1	Supply of 440v LT Power capacitor				
	a) Material				
	cost of each KVAR capacitor ssr 375 b	each	1	356	**356.00**
	add Labour Skilled Electrician ssr 5	each	0.04	610	24.40
	add Labour helper ssr 34	each	0.08	565	45.20
	add 20% labour on area alwance				0.00
	Rate per Each KVAR				425.60

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