3.1.7 Tender Specifications (2)

Basic work performance for compiling tender specifications of a combined hydraulic-chemical water well rehabilitation using a pH neutral reductant together with a multi-chamber gravel washer

REQUIRED WELL DATA	
Well name:	Gravel/bead pack size(s):
Construction year:	Well pump (type, capacity, installation depth):
Depth (original):	Riser pipe (type, diameter, lengths):
Depth (actual):	Type of well shaft (shaft, cover, pump room):
Diameter(s) of borehole:	Static water level:
Diameter(s) of casing:	Original well performance and drawdown:
Material of casing:	Present well performance and drawdown:
Diameter(s) of screen:	Power supply on site:
Length(s) of screen:	Potable wate on site:
Position(s) of screen:	Storage area on site:
Material of screen:	Truck access on site:

POS.	QUANTITY / UNIT		DESCRIPTION	UNIT PRICE	TOTAL PRICE
1. Preparatory work					
1.1	1	Flat rate	Mobilisation and demobilisation of all required equipment and manpower incl. site erection	.....	.....
1.2	1	Flat rate	Preparation of job site for performing rehabilitation work (time and scope) as per contract, incl. loading, warehousing and unloading, working and storage areas, machinery and equipment of all kinds, rehabilitation equipment, discharge pipes, mixing unit, settling container, additional pumps and tools, installation of power and water supply.	.....	.....
1.3	1	Flat rate	Clearance of job site after accomplished contractual scope of work incl. restoration of the complete area and access roads.	.....	.....
1.4	1	Flat rate	OPTIONAL: Covering job site with sheeting, foil and/or fiber mat of sufficient size. Collection and disposal after completion of work.	.....	.....

3.1.7 Tender specifications (3)

POS.	QUANTITY / UNIT		DESCRIPTION	UNIT PRICE	TOTAL PRICE
2 . Installation work					
2.1	1	Flat rate	Disassembly, cleaning and assembly of well and shaft equipment incl. appropriate storage	.....	.....
2.2	1	Flat rate	Removal, cleaning, storage and reinstallation of rising main, submersible pump and eletrotechnical connections, max. installation depth _____ m	.....	.....
2.3	1	Flat rate	Installation of flexible discharge pipe, max. length _____ m to designated discharge area incl. disassembly and transportation from site after completion of work.	.....	.....
2.4	1	Flat rate	Transportation and erection of settling container with volume of _____ m³ for discharge of exhausted rehabilitation agent incl. removal from site after completion of work.	.....	.....
3 . Pre- and post-rehab inspections and tests					
3.1	2	Flat rate	Mobilisation and demobilisation of CCTV camera vehicle incl. manpower	.....	.....
3.2	2	Flat rate	Execution of CCTV inspection in colour incl. axial and radial views before and after rehabilitation, max. depth of _____ m	.....	.....
3.3	2	pcs	Recording the findings of CCTV inspection before and after rehabilitation, submission of _____ copies incl. photographs of possible damages before and/or irregularities after rehabilitation	.....	.....
3.4	2	pcs	Documentation of CCTV inspection before and after rehablitation including _____ copies (_____ x CD, _____ x DVD)	.....	.....
3.5		h	Cost of crew standby time due to delay by client during camera inspection	.....	.....
3.6	1	Flat rate	OPTIONAL: Clear pumping due to turbidity before or during CCTV inspection	.....	.....
3.7		pcs	Step-discharge test before rehabilitation for a duration of _____ h incl. mobile flowmeter to measure and document the actual well performance	.....	.....
3.8		pcs	Step-discharge test after hydraulic rehabilitation with Q= _____ m³/h for a duration of _____ h (s. 6.4)	.....	.....
3.9		pcs	Step-discharge test after chemical rehabilitation with Q= _____ m³/h for a duration of _____ h (s. 6.4)	.....	.....

3.1.7 Tender specifications (4)

POS.	QUANTITY / UNIT		DESCRIPTION	UNIT PRICE	TOTAL PRICE
4 . Mechanical cleaning and/or hydraulic rehabilitation					
4.1	1	Flat rate	Pre-cleaning of well interior with brushes of variable diameter and variable quality attached to multi-chamber gravel washer. Length and quality of bristles as per well lining materials and slot type/size. Simultaneous discharge of loosened particles with built-in pump.	.....	.....
4.2a	1	Flat rate	Hydraulic gravel wash with max. capacity of _____ m³/h between packer plates in sections of _____ m overlapping _____ m. Simultaneous discharge of loosened particles by built-in pump.	.....	.....
4.2b		m	OPTIONAL: Cleaning of well interior by high pressure jetting incl. discharge of loosened particles. Rotating nozzle head is fixed to alignment duct. Variable nozzle diameter, interspace and pressure to match well lining materials and casing diameter.	.....	.....
4.3	1	Flat rate	Cleaning of well sump down to the base plate incl. discharge of loosened particles.	.....	.....
5 . Chemical rehabilitation					
5.1	2	Flat rate	Assembly and disassembly of multi-chamber gravel washer including auxiliary equipment.	.....	.....
5.2	1		Preparation of AIXTRACTOR® 2.0 working solution in mixing unit separately for each section prior to injection.	.....	.....
5.3		m	Injection of working solution with simultaneous execution of gravel wash in sections of _____ m with overlap of _____ m by circulation volume of _____ m³/h as per borehole diameter ans type of gravel pack. Recommended dosage per screen section _____ kg. Reaction time 45 minutes.	.....	.....
5.4	1		Regular measurement and documentation every 15 minutes of specific electrical conductivity, iron(II) concentration and temperature during the reaction time.	.....	.....
5.5	1		Subsequent discharge of depleted AIXTRACTOR®2.0 working solution: from each treated section by built-in pump. Simultaneous measurement and documentation every 15 minutes of discharge rate, water level, temperature, iron(II)/manganese(II) & sulphite concentrations and specific electrical conductivity.	.....	.....
5.6	1		Disposal of depleted AIXTRACTOR®2.0: first gush from each screen section in settling container. Dicharge of subsequent clear waste water complying with FAO limit of 3000 µS/cm² (German drinking water limit of 2790 µS/cm²) directly in sewage, irrigation or sprinkling outside Water Protection Zones I & II. Disposal of residual oxides, if any, with other sludges in water works.	.....	.....
5.7	1	Flat rate	Final clear pumping overnight/during _____ h at rate corresponding approx. maximum well capacity.	.....	.....

3.1.7 Tender specifications (5)

POS.	QUANTITY/UNIT		DESCRIPTION	UNIT PRICE	TOTAL PRICE
6 . Desanding, disinfection and final clear pumping					
6.1	1	Flat rate	Assembly and disassembly of desanding equipment, execution of desanding until reaching the technical sand-free standard (<0,1 g/m³) in sections of _____ m with overlap of _____ m. Pump performance min. _____ m³/h.	.....	.....
6.2	1	Flat rate	Cleaning of well sump down to the base plate.	.....	.....
6.3	1	Flat rate	OPTIONAL: Well disinfection	.....	.....
6.4		h	Step-discharge test of min. _____ h until no disinfectant traceable.	.....	.....
7 . Documentation					
7.1	1	pc	Preparation of documentation incl. daily work reports, protocols and process control measurements (_____ written, _____ x word / Excel). All measured values of entire rehabilitation process are to be recorded as per DVGW W 130 including: – Water level measurements – Water volumes – Quantity of rehabilitation agent per screen section – Measurements of all requested chemical and physical parameters, test strip findings and observations – Discharge rates – Step-discharge tests as per DVGW W 111incl. aquifer yield graphics before and after rehabilitation – Desanding as per DVGW W 119	.....	.....
8 . Unforseen costs and km-charges					
8.1		h	Hourly rates and km-allowance	.....	.....
			Foreman	.....	.....
			Mechanic / Electrician	.....	.....
			Skilled workman	.....	.....
			Rehabilitation equipment	.....	.....
			Passenger car	.....	.....
			Truck	.....	.....