



## NOTICE INVITING E-TENDER

### CIVIL WORKS

#### TWO COVER SYSTEM (2<sup>nd</sup> Call)

NIT No. F(Fresh)(E.tend (UCD)/KU/47/23

DATED: 09/11/23

For and on behalf of the University of Kashmir, e-tenders (In Two cover system) are invited on **Percentage (%age) Basis** from approved, eligible and Registered Contractors of Production Wells having good experience of ground water drillings for the following works:-

S.No	Nome of Work	Adv. Cost (Rs.In Locs)	Cost of T/Doc. (In Rupees)	Earnest Money In Rs.	Time of completion	M.H of Account	Class Of Contactor
1.	2	3	4	5	6	7	8
1.	Construction of Gravel packed Production Tubewell for Kupwara Campus, University of Kashmir.	34.84Lacs	Rs.1100/-	69680/-	15-days	<u>Consolidated Funds</u>	Registered for Construction of Gravel Packed Production Tube Wells

Position of AAA: - Accorded,

Position of funds: - Available.

1. The Bidding documents consisting of qualifying information, eligibility criteria, specifications, Drawings, bill of quantities (B.O.Q), Set of terms and conditions of contract and other details can be seen/downloaded from the departmental website [www.jktenders.gov.in](http://www.jktenders.gov.in) as per schedule of dates given below:-

1.	Date of Issue of Tender Notice	11/11/2023
2.	Period of downloading of bidding documents	<b>From 11/11/2023, to 20/11/2023, 6.00 P.M</b>
3.	Bid submission <b>Start Date</b>	<b>11/11/2023</b>
4.	Bid Submission <b>End Date</b>	<b>20/11/2023 up to 6.00 P.M</b>
5.	Date & time of opening of Financial Bids ( <b>Online</b> )	<b>21/11/2023</b> In the office of Executive Engineer University of Kashmir

2. Bids must be accompanied with cost of Tender document (as mentioned above) in shape of e-Challan **which can be downloaded from** <http://egov.uok.edu.in/echallan> in terms of soft copies with the e-bid.

Note: - The Date of EMD in the shape of CDR/FDR/ Bank Guarantee must be between the date of start of bid and Bid Submission End date. **Any deviation shall render the bidder as Non-responsive.**

1. **The Earnest money in favour of unsuccessful / Non-responsive bidders shall be released only after ensuring submission of Tender document Fee in original, (e-challan). Failure of submission of Tender document fee by the bidder using the site shall entail him for blacklisting.**

**(Note: - Scan all the documents on 100 dpi with black and white option.)**

- 2.1 **The successful bidder (L-1) shall have to Submit CDR and e-challan in original in the office of the undersigned before allotting the work or issuance of Supply order.**
3. The date and time of opening of Financial Bids of a responsive bidder shall be notified on Website [www.jktenders.gov.in](http://www.jktenders.gov.in) and conveyed to the bidders automatically through an e-mail message on their e-mail address.
4. **The bids for the work shall remain valid for a period of 120 days from the date of opening of Technical bids.**
5. **The earnest money shall be forfeited if:-**
  - a) Any bidder/ tenderer withdraws his bid/ tender during the period of bid validity or makes any modifications in the terms and conditions of the bid.
  - b) *Failure of Successful bidder to furnish the required performance security within the specified time limit.*
  - c) *Failure of Successful bidder to execute the agreement within 28 days after fixation of contract.*

**6(A). Instruction to bidders regarding e-tendering process**

- 6.1 Bidders are advised to download bid submission manual from the "Downloads" option as well as from "Bidders Manual Kit" on website [www.jktenders.gov.info](http://www.jktenders.gov.info) acquaint bid submission process.
- 6.2 To participate in bidding process, bidders have to get 'Digital Signature Certificate {DSC}' as per information Technology Act-2000. Bidders can get digital certificate from any approved Vendor.
- 6.3 The bidders have to submit their bids online in electronic format with digital Signature. No bid will be accepted in physical form.
- 6.4 Bids will be opened online as per time schedule mentioned in Para-1.
- 6.5 Bidders must ensure to upload scanned copy of all necessary documents with the bid. Besides, original documents related to the bid shall be submitted by L1 before issuance of Allotment in his favour.
- 6.6. **Bidders must ensure to upload scanned copies of all necessary documents, tender documents fee in terms of soft copies and all other documents required as per NIT with technical bid. No document (s) which has/have not been uploaded shall be entertained for technical evaluation in the form of hard copy. However in case of any clarification the bidders all have to produce original documents in support of soft copies if need arises.**

**Note:- Scan all the documents on 100 dpi with black and white option.**

- 6.6(a) **Bidders should note that if the documents uploaded/submitted on the basis of which the contract has been awarded are found forged/fake/not genuine at any time, the contract shall be cancelled and the contractor/bidder shall be recommended for blacklisting and debarred from taking part in tendering in University of Kashmir/Other Departments for a period of one year in the first instance, besides the performance security deposited for the said work shall be forfeited.**

7. The department will not be responsible for delay in online submission due to any reasons.
8. **For item rate method** the unit rates and prices shall be quoted by the bidder entirely in Indian Rupees and the rates quoted shall be deemed to include price escalation and all taxes upto completion of the work. Deduction on account of taxes shall be made from the bills of the contractor on gross amount of the bill as per the rates prevailing at the time of recovery.

**The %age rate method** requires the bidder to quote a percentage above / below / at par at the bottom of the

BOQ percentage template for the work. The percentage quoted by the bidder shall be deemed to include price escalation and all taxes upto completion of the work. Deduction on account of taxes shall be made from the bills of the contractor on gross amount of the bill as per the rates prevailing at the time of recovery.

10. Bidders are advised not to make any change in BOQ (Bill of Quantities) contents. In no case they should attempt to create similar BOQ manually.
11. **Price escalation and Taxes:** No price escalation shall be permissible. The deduction on account of taxes shall be made for the bills of the contractor for the gross amount of the bill as per the rates prevailing at the time of recovery.
12. Bidders are advised to use "**My Documents**" area in their user on R&B e-Tendering portal to store such documents as are required.
13. In case of CRF and any other specified project. The relevant guidelines standard bidding document shall be followed.
14. For construction of production wells bids of only those agencies shall be accepted who possess both Air rotary (ODEX) as well as mud rotary drilling rigs.
15. Tenders of only those firms shall be accepted who will give undertaking to the effect that they will depute men and machinery within 2 days at the site of work after issuing of letter of intent/allotment. (to be submitted online)
16. Instructions to Bidder (ITB)

16.1 All bidders shall upload the following information and documents along with qualification criteria/qualification information with their bids:-

**COVER 1st.**

- a) All bidders shall upload Copies of original documents defining constitution/ legal status, place of registration and principal place of Business with Cell No. and correspondence address.
- b. All bidders shall upload **e-challan and EMD as per NIT.**
- c. All bidders shall upload **Valid GSTIN Registration & PAN Card.**
- d. **All bidders shall upload Scanned copy of GSTIN registration and latest clearance certificate FORM GST-3B of the last quarter/preceding Month to the Issuance of NIT.**
- e. The firm must have done similar nature of works in the J&K or elsewhere.
- f. Valid Registration of Production Wells issued by the Competent Authority of enlistment card clearly indicating date of registration along with renewal page of Current financial year of 2023 -24.
- g. Scanned copy of Annexure I & II duly accepted/signed

**16.2 COVER 2<sup>nd</sup>.**

It shall contain Price bid (in e-form only) as per the BOQ. Price Bid shall be received by the department online only to be uploaded by the bidder.

**Note: For Technical specification of the well contractors/firms are advised to go through the Details of the work mentioned in the BOQ.**

**Note:- In case of discharge of the well is less than 4000 GPH, the well will not be taken over by the department.**

**17.0 ALL KEY CONSTRUCTION MATERIAL** shall have to be strictly as per prescribed specifications and approval of the Engineer In-charge.

17.1. The bidder at his own responsibility and risk should visit and examine the site of work and its surroundings before submission of bid.

17.2 Non attendance of pre-bid meeting will not be cause of disqualification of the bidder.

17.3 All documents relating to the bid shall be in the English Language.

**18 General Conditions of Contract: -**

18.1 The date of start of the work shall be reckoned within one week from the date of issuance of LOI/Contract allotment as the case may be.

**Penalty for delay in completion:** - In case of delay in completion of work beyond stipulated period of completion, **penalty upto maximum of 10% of the contract shall be imposed.**

**18.2 Time extension:** -Suitable time extension shall be granted in case of increase in scope of work and in the event of delay beyond control of contractor to be determined by the department.

**18.3 Advance Payments:-**No mobilization advance/equipment advance shall be paid.

**18.4 Secured Advance:-**No secured advance is admissible.

**18.5 Schedule of Payment:-**The payment schedule shall be fixed after award of contract in favour of successful bidder, **on the basis of availability of funds** and value of work executed, shall be determined by the Engineer.

**18.6 Amendment of bidding document:-**Before the deadline for submission of bids the employer may modify the bidding documents by issuing Addendum.

**18.7(a) The tender receiving authority reserves the right to accept or reject any tender or all tenders without assigning any reason thereof.**

**18.7(b)The Employer reserves the right to accept or reject any bid and to cancel the bidding process and reject all bids, at any time prior to award of Contract, without thereby incurring any liability to the affected bidder or bidders or any obligations to inform the affected bidder or bidders of the grounds for the Employer's action.**

**19.0 Unbalanced Bid:-** In case bid of the lowest bidder is found unbalanced, the successful bidder shall have to produce additional performance security in shape of CDR/ FDR /B.G within (7) days after opening of price bids, as per following break-up:-

S.No	Percentage of unbalance bid viz., advertised cost on account of Low rates	Additional Performance Security
1.	Upto and including 15% below	Nil
2.	Greater than 15%and up to 20% below.	5%
3.	Greater than 20% and up to 25% below.	10%
4.	Greater than 25% to 30% below	15%
5.	Greater than 30% below.	20%

**Additional security shall be released after successful completion of work.**

**20. Restoration of work:-** On completion of contract the contractor shall be responsible to remove allun-used

material and restore all work in its original position at his own cost.

**21 Regulations:-**The contractor is bound to adhere to traffic regulations as is applicable from time to time and ensure arrangements of smooth regulation of traffic during execution of work.

**22 Arbitration:-** The arbitration shall be conducted in accordance with the arbitration procedure stated in the J&K Conciliation and Arbitration Act No:-xxxv of 1997 issued vide SRO No:-403 vide Notification of J&K Govt., "**Law Department**" **11th December-1997**.

**23 Defect Liability period:-** The DLP shall be Calculated from date of certified completion of work and period shall be **06 months**. The defects noticed in the work during execution or D.L.P. shall be corrected by the Contractor within the length of time specified by the Engineer. If the contractor does not correct the defects pertaining to D.L.P. to the satisfaction of the Engineer within the time specified, the Engineer will assess the cost of having the defects corrected and contractor will pay this amount on correction of defects.

**24 The date of start of work shall be reckoned within 07 (seven) days from the date of issuance of allotment/ Letter of intent.**

**25 In case the agency fails to execute the work, the performance security in the shape of CDR/FDR/BG and normal deposit shall be liable for forfeiture besides initiating other punitive actions against the defaulter without serving any notice.**

**26 The Earnest Money of the successful Bidder shall be released after successful completion of DLP**

Failure on part of the contractor to fulfill his obligations of maintenance schedules shall result in forfeiture of the deposits held for this purpose as well as the CDR/FDR/BG for this work.

**27 Safety:-** The contractor shall be responsible for safety of all activities at site of work.

**28 Discoveries:-** Anything of historical or other interest or of significant value unexpectedly discovered on the site shall be the property of the Govt.

**29 Tests:-**The contractor shall be solely responsible for carrying out the mandatory tests required for the quality control at his own cost.

**30 Termination:-** The employer may terminate the contract if the contractor causes a fundamental breach of the contract.

**31 Fundamental breach of contract will include:-**

a) Continuous stoppage of Work for a period of 30 days without authorization of Engineer in- charge.

b) Contractor is declared bankrupt.

c) **Any evidence of involvement of contractor in corrupt practices.**

d) If the contractor indulges in willful disregard of the quality control measures put in place by the department.

e) Contractor delays the completion of work beyond stipulated time of completion.

f) **Pursuant to the process of termination of defaulted contract, the employer reserves the right to invite fresh tender for the balance work at the risk and cost of defaulting contractor.**

g) If in case contractor failed to start /complete the work, within the stipulated time period, his Performance Security shall be forfeited after termination of the contract. Besides, the **Bid Security Declaration shall be enforced and the defaulting contractor shall be debarred from taking part in tendering of works in R&B Department/other departments for a period of one year.**

**32 Major Labour Laws applicable to establishment engaged in building and other construction Work:-**

a) Workmen compensation act 1923.

b) Payment of Gratuity Act 1972.

c) Employees P.F. and Miscellaneous Provision Act 1952.

d) Maternity Benefits Act 1951.

- e) Contract Labour (Regulation & Abolition) Act 1970.
- f) Minimum Wages Act 1948.
- g) Payment of Wages Act 1936.
- h) Equal remuneration Act 1979.
- i) Payment of bonus Act 1965.
- j) Industrial disputes Act 1947.
- k) Industrial employment standing orders Act 1946.
- l) Trade Union Act 1926.
- m) Child Labour (Prohibition & Regulation) Act 1986.
- n) Inter State Migrant workmen's (Regulation of employment & Conditions of service) Act 1979.
- o) The Building and other Construction workers (Regulation of employment and Condition of service) Act 1996 and the Census Act of 1996.
- p) Factories Act 1948.
- q) Compliance with Labour Regulation Laws of J&K .

**33 Specification/Quality Control:-**All items of works shall conform to specifications as per IRC/ MORTH/ NBO/ CPWD/ SSRI Any other prescribed specifications.

**34 Insurance:-** Insurance cover to Labour I Machinery I Work I Plant material I Equipment by the contractor shall be mandatory.

**35 Laws Governing the Contract: -**The contract shall be governed by Laws of the land.

Court's Jurisdiction:-In case of a disputes/differences between contractor and Department the jurisdiction shall be J&K.

**36 Time Extension: -**

- a) The work is to be completed within the time limit specified in the NIT and the time of completion will also increase I decrease in proportion with additional I deleted quantum of work depending upon the actual quantum of work.
- b) Request for extension of time shall be made by the contractor in writing not later than fifteen days of happening of the event causing delay. The contractor shall also indicate in such a request the period for which extension is desired.
- c) Abnormal /bad weather or Serious loss or damage by fire or Civil commotion, strike or lockout (other than among the labour engaged by the contractor) affecting any or the trades employed on the work, or Non availability of departmental stores.
- d) Any other cause which in the absolute discretion of the accepting authority is beyond the contractor's desire.
- e) On contractor's representation based on the grounds as detailed above the time for completion of the work may be extended by a period considered reasonable by the Department.
- f) Extension of time shall be also admissible in the event of temporary suspension of work.

**37 Third Party Monitoring:**

The allotted works shall be subject to check by the Third party monitoring agency appointed by the department in Kashmir. The agency shall check the quality of works executed by the agencies, quality of material used for Construction and quality of machinery installed in each scheme. The TPIQM's role shall be that of an assistant to the Employers Representative for the purpose of monitoring and evaluation of the performance of the contract during the contract period.

**38. Terms of payment:**

- a) 90% payment shall be released after successful completion of the well as per the tender specifications and Handing Over the said department, after verification from concerned Assisnat Executive Engineer.
- b) 05% Shall be released after successful performance of Production Tube Well for Minimum period of (06) months (defective Labiality Period).
- c) Balance 05% shall be paid after harnessing of tube well for a trail run of (06)Months. In case of failure of well i.e. Discharge below 4000GPH, no payment shall be released in favour of the firm.

**39. Liquidated damages (LD)**

In the event of firms failing, decling, neglecting or delaying the supplies/ works or in the event of any damage occurring or being caused by the firm or in the event of any default or failure by the firm in complying with any of the terms and conditions of the contract, the Department shall with or without prejudice to any other remedies available to it under any law for the time being enforce in the UT, shall:

- a) Terminate the Contract after 15 days notice and/ or
- b) Recover the amount of loss caused by damage, failure or default, as may be determined by the department. And or
- c) Recover the extra cost, if any, involved in allotting contract to other party. And/or
- d) Impose Liquidated damages on account of delay beyond the schedule completion period to the tune of 0.5% of the delayed portion of contract every week but not exceeding 10% value of the contract. And/or
- e) Forfeit the performance security and blacklist the firm.

**40. Final Acceptance**

The equipment/ work shall be accepted by the Department only after the system has been tested and performed satisfactorily in all respects, at site, in accordance with the provision of the contract.

**The tender/bid is liable to rejection if it does not fulfill the requirements as laid down in NIT.**

All other terms conditions are as per PWD Form 25 (Double agreement Form) and detailedNI issued vide this office No. F(Fresh)(E.tend)(UCD) KU/47/23 DATED: 09/11/22.

**Executive Engineer  
University of Kashmir**

# **TECHNICAL SPECIFICATION**

## **01. Site Selection:**

The Contractor/firm would be given the tentative location of tube well, the information regarding Tube wells and Dug wells, existing the vicinity of the proposed sites like their depth, formations, encountered discharge and static water level will also be furnished wherever possible. Based on above information expected yield from the tube well shall also be communicated in the Contract/Firm.

In addition to above the Contractor/Firm shall be free to take the electric resistivity mapping of the proposed site and back an opinion from a hydro-geological expert. Who shall be registered with the CGWB or with the Govt organization of the Ut J&K. The charges shall be paid by the contractor himself. The data regarding strata obtained from ERM mapping shall be compared with the strata chart of the nearest existing well. The site for the tube well selected shall also be sufficiently away from possible sources of contamination like drains, Septic tank, manure animal farms, rubbish dumps, petrol and chemical storage site. After satisfying himself about the feasibility of the site for drilling of production tube well, the firm shall start the work at site. In case the contractor/firm is not satisfied about the feasibility of proposed site on the basis of above tests etc. the contractor/firm is free choose/propose a more suitable site. While doing so the Contractor/Firm shall specify the following:

- Whether a test bore hole is proposed and if so, its diameter and depth, and also depth of production tube well.
- Likelihood of increase or decrease of the depth specified above.
- Method of drilling with size of bore in different depths.
- Type of plain pipe with size, wall thickness and slotted/strainer pipes with opening may be mentioned.
- Guarantee with regard to the vertically of tube well and sand content (pm) in the discharge from the well at time of handing over.
- **Development methods shall be adopted as per the guidelines of CCWB.**

The site plan and the preliminary design shall require approval of the competent authority i.e Executive Engineer Construction Division, University of Kashmir. On initiating the drilling process, the contractor is at liberty to make the assessment for availability of adequate discharge of minimum 4000 GPH at the proposed site and if the discharge of the well turns out to be less, than the well shall not be taken over by the Concerned Division and no payment shall be made in favour of the firm.

In case of sites where feasibility of drilling cannot be ascertained other than by exploration a pilot bore of 150mm diameter shall first be done which can be furnished to the required final diameter by reaming, Strata chart shall be prepared based on samples collected during drilling of the pilot bore, Geological log of the bore hole shall also be taken which shall be used in conjunction with the strata chart for increasing quality of the aquifer. When this is done Engineer in Charge or his representative will inspect the site, and collect all the data needed for designing the well Based on this data, the well shall be designed and started for further execution. If the site is not suitable, the pilot bore shall be abandoned, and a alternative site shall be selected.

## **02. Construction of Production Tube Well:**

Construction of Production Tube well based on results of exploration data by a suitable method of drilling viz.



- I. Direct Circulation Method/
- II. Reverac Circulation Method/
- III. Dual Rotary Method
- IV. For Pitor Bore :DTH/ODEX

Up to the desired depth as per the code of practice for Construction and Testing of Tube Wells/ Bore Wells (Second Revision) IS 2800 (Part-1) 1991 and IS: 2800 (Part: II) 1979 in all kinds of Soils, boulders, rock, collapsible Strata, saturated soils etc. with the requisite accessories required thereof including Bentonite mud foam, Water Lubricants etc.

**The Drilled bore holes is to be reamed from 400mm to 550mm diameter for Mud Rotary** in case of open drilling and simultaneously cased in case of ODEX/Tubex drilling in 250mm dia an completed to the desired depth. The method of drilling shall be decided by the team comprising of Hydrogeologist, JE, AEE and the Executive Engineer after the deliberations on the surver report. The constructed Tube well shall be prepared for design and lowering of pipe. Asebly the case of open drilling. The size and length of allotted/ strainer Pipes would be selected according to the actual requirement and Strata met with and the expected discharge and depth of Tube Well.

### **03. Casing Pipe:-**

The Well casing must be large enough to house the pump and should allow sufficient clearance for installation and efficient operation. The dia of casing shall not be less than 250 mm Dia.

The Well casing Pipes generally conforming to IS-4270:1983 and the allotted/ Strainer Pipes conforming to IS 1810:1985 shall be provided by firm at the site of Well construction. The welding electrodes used for welding the casing Pipes shall confirm to the relevant Standard IS codes. The jigs and fixtures for lowering the casing Pipe shall be provided by the firm. The ball plug or bottom plug, the clamp for holding the casing Pipe and Well cap shall be fabricated out of IS-226:1975. The verticality and alignment of the Well and casing Pipes shall be tested as per IS-2800 (Part-II):1979: The well Casing shall be anchored with (SMC. 0 and CC Block. The CC Block shall be laid of size (2 X 2 X 1) M in M-15 Mix, excluding the annular dia of the Well.

### **04. Intake Design:-**

Water moves from the aquifer into the well through either a screen or slotted or perforated casing. Screens shall be manufactured with regularly shaped and sized openings. They shall be engineered to allow the maximum amount of water in with minimal entry of formation sediments. Stainless steel screens will be preferred because they are strong and relatively able to withstand corrosive water. Screens are manufactured with various slot sizes and shapes to match the characteristics of the aquifer. A good screen should allow the flow of water into the well and should be effective in holding back the formation sediments.

Cuttings from the borehole should be examined and a judgment should be made whether to use a screen, or slotted or perforated casing/liner. While a screen is the more expensive alternative, it is necessary if the aquifer is composed of loose material such as fine sand, gravel or soft sandstone. A slotted or perforated casing/liner can be used when the aquifer formation is more consolidated, such as hard sandstone of fractured shale.

### **05. Slot / screen size openings:-**

The slot/ Screen openings shall be designed on the basis of Sieve analysis of Samples collected

after every 10 to 20 Feet of Drilling, and must be small enough to permit easy entry of water into the well while keeping out sediment. The slot size chosen will depend on the particle size of the earth materials in the producing aquifer. Typically one should select a slot size that allows 60 percent of the aquifer material to pass through during the well development phase of drilling. The remaining 40 percent, comprising the coarsest materials, will form a natural filter pack around the perforations of screen. The slot size shall conform to IS 8110:2000.

#### **06. Total open area of screen**

The amount of open area in the screen or slotted or perforated casing/liner will affect how quickly the water from the aquifer enters the well. A smaller amount of open area allows the water to enter the well at a slower rate, causing a lower drop in pressure as the water moves into the well. If the water flows too quickly, dissolved minerals in the water will precipitate out of solution and create an incrustation build-up in restricting the flow of groundwater into the well. Incrustation is a build-up that occurs when dissolved minerals in the groundwater come out of solution and deposit on the screen or casing. The pore spaces in the aquifer immediately adjacent to the perforations may also get clogged, restricting the flow even more.

The total area of the slot openings is dependent on the length and diameter of the screen. While the length of the screen a variable, the diameter of the screen is determined by the diameter of the well casing. The yield from a well increases with an increase in screen diameter but not proportionately.

#### **07. Placement in the aquifer**

The screen or perforations on the casing/liner must be placed adjacent to the aquifer. If improperly placed, the well may produce fine sediment which will plug plumbing fixtures and cause excessive wear on the pump. Therefore bore log data should be analysed to accurately to identify the boundaries of the aquifer for exact placement.

#### **08. Verticality of Tube Wells**

Tube wells must be perfectly vertical by using a plumb disk. Two disks made out of 3mm thick steel plate are connected together by a rod of 25mm diameter and 3 m long tightened with the help of nuts at the ends. Some holes are punched in plates to facilitate immersion in water.

A knob is fixed on the top nut to which a thin steel wire is attached, The disk is suspended into the tube by the wire passing over a pulley on a tripod. When the disk is lowered into the pipe, the wire is exactly in the centre of pipe. When the disks are further lowered down and if the well pipe is not truly vertical, the wire will deviate from the centre and that shall be indicated at the top of pipe.

**Absolute verticality is ideal for installation of Submersible Pumping Unit.**

#### **09. Annular Seal & Well Cup**

Sealing the well protects the well from contamination. The annular space must be sealed to prevent any surface contamination from migrating downward and contaminating the water supply.

A vermin-proof well cap shall be designed to keep animals, insects and contaminates from entering the well. It shall be equipped with rubber gaskets and screened wants to ensure air circulation. Covering shall be custom made to the respective diameter.

### **9. Well Development**

Well Development in the process of removing fine sediment and drilling fluid from the area immediately surrounding the perforation. The increase the well's ability to producer water maximize production from the aquifer. If the aquifer formation does not naturally have relatively coarse particles to form a filter. It

may be necessary install an artificial filter pack. This pack is placed around the screen and preformation's so the well can be developed. This procedure is necessary when the aquifer is composed of fine sand and the individual grain are uniform in size. It is important to match the grain size of filter pack material with the size of the slot openings of the screen to attain maximum yield from the well. Typically the slot size of the screen shall be selected so that 85 percent of the artificial pack material will remain outside of the screen after well development. The well development shall be purely as per the COWB norms which is 4 hours per Meter of screen or as required at site to be decided by the site in-charge JE/AEE.

### **11. Yield Test:-**

Tube well shall be tested for yield by the Contractor/Firm as per IS: 2800-1979, yield test is to be performed by the firm in order to establish the following data:-

- I. State Water Level,
- II. Dynamic Water Level,
- III. Drown-Down,
- IV. Constant Discharge of the well,
- V. Safe Yield of the well for installation of Pumping Unit. After drilling and developing a well, contractor/firm must annularize the well with pumping unit for at least 30 Hours before Handing over the well to the concerned. Territorial Division.

### **12. Disinfecting the well:-**

The contractor/Firm shall disinfect the tube well with chlorine. The concentration must be at least 200 Milligrams of chlorine per liter of water present in the well and must be left in the well for at-least 8-12 hours to ensure any bacteria present are destroyed.

### **13. Filter Pack:-**

- I. Filter pack shall consist of well-rounded particles, with uniformity coefficient (D60/D10) less than 2.5. The gravel/ sand used in the filter pack shall be 95% malicious (not >5% Soluble in hydrochloric acid), free from foreign matter washed and disinfected. Gravel shall conform to IS: 4097:1958 \*Gravel for use as filter pack in the bore wells\*.
- II. The filter pack shall extend above the screen a distance of 1- to 2 m, to account for setting and loss during development to prevent the filter pack around the screen from being fouled by and clogging grout.
- III. The size and grading shall be as per B-3 of annexure B of IS: S110-2000 \*well screens and slotted pipes – specification\*. Gravel shall consist of sand and gravel. The grain size shall be so selected as to have D50 of filter pack 9-12. 5times the D50 of the formation in the aquifer in uniform aquifers and 11-15. 5 times the D50 of the formation in the aquifer in non-uniform aquifers. Another criteria is that the average pore size of the gravel pack which may be taken as 0.4 times D10 of the gravel pack should be less than of the formation in the aquifer.

No: F(Fresh)(E.tend)/ (UCD) KU/47/23

DATED: 09/11/23

**Annexure "A"**

**(Clause 12.2.1)**

**Information to be furnished by drilling agency to owner on**

**Completion of Tube Well.**

- 01: Agency drilling the Tube Well.....
- 02: Location of the Tube Well.....
- 03: Method of drilling adopted.....
- 04: Date of starting.....
- 05: Date of completion.....
- 06: Coring done.....bit size....Bit type.....Hours.....Recovery..... From..... to.....
- 07: Reaming .....Bit size.....Bit type.....Hours..... From .....to.....
- 08: Lithology data From To Formations .....  
.....
- 09: Total depth of Tube Well drilled.....
- 10: Assembly of Production Well...size.....Length.....Type..... Performance per  
Meter..... Housing Pipe..... Blind Pipe.....  
Strainer..... Bail Plug.....
- 11: Top of Tube Well above/below Ground Level.....
- 12: Size of Gravel.....Quantity used before development..... Quantity used during  
development.....
- 13: Method used for development.....Total Hours of testing.....
- 14: Development Discharge.....
- 15: Turbidity.....
- 16: Further details appended:
  - a) Sample of Strata, neatly packed in Sample Bags.
  - b) Chart of Pipe Assembly lowered, and
  - c) Result of Mechanical analysis of Samples of unconsolidated Strata.
- 17: Remarks

**Annexure II**

**Undertaking**

**(On Letter head duly Stamped/Signed )**

The Executive Engineer

University of Kashmir,

Srinagar.

Sir,

1. I/we the undersigned, certify that I/we have gone through the terms and conditions mentioned in the tender documents and undertake to comply with them.
2. It is further certified that our firm has not been blacklisted by any agency in India or abroad.
3. We will execute the work in accordance to the specifications of the work order. At any stage, if it is found that the work is substandard or there is any deviation from the specifications/design/quality made by us, we shall be liable for penalty and legal action.

Signature of the tenderer,  
with seal.