


Quotation Notice

This Office invites sealed rate quotations of following equipments from reputed manufactures/ suppliers for estimate purpose only. The quotation should be supplied within 15 days from the date of advertisement and the rates should be valid for one year. For more details log on to the website www.merinashik.org or visit our office of the undersigned.

Name of Instruments-

- 1) Small Box Direct Shear Appartus-2kN(Conventional)
- 2) Small Box Direct Shear Appartus-2kN(Electronic),
- 3)Shear Pat / Shear Box Assembly.

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QN/MERI/SMRL/01-2017
Date- 18-12-2017


Scientific Research Officer,
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-: Technical Specifications:-

(Approved By- 'B' committee, vide Marathi letter no.उसंवि/उप्राक/तांविस्/उपकरणे/७७९/सन२०१७ दि. १६/११/२०१७)

Item No. 1:- Small Box Direct Shear Apparatus -2kN (Conventional)

Providing, Installing and commissioning for Conventional Direct shear apparatus (small Box) having Shear load capacity 2kN & carrying out Direct/residual shear strength test. With all leads & lifts and taxes etc. comp. as per specifications.

Sr.No	Sub Item	Required Specification
1	General Purpose	The Direct shear (Motorised) test is carried out with an apparatus consisting of a square into two halves. The Specimen contained in the box, is subjected to a constant normal load while an increasing horizontal force is applied to one of the sections of the shear box. This Apparatus is required for testing Sand, soil, Clay with particle size less than 4.75mm.
2	IS	The unit must confirm to IS 2720.(Part 13, Sec-1)& I.S. 11229
3	Specimen Size	60 X60 X25 mm
4	Shear Loading capacity	2 kN
5	Proving Ring & Dial Gauge.	i)Proving Ring 2kN capacity- 1No. ii) Dial Gauge 0.25X0.01mm- 2Nos.
6	Gear box	It should have provided with a turret type gear box to get 12 different gear changes.
7	Strain Rate	It should have 12 speed ranging from 0.0002 mm/min to 1.25 mm/min.
8	Motor	The Stepper motor should be provided to attain a maximum stress up to 8 kg/cm ² and suitable for operation with 220V, 50 Hz, single- phase supply.
9	Loading system	It should have horizontal loading system for shearing the specimen and Hangers for loading.
10	Shear box assembly	It should consists of following replaceable parts. i. Halves of Shear box - 2 Nos. ii. Plane Gripper Plate- 2 Nos. iii. Perforated Gripper - 2Nos. iv. Porous Stone- 2Nos. v. Top Loading Pad- 1 No. vi. Base Plate- 1 No. vii. Specimen cutter- 1 No. viii. Shear Box Housing of Brass, complete with two ball roller strips.- 1 No. ix. Magnetic stand for shear strain Dial gauge- 1 No.
11	Set of weights	Set of weights to give a normal stress up to 8 kg/cm ² . 0.05 kg/cm ² , 4 nos. 0.10 kg/cm ² , 1 nos. 0.20 kg/cm ² , 1 nos. 0.50 kg/cm ² , 3 nos. 1.00 kg/cm ² , 4 nos.

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12	warranty	Warranty period 2 years.
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Item No. 2:- Small Box Direct Shear Apparatus -2kN (Electronic)

Providing, installing and commissioning Electronic (Digital) Direct Shear Small Box (Microprocessor Based) Apparatus having shear load capacity 2kN and carried out Direct/Residual Shear strength test with all lead and lifts and taxes etc. completes per specifications.

Sr. No	Sub Item	Required Specification
1	General Purpose	The Direct shear (Electronic (Digital) Microprocessor Based) test is carried out with an apparatus consisting of a square into two halves. The Specimen contained in the box, is subjected to a constant normal load while an increasing horizontal force is applied to one of the sections of the shear box. This Apparatus is required for testing Sand, soil, Clay with particle size less than 4.75mm.
2	IS	The unit must confirm to IS:2720.(Part13,Sec-1),&I.S: 11229
3	Gear box	It should have provided with a turret type gear box to get 12 gear changes.
4	Specimen size	60 X 60 X 25 mm
5	Strain Rate	It should have 12 speeds ranging from 0.0002 mm/min to 1.25 mm/min.
6	Motor	The Stepper motor should be provided to attain a maximum stress up to 8 kg/cm ² , and suitable for operation with 220V, 50 Hz, single- phase supply.
7	Loading system	It should have horizontal loading system for shearing the specimen and Hangers for loading.
8	Shear box Assembly	It should consist of following replaceable parts. i) Halves of Shear box - 2 Nos. ii) Plane Gripper Plate- 2 Nos. iii) Perforated Gripper - 2Nos. iv) Porous Stone- 2Nos. V) Top Loading Pad- 1 No. vi) Base Plate- 1 No. Vii) Specimen cutter- 1 No. viii) Shear Box Housing of Brass, complete with two ball roller strips.- 1 No. ix)Magnetic stand for shear strain Dial gauge- 1 No.
9	Set of weights	Set of weights to give a normal stress up to 8 kg/cm ² through lever, comprising 0.05 kg/cm ² , 4 nos. 0.10 kg/cm ² , 1 nos. 0.20 kg/cm ² , 1 nos. 0.50 kg/cm ² , 3 nos 1.00 kg/cm ² , 4 nos.
10	Transducers	It should have transducers like displacement sensors and load cell with micro-processor display system instead of dial

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		gauges and proving rings. i) Load- Universal type load cell 2kN :- 1No. ii) Displacement LVDT± 20 mm : 2Nos.
11	Shear Loading capacity	2kN.
12	Digital display /conditioning unit	Micro controller multiline Alphanumeric LCD display for all channels.
13	Electronic Conversion Kit	It consists of a Micro controller that stores the reading of each sensor and finally transfers it to computer. The data of all three channels of Direct Shear. Test can be transferred to computer and can be monitored online. The Unit also provides the facility of online monitoring of data through LCD display.
14	Other facilities should have incorporated in the system:-	Broadly the following facilities should have incorporated in the system:- i) Three independent channels. Load (N), Horizontal Displacement (mm), Vertical Displacement (mm) ii) Independent display for each channel simultaneously. iii) Programmable Print interval / data transfer interval (between 10 second to 1 hour) iv) Automatic data saving on stop button. v) 25 set of results should be stored in the electronic unit. Sample number could be programmed vi) Online date and time of test stored along with the data. On line (while the test is in progress) data transfer to the computer which is stored in the computer with a particular file name. vii) Data could be downloaded to the computer after the test, Which was stored even after the power was off. viii) Without computer, test data could be printed through printer
15	Data Acquisition Software for Testing, Analysis and Reporting.	The P.C. based control system & Data acquisition system should be supported. i) On-Line Data Acquisition Software ii) On-Line Data Transmission from Signal Conditioning Unit to Computer iii) Off-Line Data Analysis Software that does all the Calculations of Direct Shear Test. iv) Has option for manual as well as automatic recording of data. v) Calculates Area, Volume, Bulk density, Dry density, Moisture content etc. of the specimen vi) Display the following Plots. a. Horizontal Displacement vs Shear Force b. Horizontal Displacement vs Vertical Displacement c. Normal stress vs Shear Force d. Display Maximum value of the Dilation Angle along with 'C' and 'Ø' values. The software should be windows based and user friendly.

		It also should be easy to operate and has the flexibility to enter different sizes of test specimen.
16	Computer and Printer	The dedicated computer with latest configuration should be supplied. i) Computer- All in one ii) Processor- Intel core i ₃ (5 th Gen.) iii) Ram- 6GB, DDR3 iv) HDD- 1TB v) Cache- 6 MB vi) OS- Win 10- Home vii) Graphics- 2GB viii) DVD – Super multi Drive.(DVD RW) ix) Screen – 20" Full H.D., Display. x) Mouse & key board. xi) Printer – A-4 size color printer having Built in Wi-Fi. Print from mobile device.
17	warranty	Warranty period 2 years.
18	Annual maintenance	Annual maintenance for further 3 years after warranty period.

Item No. 3:- Shear Pat/ Shear Box Assembly. –

Providing & supplying shear pats/ Shear box assembly having specimen size 60 X 60 X 25 mm square and compatible to the machine providing vide Item no. 1 & 2 (Conventional & Electronic Shear machine respectively). With all leads and lifts and taxes etc. complete as per specifications.


No.	Particular's	Required Specification
1	Purpose	For determination of shear strength of soil with a maximum particle size of 4.75 mm in undrained, Consolidated undrained and consolidated drained Conditions.
2	Shear Pat -	The pat should be of non – corrosive metal and is divided into two halves horizontally so that the dividing plane coincides with the central plan of the sample. These two parts should be accurately fitted together by two easily removable pins or screws which pass vertically through the walls of the upper half and fit into the lower half. Suitable lifting screws so as to separate the two halves of shear box, to the extent required, during the test should also be provided. Suitable holes, about 1.5 mm in diameter, should be provided on the sides of the lower half of the shear box to enable entry of water below the bottom of the soil specimen. It should be made of brass and of specimen size 60 x 60 x 25 mm and about 50 mm deep total open top and bottom.
3	I.S.	The unit must confirm to I.S. 2720(part XIII)

4	Plain grid plate	2 Nos.
5	Perforated grid plate	2 Nos.
6	Base Plate	1No.
7	Top loading Pad (Brass)	1No.
8	Porous stone (6mm thick.)	1 No.


Term & Conditions-


- 1) The Rate should be supplied with inclusive of all Taxes. (Including G.S.T)
- 2) The all Instruments should have two Years Warranty periods.
- 3) The Rate of Electronic Shear Machine (Item no 2) should be provided with Three Years Annual Maintenance contract (AMC) after the warranty period.
- 4) The conditional Rate quotations should not accepted.

Prepared By-


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