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Title:

Supply of Accelerated Weight Drop (AWD) Impact Seismic Source with trolley for active seismic survey

1.0 Scope of Supply:

Accelerated weight drop (AWD) is required to act as impact seismic source for carrying out seismic surveys such as Multichannel Analysis of Surface Wave (MASW), Refraction and Reflections Analysis for the estimation of velocity structure of earth's subsurface layers. The equipment's technical specifications should be suitable to conduct these surveys.

The AWD impact seismic source should be able to sustain and withstand rugged field conditions. It should generate high energy pulse as P and/or S wave. It should be light weight, compact and portable, rugged and highly repeatable impact source. The operation and maintenance of the equipment should be user-friendly with all necessary options.

The bidder has to supply 1 (one) set of Accelerated Weight Drop (AWD) impact seismic source as per the specific requirements stated in **Para 2.0**.

- The bidder is required to supply the complete unit to meet the requirements as per tender document. Partial supply of material will not be accepted.
- The complete system should be under three years on-site warranty period from the date of acceptance of the goods.

2.0 Technical specifications:

The **Accelerated Weight Drop Impact Seismic Source** should come with controller to program cycling time, repeatability and trigger switch to trigger seismographs. It should be driven by 12V DC motor to lift the hammer mass and energise **elastomer-band or springs** which on release, accelerate the hammer mass to strike ground with a high impact. The item should be easy to assembled/disassembled, mountable on trolley and rugged for use in the field survey.

Specification of the **Accelerated Weight Drop Impact Seismic Source** is given below:

S.N	Item	Specifications
1.	Hammer	<ul style="list-style-type: none">• Mass range: 20-40 Kg ($\pm 10\%$)• Material: Steel or metal alloy
2.	Hammer drop height range	<ul style="list-style-type: none">• 0.35 - 0.50 m ($\pm 10\%$)
3.	Chassis/frame	Steel/ Aluminum/ metal alloy

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4.	Impact energy range	100-300J or more
5.	Wave generation	Pressure (P)
6.	Impact frequency bandwidth	Min - 10Hz ($\pm 10\%$) Max - 200Hz ($\pm 10\%$)
7.	Nominal depth of exploration	20metres (minimum)
8.	Hammer accelerator	<ul style="list-style-type: none"> • A drive motor, chain and sprocket mechanism, ELASTOMER RUBBER BELT/SPRING to the lift the hammer and accelerate while dropping. • Accelerator: Elastomer rubber belt or metallic/alloy spring
9.	Drive motor	<ul style="list-style-type: none"> • Electric 12V DC • Continuous duty, industrial, compact gear
10.	Strike Consistency and Repeatability	Energy and frequency content of the impact have to be consistent (within $\pm 10\%$ deviation) in every strike. The amplitude, phase and spectral content of the impact source should be as similar (within $\pm 10\%$ deviation) as possible on repetition.
11.	Controller	<ul style="list-style-type: none"> • Console: Wired control • Operation: Automatic cycling with integrated triggering system.
12.	Cycling period	3s, 5s
13.	Trigger	<p>It should provide trigger over wire to activate recordings in seismographs.</p> <ul style="list-style-type: none"> • Seismograph Trigger: Standard Pezo electric impact trigger (Hammer trigger) with cable and connector (MILITARY GRADE 3 PIN STRIAGHT PLUG TYPE MALE CONNECTOR compatible to standard seismic digitizer trigger input connector) to connect into Seismograph.
14.	Transportability & Portability	It should be easy to carry and to assemble in the survey area.
15.	Mounting on vehicle	Adjustable bracket and provision to mount on vehicle/ trolley.
16.	Strike/Base-plate	<ul style="list-style-type: none"> • Size: at least 45cm x45cm

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		<ul style="list-style-type: none">Material: at least 2.5cm thick Rugged heavy duty steel/metal alloy plate
17.	Rugged trolley	Trolley to mount the AWD for moving/operating in the field <ul style="list-style-type: none">2/4 wheelsEasy mounting of the AWDSuitable to move/operate in rugged terrain
18.	battery	12V DC (65AH or more)
19.	Weight	<ul style="list-style-type: none">Hammer assembly: < 50KG

3.0 Deliverables:

The deliverable items are given below:

S.N	Description of Items	Quantity
1.	Accelerated Weight Drop Impact Seismic Source	1

4.0 General terms and conditions:

General terms and conditions for quoting against the above mentioned product are given below:

4.1 The Supplier shall read the detailed specs of the item required and quote make/model no. of the item to meet the required technical specifications.

4.2 Suppliers shall give the complete specification sheet with offer. Otherwise their offer may be rejected.

4.3 Supplier shall quote for supply of the items as per bill of material and technical specifications.

4.4 Material acceptance criteria:

The items under the scope of supply shall be subjected to inspection by the indenter or his/her representative, before the final delivery. The product shall be tested to the satisfaction of the indenter or his/her representative for all features/specifications and functions mentioned in Para.2. Functionality and performance of the major inbuilt features: (i) impact energy range, (ii) impact frequency range (iii) strike consistency and repeatability (iv) cycling period and (v) trigger, shall be tested with standard 3-component geophones, accelerometers and seismograph. The response of the ground (in the proximity of the strike plate) will be recorded and the response spectra of each shot will be compared for all the specification. The performance should be within the 10% tolerance of the specifications for final acceptance.

4.5 Material rejection criterion:

- a. All the supplied items should be brand new. Used materials/ refurbished items/ repaired items will not be acceptable and will be rejected.
- b. The items will be rejected if it fails in any of the functionality test procedure mentioned in **4.4**.

4.6 The supplier shall submit compliance against each specs specified and specify if any deviation is there, clearly in technical compliance and provide supporting documents. Failure to this will lead to rejection.

4.7 In case of conflict among technical specifications, the more stringent one shall govern.

4.8 Offers only from OEM or their authorized agents will be accepted.

4.9 Supplier shall submit, along with the offer, information about the similar items/ product supplied to some customers in the past.

4.10 The supplier should provide documentation like specification sheets, user manuals, operating instructions in soft /hard copy in English.

4.11 No end use certificate will be provided by the purchaser.

4.12 Pre Dispatch Inspection (PDI) is required at vendor's location. Material shall not be dispatched prior to approval by our engineer, at supplier's location. Necessary testing and inspection facilities should be provided to our engineer during the pre-dispatch inspection. Once the material is ready, request for pre-dispatch inspection should be raised by the supplier at least two weeks in advance.

5.0 Packing and forwarding:

The items/product shall be packed in boxes for safe transportation to the customer's premises. Any damage occurred during transportation shall be the supplier's responsibility.

6.0 On-site warranty:

On-site warranty period for the deliverables shall be at least 36 months (3 Years) from the date of acceptance of the material at purchaser's premises. Supplier shall submit warranty certificate to this effect with delivery of material.