INDIAN INSTITUTE OF TECHNOLOGY BOMBAY

MATERIALS MANAGEMENT DIVISION

Powai, Mumbai 400076.

Ref No.(PR No.1000059206) **(Rfx No. 6100003221)**

Technical Specifications : Terrestrial Laser Scanning System, Qty : 1

Sr. No	Item Description	Detailed Technical Specification	Technical Compliance (Yes / No)	Additional Information (if any)
1	3D Laser Scanner with Automatic Total Station and GNSS integration	• Scope of tender/ contact: Supply, installation, demonstration, and training of a 3D Laser Scanner, along with the following accessories and software • Laser Class: The instrument must be a Class I Laser with eye safety. • Scanning Range: Scanning range of 500 Meters or more (at 90% reflectance) & 100 Meters or more (at 18% reflectance) • Field of View / Measurement: Vertical 290° / Horizontal 360° • Data Capturing Rate: The Instrument should have a Scanning Speed of a minimum of 25,000 points per second or more (standard measurement) over the entire Range Spectrum. • 3D Position Accuracy: 2 mm to 8 mm or better • Internal Camera: Multiple Internal Cameras with a minimum of 8MP each or higher to create 360°Panoramic Images. • Instruments Controller / Display: Minimum 10-inch (1024 x 600) TFT/LED color display, built-in or External. It should have controls to configure the		

		instrument in user-defined mode and to view the 3D Point Cloud data in the field itself. • SURVEY PROGRAM: Should have 3D Data Visualization, Station Setup, Quick orientation, Set Angle, backsight, Resection, Traverse Check & Adjust Field, tilt Graphical display, target acquisition & Target monitoring, Scan area definition: full Area Scan Polygon scanning, Graphical display of cloud with zoom facility with visualization, line joining, area Calculation, COGO, photo Capturing, collimation of Prism/target & user-defined time interval along with report, etc. • Data Storage (Controller): a) Storage 1TB or higher b) External flash drives or External hard Drives, via USB 2.0 interface or better c) RAM 16 GB minimum d) Intel Core Ultra 7 or better • Operating Temperature Range: –20 °C to 50 °C • Power Supply: Through a maintenance-free internal rechargeable Battery (from OEM resource), having sufficient capacity for continuous scanning operation for a minimum of 3 hours. • Protection Class: Should confirm IP 55 or better with dust & waterproof. • GNSS integration: The unit must be capable of integration with GNSS receivers to establish precision control. GNSS receivers must be supplied with the TLS total station instrument. • Additional features in Outdoor TLS: Automatic Total Station a) Angular Accuracy – 1" b) Distance Accuracy Prism Mode – 1 mm + 1.5 ppm or Better (Standard) c) Distance Accuracy Non-Prism Mode – 2 mm + 1.5 ppm or Better d) Measuring Range 1 Prism – 1 m to 5500 m or Better e) Measuring Range Non-Prism – 1 m to 800 m or Better (at 90% reflectance) f) Auto Lock Range – 1 m to 700 m or better		

		g) Technical: Installation, training (a) min 3 days on installation, data execution, and data processing. • List of material to be delivered for 3D Laser Scanner with Automatic Total Station: a) Terrestrial Laser scanner with scanning Range of 500 Meters or Better - 1 No b) Reflectors – 360 Degree Prism with 2.6 m Pole and Bipod - 2 Nos. c) Professional wooden tripod for the TLS-total station setup - 1 No d) Tribrach - 1 No e) Controller for TLS with 16 GB RAM, 1TB internal memory. The controller must include necessary software for controlling, operating the TLS-Total Station, and for on-field data visualization - 1 No f) Batteries for TLS - 2 Nos, g) Dual Battery Charger with Power Supply and Power Cord -1 No, h) Carrying case/ Bag pack - 1No.		
2	High-Speed, Tripod-Mounted 3D Terrestrial Laser Scanner for Indoor Scanning Applications	• Detailed Specifications of High-speed, Tripod-mounted 3D Terrestrial Laser Scanner for Indoor Scanning Applications -1 No • Scanning Speed: The Hardware Should have a scan speed of up to 1 million points/sec. • Range Accuracy: The instrument should maintain a Range Accuracy of 2 mm or better • Measurement Range: Measurement Range of 0.6-140 Meters or better • Camera Minimum 10 MP sensor or better. • 3D Point Accuracy: 2.4 mm 10 mts to 6 mm 40mts or better • Field of View: Instrument Field of View should be min 360° Hz and 280° V or better • Weight: The Instrument should be portable, weighing less than 6 kg. • Laser Class: Laser Class 1 • Auto Calibration: The instrument should be the latest to run a full auto calibration routine for		

		Angle, Range, and Vertical Speed for Optimum performance & should be able to produce a calibration report in the field. • Inertial Measuring Unit: The instrument should have an in-built IMU to track the instrument position, orientation, and Movement. • Registration: The instrument should be able to auto-register the number of positions in real time on the field, also allowing Manual Registration, visual checks, registration refinement, and generating a registration report in the field. • Battery: The internal power source should be able to run the operation for up to 3 hours on a single charge. • Accessories: The system should be offered with at least 2 batteries to support extended operation. • Controller: The instrument should essentially be able to show the captured data in Real time on a rugged controller with a minimum 10" Screen with internal storage of a minimum 1TB and 16GB of RAM. Necessary controlling and data visualization software must be included in the controller. Windows/IOS • Environmental: The instrument should be able to operate from -20°C to +50°C without additional accessories to enhance performance in rough weather. • IP Rating: IP Rating – Minimum IP55 or better. • Data Storage: Data storage should be Internal or External via SD Card/USB, which is easily available on the market (not a proprietary product of OEM) • List of material to be delivered for Terrestrial Laser Scanner for Indoor Scanning Application a) Terrestrial Laser scanner with scanning Range of 140 Meters or Better - 1 No b) Controller for TLS with 16 GB RAM, 1TB internal memory, Onboard Software, and Charger -1 No, c) Carbon Fiber Tripod - 1 No d) Batteries for TLS - 2 Nos e) Dual Battery Charger with Power Supply		

		and Power Cord - 1 No f) Carrying case/ Bag pack - 1 No.		
3	GNSS to be Supplied with the Terrestrial Laser Scanner-Automatic Total Station	• Detailed Specification of GNSS to be supplied with the Terrestrial Laser Scanner-Automatic Total Station - 1 Set (2 units) • Receiver Antenna-Integrated: The receiver and Antenna should be integrated into a single housing • Differential GPS (DGPS) Accuracy: Horizontal- 25 cm + 1ppm or better / Vertical – 50 cm + 1ppm or better • High Precision / Long Observation Static Accuracy: Horizontal - 3 mm + 0.1 ppm or better / Vertical - 3.5 mm + 0.4 ppm or better • Static and Fast Static Accuracy: Horizontal - 3 mm + 0.5 ppm or better / Vertical - 5 mm + 0.5 ppm or better • Real - Time Kinematic (RTK) Accuracy: Horizontal- 8 mm + 1 ppm or better / Vertical- 15 mm+1 ppm or better • Standalone L-band Accuracy via satellite-based correction: Horizontal - 2 cm RMS or better / Vertical - 3 cm RMS or Better • Number of Channels: 500 or better • Tilt Sensor: IMU Based Tilt Sensor. Calibration-free and immune to magnetic interference, Tilt Accuracy of 7.5 mm up to 30° RMS, Plus RTK Accuracy of GNSS, and Tilt Capable of working up to 40° • Subscription license for satellite-based correction - inclusive in the scope of supply: Satellite-Based GNSS Correction Subscription: One (1) subscription for satellite-based GNSS corrections, compatible with the GNSS rover and of the same OEM make, shall be provided and maintained		

		throughout the entire warranty period at no additional cost • Communication Ports*: Combined Lemo, Bluetooth, Wi-Fi / WLAN • Communication Protocols: CMR+, CMRx, RTCM 2.1, RTCM 2.3, RTCM 3.0, RTCM 3.1, RTCM 3.2 input and output,24 NMEA outputs, GSOF, RT 17, and RT 27 Output. • Phone Modem Antenna: Internal or External • Radio Modem Antenna: Internal Antenna • External Data Links Supported: GSM, GPRS, LTE, UMTS, HSDPA, UHF • Integrated Survey: The system shall enable real-time integration of GNSS and Terrestrial Laser Scanning (TLS) cum Automatic Total Station workflows in the field, allowing the operator to establish and maintain georeferenced scan positions directly during field acquisition, without the need for additional external accessories, separate positioning devices, or dedicated third-party software. • Internal Storage Capacity: 9 GB or higher • Radio Power (Watt): 1.0 (Watt) or better • Non-Condensing Humidity, Rh*: 100% Or higher (percent) • Ingress Protection*: IP 68 or higher • Operating Temperature: - 40 to +65 (degree Celsius) • GNSS Battery and Charging: Removable rechargeable battery for GNSS Receiver and		

		battery charging through an external battery in the field and through a battery charger. • Detail Controller Specification: Display/Screen/Touch - 6 Inch Gorilla Glass 3, Multitouch user interface with capacitive, stylus, glove, and wet-finger compatibility, Alphanumeric Touch screen soft keyboard. with a color graphic display and Landscape & Portrait views, must. • Operating system Android 12 or Higher. • RAM 6 GB. Internal storage Memory 64 GB. • Integrated GPS • Hot Swappable Lion Battery for the controller • Removable Battery • Background Maps - Built-in Maps in Satellite, Terrain, and Street View for the Warranty period of the same OEM make, with Each Field operating Software. • Drop 26 Drop (each face, edge & corner) at room Temperature from 1.22 meters onto plywood. • Operating Temperature -20 to 55. • List of material to be delivered -GNSS for Integrated Survey with Terrestrial Laser Scanner a) GNSS Receiver with 500 Channels or More - 2 Nos b) Battery for GNSS - 4 Nos c) Dual Battery Charger with Power Supply and Power Cord - 2 Nos d) Controller for GNSS with 6-inch Display, RAM 6 GB, 64 GB internal memory, and Charger – 1 No e) Tribrach with Adaptor, Base extension rod, and Tripod for Base setup - 1 No f) Rod 2.0 Mtr. With Bipod - 1 No g) Hard Carrying Case for GNSS - 2 Nos		
4	Warranty of the system	3 Years		