

SPECIAL CONDITIONS AND SPECIFICATIONS OF DEEP TUBE WELL

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1.1	The contractor shall supply all labour, materials, casing pipes, drilling pipes and all other appliances including tools and plants for constructing the tube well to the required depth for satisfactory yield at the specified site and test yield of the tube well on completion of all works. On satisfactory completion of the tube well which including with drawl of the casing pipes, drilling pipes and all other surplus materials, tools and plants and restoration of the site to original condition to facilitate other works required. All other works incidental to the above shall be executed by the contractor for which no extra payment will be made. Contractor has to maintain the work for a period of six months from the date of completion of the work only after the Security deposit will be refunded after adjustments, if any.
1.2	All pipes, flanges and fittings should be made of mild steel in perfect conformity with Indian Standard Specifications and to exact specifications as mentioned in the tender schedule painted with anti-corrosive bituminous paint inside and outside. The fittings must suit the pipes that are supplied by the contractor. The joints in pipes should be welded or screwed and socketted. The strainers should be of approved quality and must ensure the yield as specified, consistent with proper durability of the tube well. The tenderer/s must produce the full specification of the strainers to be supplied by/them for the construction of this tube well for obtaining the approval of the Administration and while tendering.
1.3	The exact location of the site/sites will be peg pointed and given free of all obstacles surface, overhead and underground by the Railway to the Contractor after the request is made by the contractor for starting the work. The contractor may use the access road for motor transport and heavy vehicles, if such road exists at site.
1.4	The contractor will be given enough open space as near to the site as possible by the Railway for storing their plants and equipments and for accommodation of the contractors Workmen, free of rent subject to Clauses 6,30 and 50/I/of the Standard Specifications of South Eastern Railway, Schedule of Rates. On written request, the contractor will be provided with a source of water duly located within a radius of 600 meters from the point of drilling for the purpose of drawing water with contractor s labour and materials for drilling and human consumption. The contractor shall pay the charges as will be fixed by the Railway as per extant Rules in force.
1.5	Trial boring:-
1.5.1	The contractor will make a trial boring of 50mm diameter upto a depth as advised in electric resistivity test. The contractor must however, be prepared to go down deeper if directed by the Railways Engineer. If satisfactory water bearing stratum is found before reaching the depth as so specified herein and in the schedule of Tender, it will be at option of the Railways Engineer to stop the work of drill further. If water bearing strata are met with, the contractor should be given in writing an assessment of volume of water that may be obtained if the main tube well is sunk at that site.
1.5.2	A complete and accurate log of the bore hole when it is being drilled should be kept. Samples of soil should be collected at a maximum of 2 meters intervals, or whenever where is any change in strata and should be supplied to the Railway neatly in leveled samples boxes or bags. Different strata samples have to be tested and examined and the average fix of drain have to be found out for detail analysis if considered necessary by the Railway s Engineer. The cost of all such test and collection of samples have to be included under the items of work and no extra payment for the same shall be made, when rotary drilling is adopted, lowering of drilling rod should be stopped for a short while, and circulation of water, plain or mixed with mud, should be continued so that the samples of strata from the correct depth may be collected . Sieve analysis of the samples may also require to be carried out if warranted to design the size of slots in the pipes and the size of gravel for packing. No extra will be payable on this account.
1.5.3	The contractor, without charging any extra cost should collect samples of water in presence of the Railways Engineer at site or his representatives and shall handover the samples to him as different squifers are drilled through for necessary chemical analysis and Bacteriological tests.The contractor shall wait at least 15 days for getting the decision of the Railway Administration whether the tube well be sunk at that site of trial boring and for the decision regarding the location of the strainers in the main bore holes.

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1.5.4	The static water level should be recorded as accurately as possible after it has stabilized.
1.5.5	In the case of percussion drilling, static water levels in bore hole should be measured daily in the Morning before commencement of drilling operations and in the Evening at class of drilling operations to study the behavior of the squifers at met with during drilling operations.
1.6	Drilling the sinking of main pipes and assembly:-After getting the satisfactory results from the trial boring, the Railway will issue necessary orders to the contractor/s for the final drilling and sinking the tube well at the rates offered by him/them as per the Schedule of rates and quantities. The work is to be carried out by hydraulic rotary drilling, using either direct Mud circulation or Reverse circulation method. Drilling pipe and equipments are to be supplied by the contractor and the cost of which are to be included in the relevant Item of the Schedule Sch. E . The depth of drilling may be the same that of the trial boring or different as ordered by the Engineer. It will be the option of the Railway s Engineer to stop drilling at any stage if he is satisfied with the water bearing strata reached or if he thinks it imprudent for whatsoever cause to drill further. In any case the contractor shall be paid as per the actual quantum of work done by him/them and no additional charges will be demanded by the contractor other than those quoted by him/them if the drilling is done less or more than the specified depth. As the drilling progress, an accurate drilling time log is to be maintained by the contractor indicating the time taken to drill each 3 metres depth and samples of soil be collected and preserved to supply to Railway s Engineer, in boxes of bags leveled showing the depth at which the different specimens were obtained. After the volume and portability of water is found satisfactory by the Railway, the contractor shall sink the main tube well and place the permanent strainers as per Railway s direction.
1.7	Gravel Packing:-In hydraulic rotary method, after the pipe assembly is lowered into position gravel packing is to be done upto the bottom of the housing pipe and after vertical of the housing pipe is tested and defects rectified, the gravel packing upto the top is to be completed. All gravel should be hard well rounded particles reasonably uniform in diameter and shall be such that it should pass through 3 mm sieve retained at 6 mm. The feeding of gravel has to be done in such a manner that there is no bridging in the annular space. To avoid bridging, circulating fluid is to be pumped to agitate the gravel as it is being fed. If found necessary more gravel is to be fed after the development of the tube well. The contractor should quote a through rate including the cost of gravel, labour charges for packing and lead, lift, freight and any other charges.
1.8	Development and yield test:-When sinking of tube well is completed, the contractor shall develop the tube well either by surging, including washing and agitating or by pumping and back washing by surging, including washing and agitating or by pumping and back washing with air lift or by other acceptable method/methods to get standy yield of liters per hour during operations i.e., rates discharge. The development may be carried out either by the contractors turbine pump or by air compressor. This development process shall be continued until the stabilization of sand and gravel packing is completely, assured. The discharge of water during development should correspond to depression of 50 percent higher than the normal depression at which the tube well would be later pumped on continuous duty. The final discharge at working depression obtained at the well, should be free from sand during the operation test run with a maximum tolerance of 20 parts of sand in one million parts of water by volume after 10 minutes of starting the pump. If the depression of 50 percent higher than the normal depression cannot be done the tube well shall be over-developed so as to yield a discharge 20 percent in excess of the rates discharge. The cost of giving test and also the cost of supplying , fittings, fixing and removing all pipes, specials and valves etc. after 3 tests are over should be included in the relevant Items of the schedule of rates and quantities Sch. H .
1.9	Plumbness and alignments:-The tube well must not be out of alignment and containing any kind or hands, the housing pipe at the top should be true to line. The contractors should be prepared to make the vertically test as per the device laid down in IS:2800-1964 or any other device recommended by the Railways Engineer with necessary arrangements for which no extra claim will be entertained. The maximum permissible deviation is 10 cm per 30 metres and shall be in one direction and in one plan only.

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1.10	Abandonment of work:-The Railway Administration reserves the right to abandon or stop the work at any stage due to poor underground water reservoir due to insufficient thickness of water bearing strata or due to presence of rock or due to excessive caving or any other reasons whatsoever. The contractor for such cases shall be paid for the actual work done and materials used up to the point of abandonment as per the rates quoted by the contractor in the schedule of rates and quantities. The contractor without charging any extra cost will have to withdraw the tube well assembly if the tube well as abandoned after the tube well assembly is lowered.
1.11	Machineries and equipments:-All machineries and equipments required to be used for the construction and testing the tube well at all stages will be supplied by the contractor and will be operated by his labour and fuel. The cost of use as such machineries, equipments, labour and fuel should be included in the rates of relevant items of works in schedule of rates and quantities. The Railway Administration will not be liable for any damage or loss of any such machinery and equipment.

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