

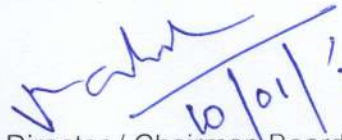


**Survey of India**  
**Tamil Nadu, Puducherry, Andaman & Nicobar Islands Geospatial Data Centre**  
**Shastri Bhavan, Nungambakkam, Chennai**

**PRE PROPOSAL CONFERENCE**

A Pre Proposal Conference on "Upgradation of Tamil Nadu - CORS Infrastructure to bring the TN CORS at par with National CORS" is proposed as below:

1	Name of Work	Upgradation of Tamil Nadu - CORS Infrastructure to bring the TN CORS at par with National CORS
2	Date of pre proposal conference	16/01/2024 15:00 Hrs
3	Mode of pre proposal conference	Both Offline & Online
4	Address of Communication	Director, Tamil Nadu, Pondicherry and Andaman & Nicobar Island Geo-spatial Data Centre, Survey of India 3rd and 4th Floors, New Additional Office Building, Shastri Bhavan, 26 Haddows Road Nungambakkam Chennai-600006
5	Contact Phone / Email	044-22501293 / tnpani[dot]gdc[dot]soi[at]gov[dot]in +91 9940364026

  
16/01/24  
Director / Chairman Board  
TNP & ANI GDC, Chennai

**DRAFT DOCUMENT**  
**- FOR UPGRADATION OF TAMIL NADU - CORS INFRASTRUCTURE TO BRING THE TN CORS AT PAR WITH NATIONAL CORS**

Introduction:

The Department of Survey and Settlement, Tamil Nadu has installed 70 CORS in Tamil Nadu and all exist on the rooftops of the State govt. establishments like taluk, collector offices, etc. Under this scope of work, these CORS are to be upgraded at par with the National SOI CORS Network and an additional 4 CORS are to be installed in the Tamil Nadu state. Out of the 74 CORS, 39 CORS are to be upgraded on the existing location i.e. rooftops, 31 CORS are to be brought down on the ground and 04 new CORS are to be installed on the ground.

Survey of India has installed the pan India CORS Network. This network is being hosted using the Spider Business Centre and Trimble Pivot Platform software at the CORS Control Centre (CC), Dehradun. The TN CORS are to be upgraded and integrated with the Spider Business Centre already installed at the CORS Control Centre (CC), Dehradun for seamless and continuous operation.

Particulars Of The Tender

Designation And Address of the authority	The Director, TNP & ANI GDC, Survey of India, 3 <sup>rd</sup> & 4 <sup>th</sup> Floor, New Additional Office Building, Shastri Bhavan, No.26, Haddows Road, Nungambakkam, Chennai-600006.
Scope of Work	1. Upgradation of 39 existing CORS installed on the rooftop as per the Technical Specifications. 2. Shifting of 31 CORS installed the rooftops to the ground and Upgradation of these CORS as per the Technical Specifications. 3. Installation of 04 new CORS as per the Technical Specifications. 4. Annual Maintenance Contract of 74 CORS as per the Technical Specifications
Last date and time of downloading of tender document	As per GeM notifications
Last Date and Time of receiving tenders	As per GeM notifications
Date and Time of opening the tenders	As per GeM notifications

Scope of Work

1. Upgradation of 39 existing CORS installed on the rooftop as per the Technical Specifications
2. Shifting of 31 CORS installed the rooftops to the ground and Upgradation of these CORS as per the Technical Specifications
3. Installation of 04 new CORS as per the Technical Specifications
4. Seamless integration with pan India Network and continuous operation as per specifications
5. Annual Maintenance Contract of 74 CORS as per the Technical Specifications

Site Visit

Details of the Existing Inventory are given in Annexure A. However in order to get a realistic estimate for services and works required for proposed upgradation, prospective bidders are encouraged to visit and examine the Site of 74 CORS & CORS CC, Dehradun and its surroundings and obtain all information that may be necessary for preparing the Bid and entering into a contract for providing the Services. The costs of visiting the Site shall be at the Bidder's own expense. It may please be noted that the Bidders are required to understand the complete work and bid responsibly covering all their risks.

Bill of Quantities

No	Description		
1.	Software Solutions pertaining to Control Center		
A	Software Solution Site Perpetual Licence (at CRC) for reference Station Nodes with all subcomponents including 5 years comprehensive warranty, Operation and Maintenance Support to ensure seamless and continuous operation of TN CORS at par with National CORS  Note: Available concurrent user licences of Sol existing will be used for disseminating of services.	74	
2.	Upgradation of Existing CORS stations at rooftop		
A	Supply and installation of Communication, power and safety appliances, other ancillary electronics including connectors, fixtures etc, and protective steel housing as detailed in TECHNICAL DETAIL FORM: Receiver Stations, including any minor repairs (except for Para1 Civil works) and upgradation of GNSS receiver firmware to support all the constellation and frequency as detailed in TECHNICAL DETAIL FORM: GNSS Multi-Frequency	39	
B	Installation and connection of AC power supply line from electricity supply grid, including supply and installation of metre/submeter and other ancillary appliances for connection, laying of secure supply cable from nearest supply node, and any other civil and electrical work incidental to said works as detailed in Para 4Power Backup of TECHNICAL DETAIL FORM: Receiver Stations	39	
C	Installation and connection of redundant communication network, including supply and installation of best available Broadband and SIMs, supply and installation of power, safety,other ancillary appliances required for said connection, laying of secure supply cable from nearest supply node and any other civil and electrical work incidental to said works as detailed in Para 11 Communication of TECHNICAL DETAIL FORM: Receiver Stations	39	
D	Comprehensive on-site full operational, repair and maintenance support for all components (including GNSS receiver, Antenna, communication, power and safety fixtures appliances installed and civil and electrical work incidental to said maintenance) of the reference stations for a period of 5 years, including the Recurring expense i.e. uninterrupted monthly payment of electricity/Gen set expenses and communication line (ADSL/Broadband as well as GSM /CDMA) bills.	39	
E	Comprehensive insurance of all equipments installed at all reference stations against theft, fire, vandalism from the date of installation till completion of contractual period	39	
3	Shifting of Existing CORS stations to Ground Stations and their Upgradation		
A	Site Preparation and Monumentation including erection of pillar, installation of GNSS receiver, antenna, supply and installation of protective fence, and any other civil and electrical work incidental to said works as detailed in Para 1 Civil Works (Monumentation) of TECHNICAL DETAIL FORM: Receiver Stations	31	
B	Supply and installation of Communication, power and safety appliances, other ancillary electronics including connectors, fixtures etc, and protective steel housing as detailed in TECHNICAL DETAIL FORM: Receiver Stations(except Para 1 Civil works) and upgradation of GNSS receiver firmware to support all the constellation and frequency as detailed in TECHNICAL DETAIL FORM: GNSS Multi-Frequency	31	
C	Installation and connection of AC power supply line from electricity supply grid, including supply and installation of metre/submeter and other ancillary appliances for connection, laying of secure supply cable from nearest supply node and any other civil and electrical work incidental to said works as detailed in Para 4Power Backup of TECHNICAL DETAIL FORM: Receiver Stations	31	
D	Installation and connection of redundant communication network, including supply and installation of best available Broadband and SIMs, supply and installation of	31	

	power, safety, other ancillary appliances required for said connection, laying of secure supply cable from nearest supply node and any other civil and electrical work incidental to said works as detailed in Para 11 Communication of TECHNICAL DETAIL FORM: Receiver Stations		
E	Comprehensive on-site full operational, repair and maintenance support for all components (including GNSS receiver, Antenna, communication, power and safety fixtures appliances installed and civil and electrical work incidental to said maintenance) of the reference stations for a period of 5 years, including the Recurring expense i.e. uninterrupted monthly payment of electricity/Gen set expenses and communication line (ADSL/Broadband as well as GSM /CDMA) bills	31	
F	Comprehensive insurance of all equipments installed at all reference stations against theft, fire, vandalism from the date of installation till completion of contractual period	31	
4	Supply and Installation of new CORS stations to Ground Stations		
A	Site Preparation and Monumentation including erection of pillar, installation of GNSS receiver, antenna, supply and installation of protective fence and any other civil and electrical work incidental to said works as detailed in Para 1 Civil Works (Monumentation), of TECHNICAL DETAIL FORM: Receiver Stations	4	
B	Supply and installation of GNSS Receiver, Antenna, Radome and other ancillary cables, connectors, fixtures, etc, as detailed in TECHNICAL DETAIL FORM: GNSS Multi Frequency	4	
C	Supply and installation of Communication, power and safety appliances, other ancillary electronics including connectors, fixtures etc, and protective steel housing as detailed in TECHNICAL DETAIL FORM: Receiver Stations(except Para1 Civil works)	4	
D	Installation and connection of AC power supply line from electricity supply grid, including supply and installation of metre/submeter and other ancillary appliances for connection, laying of secure supply cable from nearest supply node and any other civil and electrical work incidental to said works as detailed in Para 4 Power Backup of TECHNICAL DETAIL FORM: Receiver Stations	4	
E	Installation and connection of redundant communication network, including supply and installation of best available Broadband and SIMs, supply and installation of power, safety, other ancillary appliances required for said connection, laying of secure supply cable from nearest supply node and any other civil and electrical work incidental to said works as detailed in Para 11 Communication of TECHNICAL DETAIL FORM: Receiver Stations	4	
F	Comprehensive on-site full operational, repair and maintenance support for all components (including GNSS receiver, Antenna, communication, power and safety fixtures appliances installed and civil and electrical work incidental to said maintenance) of the reference stations for a period of 5 years, including the Recurring expense i.e. uninterrupted monthly payment of electricity/Gen set expenses and communication line (ADSL/Broadband as well as GSM /CDMA) bills	4	
I	Comprehensive insurance of all equipments installed at all reference stations against theft, fire, vandalism from the date of installation till completion of contractual period	4	

Technical Specification

1. TECHNICAL DETAIL FORMS: GNSS Multi Frequency

Sl. No	Name of the Item	Required Specification	Bidder's Offered Specifications / Compliance /Deviation Statement (to be filled up by BIDDER)
1	GNSS receiver	<p>Measuring Mode Static Fast or Rapid Static Real-Time Kinematic (RTK) Differential(DGPS,DGNSS)</p> <p>Horizontal Accuracy 3mm + 0.1 ppm RMS Static (long) 0.5cm ± 0.5ppm RMS (Static &amp; Fast Static) or better 0.8cm ± 1ppmRMS (Real Time Kinematic in Single Line Solution) or better 0.8cm ± 0.5ppmRMS (Real Time Kinematic in Network RTK Solution) or better 0.25 m + 1 ppm Code differential GNSS positioning or better</p> <p>Vertical Accuracy 3.5mm + 0.4 ppm RMS Static (long) 1.0cm±0.5ppm RMS (Static &amp; Fast Static) or better 1.5cm ± 1ppmRMS (Real Time Kinematic in Single Line Solution) or better 1.5cm ± 0.8ppmRMS (Real Time Kinematic in Network RTK Solution) or better 0.50 m + 1 ppm RMSCode differential GNSS positioning or better</p> <p>The offered receiver shall have 400+ physical channels</p> <p>Multiple frequency and supporting the following simultaneous signal tracking:  <ul style="list-style-type: none"> <li>- GPS: L1 C/A; L2E/L2P; L2C; L5</li> <li>- GLONASS: L1 C/A; L1P; L2 C/A; L2P; L3 CDMA</li> <li>- GALILEO: L1 CBOC; E5A; E5B; E5AltBoc;E6</li> <li>- BEIDOU: B1; B2; B3</li> <li>- QZSS:L1C/A, L1C, L2C, L5</li> <li>- SBAS: L1 C/A (EGNOS/MSAS/WAAS); L5 (WAAS);</li> </ul>                     GAGAN                      - NavIC (IRNSS) L band signals</p> <p>Receiver must be capable of tracking all satellites in view, even if unhealthy, to an elevation angle of 0°.</p> <p>The receiver shall support real time kinematic positioning using industry standard formats</p> <p>The receiver shall support onboard worldwide, real-time positioning</p> <p>The offered receiver shall offer a minimum of two power inputs supporting both AC and DC operation.</p> <p>The offered receiver shall contain an internal battery (Li-Ion) and with battery charger. The internal battery shall be capable of operating the unit standalone for up to 12 hours. The offered receiver shall contain capability to Automatic swapping between power sources without affecting data recorded.</p> <p>Internal battery must be capable of operating as an internal battery backup system (UPS) with user configurability to enable/disable this functionality.</p> <p>Receiver must be capable of charging from PoE input.</p> <p>The receiver must automatically restart after loss of power and must power up in the same configuration when powered down (or loss of power).</p> <p>The receiver must have an LED indication/LCD screen to view satellite tracking, Memory, Network connectivity, Bluetooth/Wifi,</p>	

		Battery status.	
		The receiver shall offer an automatic shutdown and wake up routine to allow the receiver to power down when not needed and wake up at a predetermined time and continue the configured activity.	
		Support of logging rates from 50Hz to 600 seconds	
		Must contain memory with up to 16GB of logging space. That should be able to maintain operation and logging during high motion events such as earthquakes.	
		In addition to the internal memory, the receiver must have a port for removable media.	
		Must support a minimum of 8 independent and concurrent logging sessions.	
		Internally logged data shall have a file size of less than 6MB (unzipped) for a 24 hour, 15 second file to maximise storage capacity	
		Must be capable of producing both RINEX and BINEX file formats internal to the receiver without the need for external tools/converters.	
		Must be capable of pushing logged and converted data files to three separate FTP servers.	
		Receiver must support both a configurable ring buffer style memory deletion scheme as well as session specific "pools" with similar functionality.	
		Receiver must support the configurable input, output and logging of Met/Tilt measurements.	
		The receiver must have an integrated RJ45 connector, two serial ports, USB, and an external frequency input. RJ45connector should be enabled for server feature	
		A minimum of 6 unique TCP/IP ports. Unique meaning one multicast TCP/IP port (allows multiple connections) only counts as 1 TCP/IP port. Each port must be fully configurable independent of the other ports and outputs.	
		In addition to the 6 TCP/IP ports, the receiver shall support a minimum of 1 NTRIP Caster, 1 NTRIP Client, and 1 NTRIP Server ports	
		Receiver must support IP filtering restricting IP packet access to and from the receiver for enhanced access control security based on individual IP addresses or subnets based on a user specified netmask.	
		The receiver must support one Bluetooth/Wifi connection or greater.	
		The receiver must support FTP downloads as well as the FTP REST command.	
		The receiver must support the following streaming data types: CMR, CMR+, RTCM v2.x, RTCM v3x, BINEX, and NMEA. Proprietary message types will be considered in addition to (not in replacement of) the before mentioned formats.	
		The offered receiver shall be capable of monitoring its own absolute position to centimetre level accuracy and alerting via both graphical and email mean of any detected change in antenna position. The tolerance at which to send alerts shall be user configurable depending upon the solution type in use.	
		The receiver shall support email alerts for various functions such as tracking, power, reboots, logging, status, etc.	
		The receiver shall support dynamic domain name systems (DDNS).	
		Receiver must implement a secure network connection (secure means via an encrypted, authenticated session) as well as provide various access levels to the receiver controls. CA certificates to be added to ensure secure communication	

		Receiver must meet the following environmental specification: Operating temperature: -40° C - + 65° C, Humidity: 100%, fully sealed with IP67 certification, Shock: 1m drop to hard surface. Equipment must have Compliance to Vibration / Shock test of MIL STD-810 G or equivalent.	
2	GNSS Antenna	Choke Ring Antenna tracking GPS, Glonass, Galileo, Beidou, QZSS, Navic, SBAS, L-Band Technology that minimises multi-path interference. Phase centre stability better than 2 mm and repeatability 2 mm or better Antenna gain 40dB or more Supply current 125 mA maximum Minimum tracking elevation = 0 degrees Absolute calibration file from IGS must be available. For antenna calibrations to be valid the GNSS antenna must be orientated to within ±5° of True North while installation at site. Powered by receiver (supply voltage 3.5 to 20VDC) Antenna shall operate in humidity, high winds, sand storm and blowing rain Temperature range is -40°C to +65°C or better Humidity 95% or better, fully sealed Shock rating 1m drop The antenna should be delivered with an external radome. Antenna + radome combination must have a valid antenna calibration.	
3	Antenna cable	All CORS cabling is vulnerable to vandalism, weather, pests and fire. External cabling should be protected by secured conduits. Cable connectors are potential points of failure when stressed, corroded, or infiltrated by water, dust and pests. Self-amalgamating ultra-violet stabilised tape shall be used to protect cable connections. A short loop of excess cable at the antenna and receiver connections should be provided to avoid tension in cable. A grounded lightning protector in the antenna cable should be provided, especially in lightning prone areas. In lightning prone areas, the horizontal cable-run length should be as less as possible to minimise the risk of signal induction from nearby lightning strikes. If this is not possible, a lightning arrestor should be fitted towards the receiver end of the cable. The Supplied cables and components should have a total signal loss of less than 9 dB over the length of the cable run.	
4	Warranty	Five years comprehensive on-site warranty support, including post deployment driver & firmware updates.	
5	Comprehensive Insurance	Comprehensive insurance of all equipments against theft, fire and vandalism from date of installation till end of contractual period of shall be taken by supplier on behalf of purchaser	

2. TECHNICAL DETAIL FORM: Receiver Stations (All components)

No.	Requirement at each location	Specifications	Bidder's Offered Specifications / Compliance/Deviation Statement (to be filled up by BIDDER)
CORS stations should be as per UNAVCO specifications for size, design, operation and quality to house GNSS receiver systems and other peripherals (including power back-up systems).			
1	Civil Works (Monumentation):	<p>Design, quality and specifications of reference pillars should generally meet UNAVCO guidelines for Ground Mount or Roof Mount on suitability at a particular station as decided by the SOI. General design of the monument is shared in S.No.3 – Drawings.</p> <p>Ground Mount pillar pedestal of 1.2 m X 1.2 m should be 1 to 3 m below ground level depending on soil type. Type A : Pedestal of 1.2m X 1.2m with thickness 25 cm should be constructed over Ground Level. The Pillar constructed above the pedestal should be circular in cross-section with dimension of 30 cm diameter. Height of the pillar of the Reference station should be at least 3.5 m above ground level. Above it 0.5 mt steel pipe of 3.5 inch dia, fitted with Antenna adaptor and SECO Adjustable Tilt Monument Mounts with Male 5/8 x 11 TPIstud (as per UNAVCO specs),for proper levelling of Antenna plane. Reference station Pedestal, footing and Pillar should be a RCC structure with M30 grade concrete and reinforcement grade Fe500. Appropriate reinforcement should be provided. The RCC structure design with detailed drawings of the pedestal (designed to support the enclosure) should be submitted by the bidder for approval by the purchaser.</p> <p>The pillar, solar panel and steel housing containing UPS and other hardwares should be kept within the fence or inside the nearby building.</p> <p>Provision of drainage should be properly made so that no water logging occurs within the fenced structure. A concrete kerb with dimensions as mentioned in drawing 3(c). The concrete pavement should be tiled with non-reflected tiles, a sample of which should be submitted to the Purchaser for approval.</p> <p>Roof Mount pillar pedestal should be 1.2 m X 1.2 m with thickness 25 cm. The Pillar constructed above the pedestal should be circular in cross-section with dimension of 30 cm diameter. Height of the pillar of the reference station should be at least 1.7 m above roof top. Above it 0.5 mt steel pipe of 3.5 inch dia, fitted with Antenna adaptor and SECO Adjustable Tilt Monument Mounts with Male 5/8 x 11 TPIstud (as per UNAVCO specs),for proper levelling of Antenna plane. Reference station Pedestal and Pillar should be a RCC structure with M30 grade concrete and reinforcement grade Fe500. Roof mounts should be properly anchored to the building structure.</p> <p>The pillar and solar panel should be located at a place on the roof with sufficient sky clearance and maximum solar rays exposure respectively.</p> <p>Steel housing containing UPS and other hardwares may be installed on roof or within any secured location in the vicinity to Reference Pillar or inside the building.</p> <p>The surface of the pillar should be plastered and painted neatly with smooth finishing on the surface and edges. The colour of the</p>	



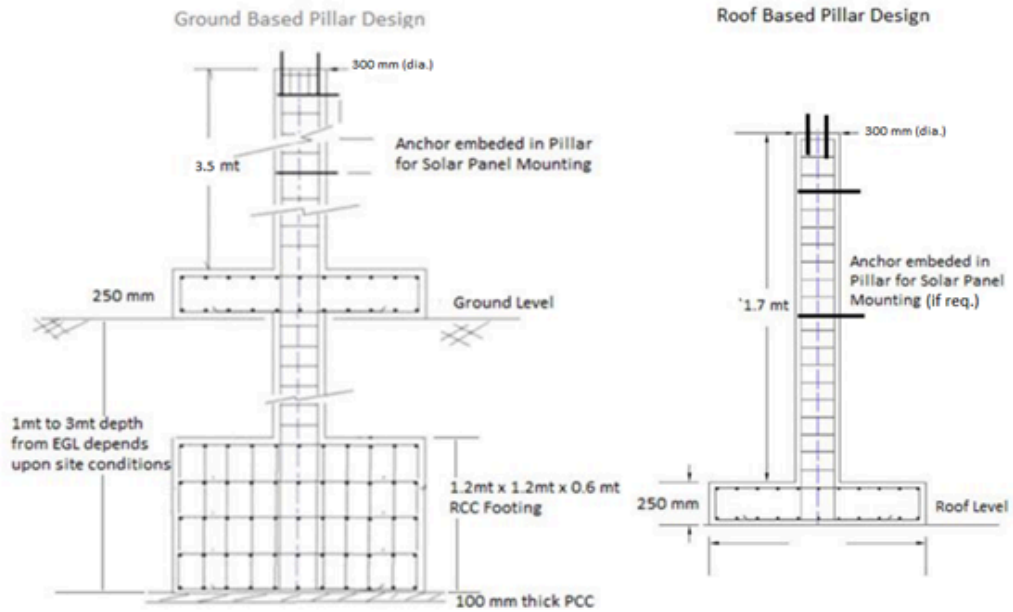
No.	Requirement at each location	Specifications	Bidder's Offered Specifications / Compliance/Deviation Statement (to be filled up by BIDDER)
		<p>pillar and fence should be of Wimbledon Green which should be submitted to the purchaser for approval.</p> <p>The ground mounted reference pillar and equipment housing should be fenced with a hot dip galvanised iron fencing of dimension 5 cm x 5 cm with 4mm dia (Diamond shape chain link Mesh) or equivalent size as shown in the Drawing 3(c) with one door, lock and key. The specification of corner pillars of the fence are to be of specification ISA 40x40x3 or stronger.</p>	
2	Enclosure and Electrical Works	<p>All equipment except antenna, antenna radom, and solar panels should be encased in antistatic, weather proof, tamper proof steel housing of IP54/NEMA 4 type enclosure. Housing shall have a door in front to access equipment for maintenance etc. Access through the door shall be restricted by a bolt secured by lock. Steel Housing shall have an internal fan to facilitate proper ventilation and temperature control of electronic components within. Enclosure shall be installed on a separate Pedestal or inside building, as case may be. The design with detail drawings of pedestal (designed to support the enclosure) should be submitted by bidder for approval by the purchaser</p> <p>All Electrical works (incl. Earthing) at Reference Station site for installing all components including power back-up required to make Reference Stations operational and fully commissioned for AC and DC supply as described in the following paras.</p>	
3	Lightning Conductor & Surge protection	Lightning Conductor and Surge protector of reputed brand as per the UNAVCO specs	
4	Power Back-up	<p>Each reference station will be provided a primary source of power either through AC supply connection from local grid or through Gen Set. Power connection at each reference station is to be taken by bidder on behalf of purchaser. In addition to this, for additional redundancy Seven (07) days 24X7 Uninterrupted power back-up arrangement using UPS and Battery Bank (Detailed power calculation sheet is to be submitted with the bid)</p> <p>AC supply connection at each reference station is to be taken by the bidder on behalf of the purchaser.</p>	
5	Solar Panel	Industry grade solar panels capable of supporting a minimum 7 days uninterrupted power supply for reference stations are to be installed at each reference station site. Design of solar panels & solar charge controller should be proposed based on the power calculation as given above by the bidder for approval by the purchaser. The solar charge controller and surge protector should be part of supply.	
6	Interoperability	All hardware installed at reference stations should be compatible with, and be able to operate with Reference Receiver installed as well as with all other industry grade reference receivers.	
7	Router	<p>Cellular router for primary and backup connectivity over 2G/3G/4G/LTE/ADSL/Broadband with at least 2 SIM Slots and at least fourRJ45 (1 WAN and 3 LAN) 10/100 Mbps ports with following functionalities:</p> <p>Operator black/white list  advanced routing protocols, VPN and stateful firewall  Supports at least 4 VPN tunnels  Link integrity monitoring</p>	

No.	Requirement at each location	Specifications	Bidder's Offered Specifications / Compliance/Deviation Statement (to be filled up by BIDDER)
		Virtual Router Redundancy Protocol (VRRP) SNMP, event logging, and QOS reboot through SMS with -35° C to 70° C Operating Temperature and Relative Humidity 10% to 90% (non-condensing) @ 25° C	
8	Accessories	Surge Protectors for ADSL/Broadband connection, GPRS Connection, AC Power Supply connection and Solar Panel Power connection; AC/DC power cables; Batteries; Connectors; Circuit Breakers; Rack mounting kit; Industry grade flash and SD cards, battery chargers, Fuses, inlet and exhaust Fans & filters; end clamps etc.	
9	Memory	In addition to Internal Memory of GNSS receiver, 1 Terabyte auxiliary USB supported storage device should be installed at the reference station in addition to internal memory.	
10	Data Logging	Maximum logging rate 50 Hz.	
11	Communication on line:	Communication systems should be secure (with end to end encryption) and should have redundancy as detailed below. For this communication between Reference station and control centre should be provided a) Best available ADSL/ Broadband or equivalent b) Best available Wireless cellular i.e. GSM/CDMA GPRS/LTE/ (2G/3G/4G/5G), Provision for Dual SIM shall be provided to increase reliability. ADSL/ Broadband or equivalent and Wireless cellular connection at each reference station is to be taken by the bidder on behalf of the purchaser. Each receiver station shall be equipped with 2 GSM/CDMA SIMs to increase reliability. Both SIMs shall not be from the same Network/Service provider. Irrespective of the communications method used, the data latency between the CORS site and the network control centre should be designed to be less than 200 millisecond.	
12	Warranty	Five years on-site comprehensive warranty support including post deployment driver & firmware updates.	
13	Comprehensive Insurance	Comprehensive insurance of all equipments against theft, fire and vandalism from date of installation till end of contractual period of shall be taken by supplier on behalf of purchaser	

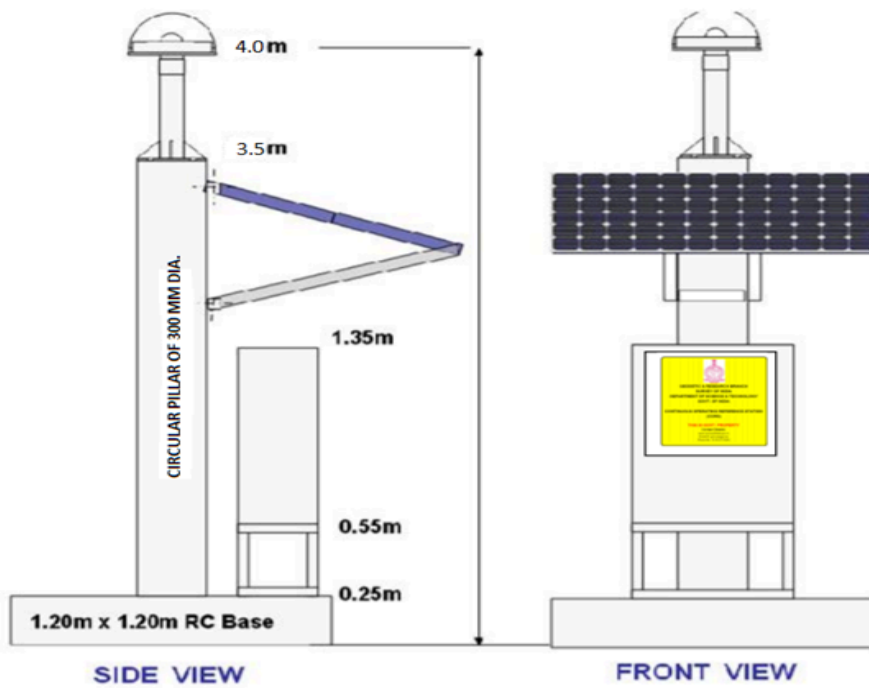
- All the existing CORS are to be upgraded/installed as per the above technical specifications. Any repairs required at the existing sites are inclusive in the scope of work. The new CORS and the CORS to be shifted to the ground are to be constructed as per the Civil and Electrical Works (Monumentation) and drawing.
- Available concurrent user licences of Sol existing will be used for disseminating of services.
- Providing Power Supply at receiver station and Communication line (ADSL/Broadband connection and GSM/CDMA both) at receiver station shall be the responsibility of supplier. However, requisite documents for taking connection will be provided by the purchaser.
- Monthly/recurring expenses for power supply and Communication lines (ADSL/Broadband connection and GSM/CDMA both) at receiver stations shall be borne by the contractor for the complete duration of the contract period.
- Rectification of any fault in Power Supply/Communication line connection through appropriate authority shall be the responsibility of the contractor for the complete duration of the contract period. Any expenditure necessary for it shall be borne by the contractor. Acceptable downtime for carrying out necessary rectification/ maintenance shall be as per Repair clause.
- Comprehensive insurance of equipment installed at each receiver station against fire, theft, vandalism etc. from the date of installation till completion of contractual period. Insurance will be taken by the Supplier in the name of the purchaser and to be included in the Price schedule.



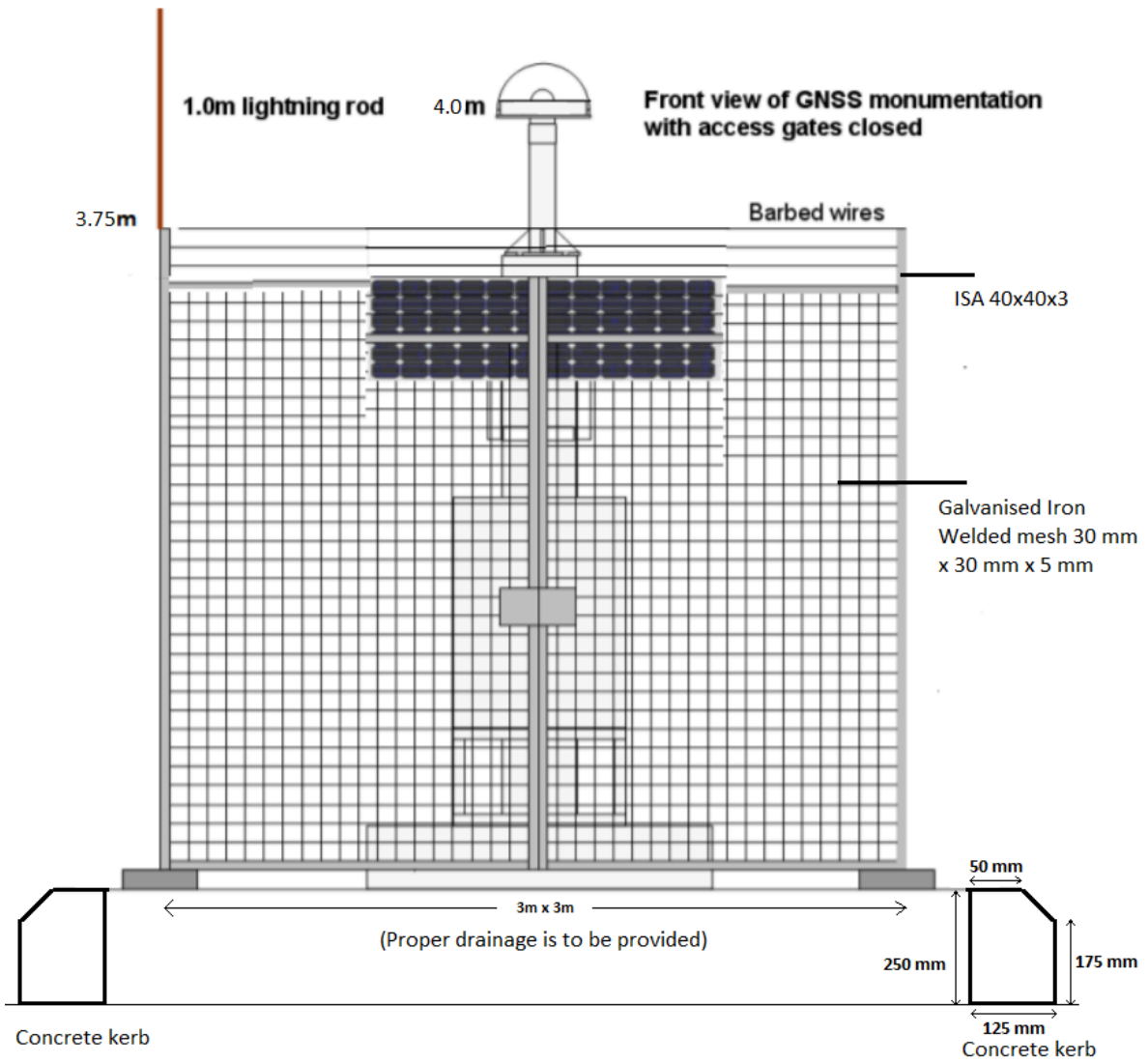
3. Drawings



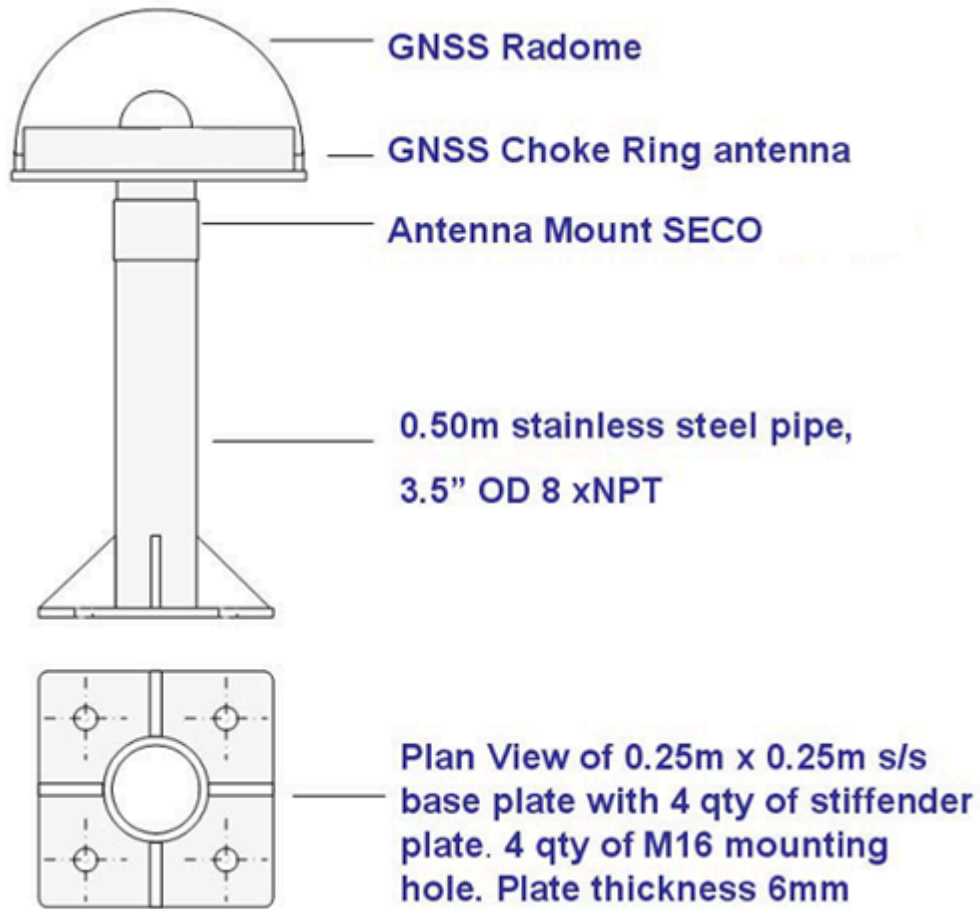
**REFERENCE STATION MONUMENT**



**REFERENCE STATION MONUMENT**



Reference Station Monument / Antenna Mount



All the constructions will be done as per the above drawings.

**Pre Bid Meeting**

Designated representatives of bidders are invited to attend a pre-bid meeting at the date, time and at the address mentioned in the GeM Portal against the same. The purpose of the meeting will be to clarify issues and to answer questions on any matter that may be raised at that stage.

**Clarification of GeM bid Document**

Bidders requiring any clarification or elucidation on any issue of the GeM bid Document may take up the same with the purchaser through GeM Portal only. The purchaser will respond through GeM Portal to such requests provided the same is uploaded within the time schedule mentioned in GeM Portal.

**Corrigendum to GeM bid Document**

At any time prior to the deadline for submission of bids, the purchaser may, for any reason deemed fit by it, modify the GeM bid Document by issuing suitable Corrigendum to it. Corrigendum will be notified through GeM only. In order to provide reasonable time to the prospective bidders to take necessary action in preparing their bids as per the amendment, the purchaser may, at its discretion, extend the deadline appropriately for the submission of bids and other allied time frames, which are linked with that deadline.

#### Eligible Bidders

The bidder should be a Company registered under Indian Company Act, 1956 / under Indian Partnership Act 1932.

Bidders shall not be under Ban / Blacklisting / Debarment For corrupt and Fraudulent Practices or for lack in performance by any Government/Semi-Government entity. All bidders should provide UNDERTAKING to this effect as part of their Technical Bid.

Bidder should be Manufacturer / Integrator of the equipment to be supplied OR must be an authorised Distributor / authorised Franchise / Subsidiary in India. In case the bidder offers to supply goods, which are manufactured by some other firm, the bidder shall submit a bid specific manufacturer's authorization letter.

#### Documents to be submitted with the Bid

The bid will be two packet bids, i.e. "Technical Bid" and "Price Bid". The bidders are required to submit

#### A1) Technical Bid (Unpriced Bid)

1. Certificate of Incorporation of the bidder regarding its constitution and legal status.
2. Scanned Copy of "EMD / Bid Security" is to be furnished. Alternatively, documentary evidence for claiming exemption from payment of EMD / Bid security.
3. Power of Attorney (PoA) of signatory of Bid. Authority persons signing the Po should also be enclosed.
4. Scanned copy of documents at Technical Specifications & Compliance / Deviation Statement.
5. Latest certificate from the consignee / end user with cross - reference of order no. and date in support of satisfactory performance for supplies made during the last three years.
6. In case the Bidder is not Manufacturer (a) Bid specific Manufacturer's Authorization Form, shall be submitted (b) Authorised Franchise / Distributor Certificate from the Manufacturer (c) Scanned copy of Power of Attorney in favour of signatory of Manufacturer's Authorization Form.
7. Scanned copy of "Technical Brochure / Catalogue of OEM of quoted equipment" detailing its technical parameters. Descriptive Documents, drawings, notes and references of operating and assembly of mechanical parts if applicable also to be included in support of specifications stipulated in the bid document.
8. Financial reports for the last Three years (2020-21, 2021-22, 2022-23): balance sheets, profit and loss statements, auditors' reports, etc. Company's PAN / TAN, Income Tax Return (ITR) for last 3 financial years and ward / circle where it is being assessed.
9. Scanned Copy of GST Registration Certificate.
10. Scanned Copy of Certificate of Registration issued by Department of MSME / DIPP for Bidders claiming & Scanned Copy of Affidavit, as applicable, for bidders claiming Domestic Preference.
11. Scanned copy of any other document, as necessary in terms of clause 'Eligible Bidders' establishing that the bidder is eligible to submit the bid and, also, qualified to perform the contract if its bid is accepted to be uploaded.
12. No consortium or joint venture is permitted. An undertaking in this regard to be Furnished By the firm.
13. Any other documents required as per GeM bid.

#### A2) Price Bid:

1. The Bidder shall quote in Indian Rupees only. Bids, where prices are quoted in any other way shall be treated as non - responsive and rejected.
2. The Bidder shall indicate on the Price Schedule provided in GeM all the specified components of prices shown therein, including the unit prices, all applicable GST / taxes and total bid prices (F.O.R on consignee location) of the goods and services it proposes to supply against the requirement. All the columns shown in the Price Schedule should be filled up as required.

#### A3) Fall Clause:

1. Fall clause is a price safety mechanism. The fall clause provides that if the contract holder reduces its price or sells or even offers to sell the contracted goods of identical specification and terms & conditions to that of the contract, at a price lower than the contract price, to any person or organisation during the currency of the Contract, the Contract price will be automatically reduced with effect from that date for all the subsequent supplies under the Contract and the contract amended accordingly.

Scrutiny and evaluation of bids:

- i. Bids will be evaluated based on the terms & conditions already incorporated in the GeM bid Document, based on which bids have been received and the terms, conditions etc. mentioned by the bidders in their bids. No new condition will be brought in while scrutinising and evaluating the bids.
- ii. The Purchaser will examine the Bids to determine whether they are complete, whether any computational errors have been made, whether required Bid Securities have been furnished, whether the documents have been properly signed and stamped and whether the Bids are generally in order.
- iii. The Purchaser's determination of a Bid's responsiveness is to be based on the contents of the Bid itself without recourse to extrinsic evidence.
- iv. The Bids will be scrutinised to determine whether they conform to all the terms, conditions, and specifications of the bidding documents, without material deviation or reservation. A material deviation or reservation is one (a) which affects in any substantial way the scope, quality of goods to be supplied or performance of associated Services; (b) which limits in any substantial way, inconsistent with the bidding documents, the Employer's rights or the Bidder's obligations under the Contract; or (c) whose rectification would affect unfairly the competitive position of other bidders presenting substantially responsive bids. The bids, which do not conform to above basic requirements, are liable to be treated as non-responsive and will be rejected.
- v. In Case, there is any variation and/or deviation between the goods & services prescribed by the purchaser and that offered by the bidder, the bidder shall list out the same in a chart form without ambiguity and provide the same along with its bid.
- vi. If a bidder furnishes wrong and/or misleading data, statement(s) etc. about technical acceptability of the goods and services offered by it, its bid will be liable to be ignored and rejected in addition to other remedies available to the purchaser in this regard.
- vii. Minor Infirmary / Irregularity / Non-Conformity: To assist in the examination, evaluation, comparison of the bids and post-qualification of the Bidders, the Purchaser may, at its discretion, ask any Bidder for a clarification of its Bid. Any clarification submitted by a Bidder in respect to its Bid, that is not in response to a request by the Purchaser shall not be considered. The Purchaser's request for clarification and the response shall be in writing. If during the evaluation, the purchaser finds any minor informality and/or irregularity and/or non-conformity in a bid, the purchaser will convey its observation on such "minor" issues, which has no price implication, to the bidders by registered / speed post / e-mail / fax / GeM etc. asking the bidder to respond by a specified date. If the bidder does not reply by the specified date or gives an evasive reply without clarifying the point at issue in clear terms, that bid will be liable to be ignored.
- viii. Detailed Technical Evaluation: Only Technical unpriced bids, which are found substantially responsive shall be taken up for Detailed Technical Evaluation. Bidders, who comply with the Technical Specifications shall stand technically qualified for consideration of their financial bids. The compliance statement submitted by the bidder & information / supporting documents provided by bidders shall be checked with the supporting brochures / catalogues / documents screen-shots, Financial Reports etc. shall be checked for compliance during Detailed Technical Examination.
- ix. From the time of submission of bid to the time of awarding the contract, if a bidder needs to contact the purchaser for any reason relating to GeM bid Document, it should do so only through GeM portal / official Email Id or address of purchaser as given in bid document. In case a bidder attempts to influence the purchaser in the purchaser's decision on scrutiny, comparison & evaluation of bids and awarding the contract, the bid of the bidder shall be liable for rejection in addition to appropriate administrative actions being taken against that bidder, as deemed fit by the purchaser.
- x. List of firms found to be responsive and technically qualified and such other details that the Employer may consider appropriate shall be published as part of Technical Bid Evaluation Report summary.
- xi. Opening of Financial Bid: Financial Bid of only those bidders, found successful after Technical Evaluation, shall be opened.
- xii. The contract will be awarded to the financially qualified L1 bidder.



**Corrupt or fraudulent practices:**

It is required by all concerned namely the Bidder / Suppliers / Purchaser / Consignee / End User etc. to observe the highest standard of ethics during the procurement and execution of such contracts. In pursuance of this policy, the Purchaser:

- (i) Defines, for the purposes of this provision, the terms set forth below as follows:
- (ii) "corrupt practice" means the offering, giving, receiving or soliciting of anything of value to influence the action of a public official in the procurement processor in contract execution; and
- (iii) "fraudulent practice" means a misrepresentation of facts in order to influence a procurement processor the execution of a contract to the detriment of the Purchaser, and includes collusive practice among bidders (prior to or after Bid submission) designed to establish Bid prices at artificial non-competitive levels and to deprive the Purchaser of the benefits of free and open competition;
- (iv) Will reject a proposal for award if it determines that the Bidder recommended for award has engaged in corrupt or fraudulent practices in competing for the contract in question;
- (v) Will declare a firm ineligible, either indefinitely or for a stated period of time, to be awarded a contract by the purchaser if it at any time determines that the firm has engaged in corrupt or fraudulent practices in competing for, or in executing the contract.

**Country of Origin:**

All goods and related services to be supplied under the contract shall have their origin in India or any other country with which India has not banned trade relations. The Term "origin" used in this clause means the place where the goods are mined, grown, produced, or manufactured or from where the related services are arranged and supplied. The country of origin may be specified in the Technical Bid.

**Packing, Marking & Dispatching:**

- i. The packing for the goods to be provided by the supplier should be strong and durable enough to withstand, without limitation, the entire journey during transit including transshipment (if any), rough handling, open storage etc. without any damage, deterioration etc. As and if necessary, the size, weights and volumes of the packing cases shall also take into consideration, the remoteness of the final destination of the goods and availability or otherwise of transport and handling facilities at all points during transit upto final destination as per the contract.
- ii. The quality of packing, the manner of marking within & outside the packages and provision of accompanying documentation shall strictly comply with the requirements as provided in Technical Specifications In case the packing requirements are amended due to issue of any amendment to the contract, the same shall also be taken care of by the supplier accordingly.
- iii. Distribution of Dispatch Documents for Clearance/Receipt of Goods : The supplier shall send all the relevant dispatch documents well in time to enable the purchaser to clear or receive(as the case may be) the contract. Within 24 Hours Dispatch, the supplier shall notify the concerned Consignee, Clearing Agent and others concerned the complete details of dispatch and also supply following documents by air mail / courier etc. with intimation by e- mail:
  - a) Packing list;
  - b) Certificate Of Country Of Origin;
  - f) Insurance Certificate;(if applicable)
  - g) Manufacturer's guarantee and Inspection certificate; (if applicable)
  - h) Inspection certificate issued by the Purchaser's Inspector; (if applicable)
  - i) Any Other Document(s) as and if required in terms of the contract
- iv. Packing instructions: Unless otherwise mentioned in the Technical Specification, the supplier shall make separate packages for each consignee (in case there is more than one consignee mentioned in contract) and mark each package on three sides with the following with indelible paint of proper quality:
  - a. Contract Number And Date
  - b. Brief Description Of Goods Including Quantity
  - c. Packing list reference number
  - d. Country Of Origin Of Goods
  - e. Consignee's Name And Full Address and
  - f. Supplier's Name And Address

Installation, Testing and Commissioning:

The following inspections and tests shall be performed:

The inspection of the goods shall be carried out to check whether the goods are in conformity with the technical specifications attached to the purchase/work order form and shall be in line with the inspection/test procedures laid down in the technical specifications and the manufacturer's warranty certificate. The purchaser will test the equipment after completion of the installation and commissioning at the site of the installation. For site preparation, the supplier should furnish all details to the purchaser sufficiently in advance so as to get the works completed before receipt of the equipment. Complete hardware and software as specified under Technical Specifications should be supplied, installed and commissioned properly by the supplier prior to commencement of performance tests.

The acceptance test will be conducted by the committee constituted by the purchaser, where the final delivery is to be made. The committee shall inspect and make recommendations for acceptance of goods & related services offered by the supplier for Final Acceptance by the purchaser or his designated representative. The acceptance will involve successful installation, commissioning, performance by the way of trouble-free operation during the acceptance exercise at site. The acceptance exercise shall be combined with the Training exercise to be imparted by the supplier to Sol personnel. There shall not be any additional charges for carrying out acceptance tests. No malfunction, partial or complete failure of any part of hardware or bugs in the software should occur. All the software should be complete and no missing modules/ sections will be allowed. The software should be correctly configured to the requirements of Sol. The outputs generated during the acceptance exercise and/or training exercises to demonstrate the successful performance of the equipment/software, shall be taken into account by the Committee before issuing the Acceptance Certificate.

In the event of the equipment and/or on-board software failing to pass the acceptance test, a period not exceeding 15 days will be given to rectify the defects and clear the acceptance test, failing which the purchaser reserves the rights to get the equipment replaced by the supplier at no extra cost to the purchaser.

Acceptance Test Procedure (ATP) document for supply and installation of equipment at Control Centre, Site Server and Receiver Stations should be provided by the bidder. Acceptance test on the supplied equipment must be conducted as per the ATP document by the bidder and acceptance test procedure given in following paras.

Manufacturer's test and inspection certificate to be provided along with the supply and installation

Initial Acceptance Test for RTK network: The Test shall be carried out in the closed polygonal area bounded by the Five Receiver Stations in and around area chosen by the purchaser at adjoining locations 60-80 km apart, to which the Control Centre & corresponding Site Server have been integrated. If the results of the test do not meet the Technical specifications, it shall be the responsibility of the Bidder to identify the extent and cause of error and carry out corrective steps accordingly.

Incremental Acceptance Test for RTK Network: Whenever an additional Receiver Station is commissioned, performance of RTK network shall be checked against the performance indicators specified in the Technical specifications. The Test shall be carried out in the additional closed polygonal area due to integration of the Receiver Station to the RTK Network. If the results of the test do not meet the specifications laid down in the Technical specifications, it shall be the responsibility of the Bidder to identify the extent and cause of error and carry out corrective steps accordingly.

For First acceptance and further each incremental test following exercise will be carried out

- a. The sample size should be large enough to validate the outcome statistically. At least 30 observations, i.e. 2 sets of 15 points (20 to 50 metres apart from each other), to be taken of each Network RTK method to be tested in the cluster under consideration. There should be at least 45 to 60 minute time separation between two consecutive sets on a particular point.
- b. For Acceptance testing purpose RTK rover will be used with bipod or tripod.
- c. Test points will be chosen on flat ground, with open sky and no obstruction within a 10° elevation mask.
- d. The solution provided by the bidder should support Industry standard Geodetic RTK rovers with multi-frequency and multi-constellation support, with proven compatibility for RTCM standards.
- e. Solution based on all Network RTK standard methods i.e. VRS, IMAX, MAC and FKP, will be provided. Network acceptance test will be carried out in VRS & IMAX Method for acceptance testing. MAC & FKP results will not be used for accuracy assessment of Network RTK solutions.
- f. Results of RTK measurement will be compared with coordinates of points, observed with reference to nearest two or more CORS reference stations, in Static GNSS surveying mode. Static observations will be carried out at 1 Second epoch rate for appropriate duration based on Network Geometry. Static observation will be made using industry standard multi frequency Geodetic grade GNSS instruments.
- g. Each cluster (k) of measurements shall consist of n = 2 sets (j) of positions on each point (i = 1, 2,3.....20).

The deviations,  $\epsilon_{ij}$ , are

$$\epsilon_{x, ij} = X_i - X_{ij}, \epsilon_{y, ij} = Y_i - Y_{ij}, \epsilon_{h, ij} = h_i - h_{ij}$$

$$\epsilon_{p, ij} = (\epsilon_{x, ij}^2 + \epsilon_{y, ij}^2)^{1/2}$$

where,

$X_i, Y_i, h_i$  are the reference value i.e. true values or the corresponding values of the coordinates  $x$  and  $y$  and heights  $h$  of the test points  $i^{th}$  point, calculated after post processing of static observation with respect to 2 or more reference stations.

$X_{ij}, Y_{ij}, h_{ij}$  are the RTK coordinates of  $i^{th}$  point in  $j^{th}$  set, and  $\epsilon_{x, ij}, \epsilon_{y, ij}, \epsilon_{h, ij}$  are the deviations of the  $i^{th}$  measurement of the  $j^{th}$  set w.r.t. reference value

$\epsilon_{p, ij}$  positional deviation of the  $i^{th}$  measurement of the  $j^{th}$  set w.r.t. reference value

h. At Least 95% of  $\epsilon_{p, ij}$  positional deviation of each cluster should be statistically within a specified permitted deviation  $p$  for the intended measuring task. 'p' will be 8 mm +0.5 ppm or 2 cm whichever will be greater, for clusters within polygon bounded by reference station under acceptance test and 8 mm +1 ppm (limited up to range of 20 km from nearest active Reference station) or 2 cm whichever will be greater, for clusters outside polygon bounded by reference station under acceptance test. Where ppm part corresponds to a baseline length between the mean test rover position for the cluster and nearest active Reference station. Said accuracy should be achieved within 5 minutes of RTK observation.

i. Reference station with 95 % raw data completeness for the last 15 minutes from time of observation, will be considered as an active Reference station.

j. For statistical Analysis for Network RTK testing, Null Hypothesis Testing for 95% confidence level, is proposed to be used. For said statistical testing, the hypothesis set as follow:

a. Null hypothesis: The null hypothesis assumes that there is no significant difference between the observed and the expected value.

b. Alternative hypothesis: The alternative hypothesis assumes that there is a significant difference between the observed and the expected value.

k. Following questions, are set to test Null Hypothesis

a. Is the calculated experimental standard deviation,  $s$ , smaller than the value,  $\sigma$ , (where  $\sigma$  is value stated under Testing Process described in Supply orders i.e. 8mm+ 0.5/1 ppm or 2 cm, as applicable) ?

b. Do two experimental standard deviations,  $s$  and  $s'$ , as determined from two different samples of measurements belong to the same population, where degrees of freedom are,  $v$  and  $v'$  respectively?

The experimental standard deviations,  $s$  and  $s'$ , are be obtained from:

- two samples of measurements by the same equipment at different times

Here sample standard deviation  $s$ , is calculated by square rooting, sum of square of positional deviation of RTK observation, divided by degree of freedom, and sample mean positional deviation  $\bar{\delta}$  is arithmetic mean of positional deviation of RTK observation.

$$s = \sqrt{\frac{\sum \epsilon_x^2 + \sum \epsilon_y^2}{v}}$$

where  $\epsilon_x$  and  $\epsilon_y$  are positional deviation of individual observation in  $x$  and  $y$  direction respectively

w.r.t. coordinates of point determined by static observation, and degree of freedom  $v$  is the number of independent observations (no of Series  $m$  x no of Set  $n$  x no of points  $p$ ).

l. Considering said three questions Null Hypothesis and Statistical Tests are given as

Test	Null Hypothesis $H_0$	Alternative Hypothesis $H_a$	Statistical Test
a	$s \leq \sigma$	$s > \sigma$	One Sample Chi-Square Testing of the Variance
b	$S_A = S_B$	$S_A \neq S_B$	F-test of equality of variances

a. Is the calculated experimental standard deviation,  $s$ , smaller than the value,  $\sigma$ ?

$$\text{Conditions } \leq \sigma, \text{ is said to be met if } s \leq \sigma \sqrt{\frac{\chi_{\alpha}^2(v)}{v}}$$

Where  $\chi_{\alpha}^2(v)$  is Critical Chi square value for  $(1-\alpha)$  confidence level or  $\alpha$  Significance Level at  $v$  degree of freedom.

In this test, two hypotheses are tested. The null hypothesis ( $H_0$ ) states that there is no difference between the

two sets of data, the observed and expected values; they are statistically the same and any difference that may be detected is due to chance. The alternative hypothesis ( $H_a$ ) states that the two sets of data, the observed and expected values, are different; the difference is statistically significant and must be due to some reason other than chance. A chi-square test is performed at 5% level of significance  $\alpha$ , which is associated with a 95% confidence level. As in this case, whether sample's variance or standard deviation is less than a certain value or not is being checked, right-tailed test is to be used hence  $\chi^2$  value will be computed for  $\alpha$  Significance Level.

b. Do two experimental standard deviations,  $s_A$  and  $s_B$ , as determined from two different samples of measurements belong to the same population, assuming that degrees of freedom are  $v_A, v_B$  respectively?

The experimental standard deviations,  $s_A$  and  $s_B$  are obtained from:

- two samples of measurements by the same equipment at different times.

Condition  $s_A = s_B$ , is said to be met if

$$\frac{1}{F_{\alpha/2}(v_B, v_A)} \leq \left\{ \frac{s_A^2 v_B}{s_B^2 v_A} \right\} \leq F_{\alpha/2}(v_A, v_B)$$

Where  $F_{\alpha/2}(v_A, v_B)$  is Critical test Statistic for Fisher's Distribution at  $(\alpha/2)$ , for  $\alpha$  Significance level, and at  $(v_A, v_B)$ , degrees of freedom for the numerator and denominator.

In this test, two hypotheses are tested. The null hypothesis ( $H_0$ ) states that there is no difference between the two sets of experimental standard deviation  $s_A$  and  $s_B$ , determined from two different samples of measurements; they are statistically the same and any difference that may be detected is due to chance. The alternative hypothesis ( $H_a$ ) states that the two sets of experimental standard deviation  $s_A$  and  $s_B$  are different; the difference is statistically significant and must be due to some reason other than chance. Fisher Distribution computed at a certain level of significance  $\alpha$ , i.e. 5%, which is associated with a 95% confidence level. As in this case, sample's standard deviations are compared in both direction, two-tailed test will be used, hence one-tailed  $F$  value will be computed for  $(\alpha/2)$  or two-tailed  $F$  value will be computed for  $(\alpha)$ .

m. If both questions are affirmed, i.e. both conditions fulfilled, null hypothesis is not rejected and the observed values of Network RTK for cluster under consideration is said to be statistically smaller than or equal to expected values and any excess that may be detected is due to chance.

(viii) Manuals and Drawings:

(a) Before the goods and equipment are taken over by the Purchaser, the Supplier shall supply operation and maintenance manuals together with drawings of the goods and equipment. These shall be in such detail as will enable the Purchaser to operate, maintain, adjust and repair all parts of the works as stated in the specifications.

(b) The manuals and drawings shall be in the ruling language (English) and in such form and numbers as stated in the contract.

(c) Unless and otherwise agreed, the goods and equipment shall not be considered to be completed for the purpose of taking over until such manuals and drawings have been supplied to the Purchaser.

(ix) For the System and Other Software The following will apply:

The Supplier shall provide complete and legal documentation of hardware, all subsystems, operating systems, compiler, system software and the other software. The Supplier shall also provide licensed software for all software products, whether developed by it or acquired from others. The supplier shall also indemnify the purchaser against any levies/penalties on account of any default in this regard.

(x) Acceptance Certificate:

On successful completion of acceptability test, receipt of deliverables etc, and after the Purchaser is satisfied with the working of the system, the acceptance certificate signed by the supplier and the Committee constituted by the purchaser will be issued. The date on which such certificate is signed shall be deemed to be the date of successful commissioning of the systems.

(xi) In case, site locations for all receivers could not be made available to contractor within 270 days from date of signing of contract, Acceptance certificate in respect of system and other software installed at receiver stations and the Control Centre shall be issued in accordance with above clauses.

Acceptance of delivery of goods for remaining (uninstalled) receiver stations shall be issued on delivery to designated places. In this case the inspection of the goods shall be carried out to check whether the goods are in conformity with the technical specifications attached to the purchase/work order form and shall be in line with the inspection /test procedures laid down in the technical specifications and the manufacturer's warranty certificate. The purchaser will test the GNSS Receiver and antenna and other critical equipment at place of delivery by way of trouble-free operation during the acceptance exercise.

**Terms and Mode of Payment:**

- i. Payment Terms: Payment shall be made subject to recoveries, if any, by way of liquidated damages or any other charges as per terms & conditions of contract.
- ii. The Contract Price as specified in the Contract Agreement shall be paid as per the schedule, after successful Delivery, installation, acceptance and commissioning of CORS installed & upgraded against acceptance report from purchaser.
- iii. The Supplier's request for payment shall be made to the Purchaser in writing, accompanied by invoices describing, as appropriate, the Goods delivered and Related Services performed, and by the dispatch documents, packing list, Manufacturer's / Supplier's warranty certificate, and upon fulfilment of all other obligations stipulated in the Contract.
- iv. Payments shall be made promptly by the Purchaser after submission of an invoice or request for payment by the Supplier, and after the Purchaser's acceptance.
- v. The payments shall be made in Indian Rupees to the Supplier under this contract.

Payment shall be made in Indian Rupees in the following manner:

- i. Advance payment of Twenty (20) % of total contract price including total GST amount shall be paid to supplier on submission of irrevocable Bank Guarantee valid for 1 year from the date of signing of contract, of an equivalent amount from a nationalised bank or all Commercial scheduled bank in the prescribed format, and the full amount of advance payment will be adjusted at the later payment stage, as applicable.
- ii. On Delivery of goods, installation and completion of work under BoQ "SI 1: Software Solutions pertaining to Control Center"  
and  
On Delivery of goods, installation and completion of at least 80% of work under BoQ "SI 2: Upgradation of Existing CORS stations at rooftop: sub head A, B & C"  
and  
On Delivery of goods, installation and completion of at least 60% of work under BoQ "SI 3: Shifting of Existing CORS stations to Ground Stations and their Upgradation: sub head A, B, C & D"  
and  
On Delivery of goods, installation and completion of at least 60% of work under BoQ "SI 4: Supply and Installation of new CORS stations to the Ground stations: sub head A, B, C, D & E"  
and  
Testing of one cluster as per the testing methodology proposed above, under the contract, Fifty (50) % of the total contract price including total GST amount charged in Invoice against above said works shall be paid within thirty (30) days on completion of above said Work against an acceptance report from purchaser or another form acceptable to the Purchaser; 20% of advance payment made in accordance with point (i) shall be fully adjusted while releasing payment at this stage.
- iii. On Final Acceptance i.e. On Delivery of goods, installation, and testing of all cluster (commissioning): Thirty (30) % of the Contract Price including total GST amount charged in Invoice against above said works shall be paid within thirty (30) days on completion of above said Work against an acceptance report from purchaser or another form acceptable to the Purchaser.
- iv. Completion of each year of comprehensive operational and maintenance period: (Twenty) 20 % of the Contract Price including total GST amount charged in Invoice against operation and Maintenance shall be paid on pro rata basis annually @ 4 (four) % per year for 5 years within thirty (30) days on submission of certificate of successful completion of respective operation and Maintenance year wise issued by purchaser.
- v. Start of operation and Maintenance year shall be counted for above payment term, from date of issuance of certificate for Acceptance as per sl. (ii) above.
- vi. Payment of Local Taxes such as GST will be against valid Invoice as per GST ACT & Rules and submission of GST Registration Certificate along with declaration that "GST Registration is valid and all liabilities towards GST have been discharged by the vendor". GST amount will be paid within 30 days of submission of valid Invoice and all required documents and declaration by vendor.
- vii. For all the payments to be made, against Bank guarantees, the bank guarantee shall be issued by a Scheduled Indian Bank or a foreign bank located in India. The guarantees issued by other banks should be confirmed by a Scheduled Indian Bank or a foreign bank operating in India.
- viii. Bank guarantees for advance payment shall be released not later than 30 days after final adjustment of advance payment in subsequent payment stages.

#### Termination for Default

- i. The Purchaser without prejudice to any other contractual rights and remedies available to it the Purchaser, may, by written notice of default sent to the supplier, terminate the contract in whole or in part, if the supplier fails to deliver any or all of the goods or fails to perform other contractual obligation(s) within the time period specified in contract, or within any extension thereof, if any, granted by the Purchaser. The Performance Security in such cases will be forfeited.
- ii. Unless otherwise instructed by the Purchaser, the supplier shall continue to perform the contract to the extent not terminated.
- iii. Termination for Insolvency: If the supplier becomes bankrupt or otherwise insolvent, the purchaser reserves the right to terminate the contract at any time, by serving written notice to the supplier without any compensation, whatsoever, to the supplier, subject to further condition that such termination will not prejudice or affect the rights and remedies which have accrued and / or will accrue thereafter to the Purchaser.

#### Force Majeure:

- i. The supplier shall not be liable for imposition of any such sanction so long the delay and/or failure of the supplier in fulfilling its obligations under the contract is the result of an event of Force Majeure.
- ii. For purposes of this clause, Force Majeure means an event beyond control of the supplier not involving the supplier's fault or negligence, and which is not foreseeable and not brought about at the instance of the party claiming to be affected by such an event and which has caused the non-performance or delay in performance. Such events may include, but are not restricted to, wars or revolutions, hostility, acts of public enemy, civil commotion, sabotage, fires, floods, explosions, epidemics, strikes excluding by its employees, lockouts excluding by its management and freight embargoes.
- iii. If a Force Majeure situation arises, the supplier shall promptly notify the Purchaser in writing of such conditions and the cause thereof within twenty-one days of occurrence of such event. Unless otherwise directed by the Purchaser in writing, the supplier shall continue to perform its obligations under the contract as far as reasonably practical and shall seek all reasonable alternative means for performance not prevented by the Force Majeure event.
- iv. If the performance in whole or in part or any obligation under this contract is prevented or delayed by any reason of Force Majeure for a period exceeding sixty days, either party may at its option terminate the contract without any financial repercussion on either side.
- v. In case due to a Force Majeure event the Purchaser is unable to fulfil its contractual commitment and responsibility, the Purchaser will notify the supplier accordingly and subsequent actions taken on similar lines described in above sub-paragraphs.

#### Termination for Convenience:

- i. The Purchaser reserves the right to terminate the contract, in whole or in part for its Purchaser's convenience, by serving written notice on the supplier at any time during the currency of the contract. The notice shall specify that the termination is for the convenience of the Purchaser. The notice shall also indicate inter alia, the extent to which the supplier's performance under the contract is terminated, and the date with effect from which such termination will become effective.
- ii. The goods and services which are complete and ready in terms of the contract for delivery and performance within thirty days after the supplier's receipt of the notice of termination shall be accepted by the Purchaser following the contract terms, conditions and prices. For The remaining goods and services, the Purchaser may decide:
  - a) To get any portion of the balance completed and delivered at the contract terms, conditions and prices; and /or
  - b) To cancel the remaining portion of the goods and services and compensate the supplier by paying an agreed amount for the cost incurred by the supplier towards the remaining portion of the goods and services

#### Resolution of Disputes:

- i. If dispute or difference of any kind shall arise between the Purchaser/Consignee and the supplier in connection with or relating to the contract, the parties shall make every effort to resolve the same amicably by mutual consultations.
- ii. If the parties fail to resolve their dispute or difference by such mutual consultation within twenty-one days of its occurrence, then, unless otherwise provided in the SCC, either the

Purchaser/Consignee or the supplier may give notice to the other party of its intention to commence arbitration, as hereinafter provided the applicable arbitration procedure will be as per the Arbitration and Conciliation Act, 2015 of India.

iii. In the case of a dispute or difference arising between the Purchaser domestic Supplier relating to any matter arising out of or connected with the contract, such dispute or difference shall be referred to the sole arbitrator to be appointed by the Surveyor General Of India. The award of the arbitrator shall be final and binding on the parties to the contract subject to the provision that the Arbitrator shall give reasoned award in case the value of claim in reference exceeds Rupees One lakhs (Rs. 1,00,000/-)

iv. Venue of Arbitration: The venue of arbitration shall be the place from where the contract has been issued, i.e. DehraDun, India. Jurisdiction Of The Court will be from place where the GeM bid document has been issued, i.e., Dehradun, India

v. Applicable Law: The contract shall be governed by and interpreted in accordance with the laws of India for the time being in force.

#### Confidential Information:

a. The Purchaser and the Supplier shall keep confidential and shall not, without the written consent of the other party hereto, divulge to any third party any documents, data, or other information furnished directly or indirectly by the other party hereto in connection with the Contract, whether such information has been furnished prior to, during or following completion or termination of the Contract. Notwithstanding the above, the Supplier may furnish to its Subcontractor such documents, data, and other information it receives from the Purchaser to the extent required for the Subcontractor to perform its work under the Contract, in which event the Supplier shall obtain from such Subcontractor an undertaking of confidentiality similar to that imposed on the Supplier.

b. The Purchaser shall not use such documents, data, and other information received from the Supplier for any purposes unrelated to the contract. Similarly, the Supplier shall not use such documents, data, and other information received from the Purchaser for any purpose other than the performance of the Contract.

c. The obligation of a party under a and b above, however, shall not apply to information that:

(a) the Purchaser or Supplier need to share with the other institutions participating in the financing of the Contract;

(b) now or hereafter enters the public domain through no fault of that party;

(c) can be proven to have been possessed by that party at the time of disclosure and which was not previously obtained, directly or indirectly, from the other party; or

(d) otherwise lawfully becomes available to that party from a third party that has no obligation of confidentiality.

d. The above provisions of Confidential Information shall not in any way modify any undertaking of confidentiality given by either of the parties hereto prior to the date of the Contract in respect of the Supply or any part thereof.

e. The provisions of Confidential Information shall survive completion or termination, for whatever reason, of the Contract.

#### Liquidity Damage

Except as provided under Force Majeure, if the Supplier fails to deliver any or all of the Goods by the Date(s) of delivery or perform the Related Services within the period specified in the Bill of Quantities, the Purchaser may without prejudice to all its other remedies under the Contract, deduct from the Contract Price, as liquidated damages, a sum equivalent to the 0.01% of contract price per day or part thereof the delivered price of the delayed Goods or unperformed Services for each week or part thereof of delay until actual delivery or performance, up to a maximum deduction of the 10% of the contract price. Once the maximum is reached, the Purchaser may terminate the Contract.

#### Repair

The period for repair or replacement shall be:

a) For the Receiver station 48 hours from time of reporting. If repair and replacement are not completed within 48 hours from time of reporting, a penalty of Rs 5000/- per day per station shall be charged over the period in which the receiver station remains un-operational.

#### Availability of Network RTK Services and the CORS Data

a. High Availability of Network RTK service for users of specified accuracy and precision on an average > 95 % computed on monthly basis.

b. Availability of past CORS data at 1 second epoch in Rinex/Native format should be available on an average > 95 % computed on daily basis for each reference station. If this condition is not satisfied then a penalty of Rs 5000/- per day per station shall be charged over period in which data remains unavailable.

Tentative Location of the CORS

a. Existing rooftops CORS to be upgraded to the National SOI CORS Network standards:

1	Agastheeswaram
2	Alangudi
3	Cheyyar
4	Cheyyur
5	Cuddalore
6	Gingee
7	Gudiyatham
8	Gummidipoondi
9	Harur
10	Kadavur
11	Kalasapakkam
12	Kalkurichi
13	Kamuthi
14	Kanchipuram
15	Kangayam
16	Karaikudi
17	Kariapatti
18	Kolli Hills
19	Krishnagiri
20	Kudavasal
21	Kundah
22	Kuzhithurai
23	Madathukulam
24	Natham
25	Nilakottai
26	Palayamkottai
27	Pallipattu
28	Perambalur
29	Radhapuram
30	Salem
31	Senthurai
32	Sivagangai
33	Tenkasi (Shenkottai)
34	Thiruvaiyaru
35	Tiruchengode
36	Tiruvallur
37	Tuticorin
38	Ulundurpet
39	Uthamapalayam

b. Existing rooftops CORS to be shifted on

the ground and to be upgraded to the National SOI CORS Network standards:

1	Anthiyur
2	Gudalur
3	Karur
4	Kinathukadavu
5	Kodaikanal
6	Kurinjpadi
7	Oddanchatram
8	Srirangam
9	Talav Adi
10	Valparai
11	Vanur
12	Annur
13	Hosur
14	Katpadi
15	Natrampalli
16	Pennagaram
17	Thandarampattu
18	Kannya Kumari
19	Ambasamudram
20	Kovilpatti
21	Manamelkudi
22	Nagapattinam
23	Pattukottai
24	Peraiyur
25	Ponnamaravathy
26	Ramanthapuram
27	Sivagiri
28	Tiruchendur
29	Vedaranyam
30	Thiruporur
31	Chennai

c. New CORS to be installed to be upgraded to the National SOI CORS Network standards:

1	Kadaladi
2	Rameshwaram
3	Sirnali
4	Thiruvadana

The locations listed at Sl. No. (b) and (c) above are tentative and subject to change.



## 5. Non-Disclosure Agreement

*[The successful Bidder shall fill in this form in accordance with the instructions indicated]*

THIS AGREEMENT is made on

the *[insert: number]* day of *[insert: month]*, *[insert: year]*.

BETWEEN

(1) *[insert complete name of Purchaser]*, a *[insert description of type of legal entity, for example, an agency of the Ministry of .... of the Government of {insert name of Country of Purchaser}, or corporation incorporated under the laws of {insert name of Country of Purchaser} ]* and having its principal place of business at *[insert address of Purchaser ]* (hereinafter called "Disclosing Party"), and

(2) *[insert name of Supplier]*, a corporation incorporated under the laws of *[insert: country of Supplier]* and having its principal place of business at *[insert: address of Supplier]* (hereinafter called "Receiving Party").

WHEREAS the Purchaser invited bids for certain SUPPLY, INSTALLATION, COMMISSIONING AND MAINTENANCE OF CONTINUOUSLY OPERATING REFERENCE STATION (CORS) NETWORK in, *[insert region]* (hereinafter called "Work"), and has accepted a Bid by the Supplier for the supply, installation, commissioning and maintenance of said CORS Network.

AND WHEREAS the Parties contemplate that with respect to the work, certain data, information, material and documents as well as Disclosing Party's business, assets, financial condition, operations, plans and/or prospects of businesses, may be shared by Disclosing Party or may be generated/collected/acquired/gathered during course of the work by Receiving Party, (hereinafter referred to as "Confidential Information", more fully detailed in clause 1 herein below), that Disclosing Party regards as proprietary and confidential; and

NOW THIS AGREEMENT WITNESSETH AS FOLLOWS:

1. "Confidential and or proprietary Information" shall mean and include any information disclosed by Disclosing Party to the Receiving Party either directly or indirectly, in writing, orally, by inspection of tangible objects (including, without limitation, documents, prototypes, samples, media, documentation, discs and code) or generated/gathered/collected/acquired by the Receiving Party during the course of the work through hardware/software supplied, installed and commissioned in the work. Confidential information shall include, without limitation, any materials, data, trade secrets, network information, configurations, trademarks, brand name, know-how, business and marketing plans, financial and operational information, and all other non-public information, material or data relating to the current and/ or future business and operations of the Disclosing Party and analysis, compilations, studies, summaries, extracts or other documentation prepared by the Disclosing Party or prepared by Receiving party for Disclosing Party. Confidential Information may also include information disclosed to the Receiving Party by third parties on behalf of the Disclosing Party.
2. The Receiving Party shall refrain from disclosing, reproducing, summarising, and/or distributing Confidential Information and confidential materials of the Disclosing Party except in connection with the Work.
3. The Receiving Party will not export or sell, directly or indirectly, any technical data acquired from Disclosing Party or generated/gathered/collected/acquired by the Receiving Party during the course of the work through hardware/software supplied, installed and commissioned in the work or any product utilising any such data to any third party, without first obtaining approval of the Disclosing Party.
4. The Receiving Party shall protect the confidentiality of Disclosing Party's Confidential Information in the same manner they protect the confidentiality of their own proprietary and confidential information of similar nature. Receiving Party, while acknowledging the confidential and proprietary nature of the Confidential Information, agrees to take all reasonable measures at its own expense to restrain its representatives from prohibited or unauthorised disclosure or use of the Confidential Information.
5. Confidential Information shall at all times remain the property of the Disclosing Party and may not be copied or reproduced by the Receiving Party without the Disclosing Party's prior written consent.
6. Within seven (7) days of a written request by the Disclosing Party, the Receiving Party shall return/destroy (as may be requested in writing by the Disclosing Party or upon expiry and or earlier termination) all originals, copies, reproductions and summaries of Confidential Information available with the Receiving Party as Confidential Information. The Receiving Party shall certify to the Disclosing Party in writing that it has satisfied its obligations under this paragraph.

7. The Receiving Party may disclose the Confidential Information only to the Receiving Party's employees and consultants on a need-to-know basis. The Receiving Party shall have executed or shall execute appropriate written agreements with third parties, in a form and manner sufficient to enable the Receiving Party to enforce all the provisions of this Agreement.

8. Confidential Information, however, shall not include any information which the Receiving Party can show:

- i. is in or comes into the public domain otherwise than through a breach of this Agreement or the fault of the Receiving Party; or
- ii. was already in its possession free of any such restriction prior to receipt from the Disclosing Party; or
- iii. was independently developed by the Receiving Party without making use of the Confidential Information; or
- iv. has been approved for release or use (in either case without restriction) by written authorisation of the Disclosing Party.

9. In the event Receiving Party receives a summons or other validly issued administrative or judicial process under Indian laws requiring the disclosure of Confidential Information of the Disclosing Party, the Receiving Party shall promptly notify the Disclosing Party. The Receiving Party may disclose Confidential Information to the extent such disclosure is required by law, rule, regulation or legal process; *provided however*, that, to the extent practicable, the Receiving Party shall give prompt written notice of any such request for such information to the Disclosing Party, and agrees to cooperate with the Disclosing Party, at the Disclosing Party's expense, to the extent permissible and practicable, to challenge the request or limit the scope thereof, as the Disclosing Party may reasonably deem appropriate.

10. Receiving Party shall not use the Disclosing Party's name, trademarks, proprietary words or symbols or disclose under this Agreement in any publication, press release, marketing material, or otherwise without the prior written approval of the other.

11. Neither the execution of this Agreement nor the furnishing of any Information hereunder shall be construed as granting either expressly or by implication, any licence under or title to any invention, patent, copyright, trademark or trade name now or hereafter owned by or controlled by the party furnishing the Information.

12. Receiving Party agrees that the conditions in this Agreement and the Confidential Information disclosed pursuant to this Agreement are of a special, unique, and extraordinary character and that an impending or existing violation of any provision of this Agreement would cause the Disclosing Party irreparable injury for which it would have no adequate remedy at law and further agrees that the Disclosing Party shall be entitled to obtain immediately injunctive relief prohibiting such violation, in addition to any other rights and remedies available to it at law or in equity.

13. The Receiving Party shall indemnify the Disclosing Party for all costs, expenses or damages that Disclosing Party incurs as a result of any violation of any provisions of this Agreement. This obligation shall include court, litigation expenses, and actual, reasonable attorney's fees. The Parties acknowledge that as damages may not be a sufficient remedy for any breach under this Agreement, the non-breaching party is entitled to seek specific performance or injunctive relief (as appropriate) as a remedy for any breach or threatened breach, in addition to any other remedies at law or in equity.

14. Disclosing Party shall not be liable for any special, consequential, incidental or exemplary damages or loss (or any lost profits, savings or business opportunity) regardless of whether Party was advised of the possibility of the damage or loss asserted.

15. Receiving Party agrees that by virtue of entering into this Agreement the Disclosing Party is not obligated to disclose all or any of the Confidential Information to the other as stated in this Agreement. The Disclosing Party reserves the right to disclose only such information at its discretion and which it thinks is necessary to disclose in relation to the Work.

16. This Agreement will be effective from the date of execution of this Agreement and shall continue to be effective till the Work is terminated by either Party by giving notice in accordance with contract agreement of work, in case either Party foresees that the Work would not be achieved.

17. Notwithstanding anything contained herein, the provisions of this Agreement shall survive and continue after expiration or termination of this Agreement for a further period of five year(s) from the date of expiration.

18. It being further clarified that notwithstanding anything contained herein, in case a binding agreement is executed between the Parties in furtherance of the Work, the terms and conditions of this Agreement shall become effective and form a part of that binding agreement and be co-terminus with such binding agreement and shall be in effect till the term of such binding agreement and shall after its expiry and or early termination shall continue to be in force in the following manner:

- i.5 (five) years after the termination of the binding agreement
- ii.5 (five) years after the expiry of the binding agreement  
(whichever is earlier)

19. If any provision of this agreement is held to be invalid or unenforceable to any extent, the remainder of this Agreement shall not be affected and each provision hereof shall be valid and enforceable to the fullest extent permitted by law. Any invalid or unenforceable provision of this Agreement shall be replaced with a provision that is valid and enforceable and most nearly reflects the original intent of the unenforceable provision.

20. The rights and obligations of the parties under this Agreement may not be sold, assigned or otherwise transferred (subject to contract).

21. This Agreement shall be governed by the laws of India. Both parties irrevocably submit to the exclusive jurisdiction of the Courts in New Delhi, for any action or proceeding regarding this Agreement. Any dispute or claim arising out of or in connection herewith, or the breach, termination or invalidity thereof, shall be settled by arbitration in accordance with the provisions of Procedure of the Indian Arbitration & Conciliation Act, 2015, including any amendments thereof. The arbitration tribunal shall be composed of a sole arbitrator, and such arbitrator shall be appointed mutually by the Parties. The place of arbitration shall be New Delhi, India and the arbitration proceedings shall take place in the English language.

22. Additional oral agreements do not exist. All modifications and amendments to this Agreement must be made in writing.

IN WITNESS WHEREOF, THE PARTIES HERETO HAVE EXECUTED THIS CONFIDENTIALITY AGREEMENT IN ACCORDANCE WITH THE LAWS OF [INSERT THE NAME OF THE CONTRACT GOVERNING LAW COUNTRY] BY AFFIXING THE SIGNATURE OF THE AUTHORISED REPRESENTATIVES AS OF THE DATE HEREIN ABOVE MENTIONED.

For and on behalf of the Disclosing Party

Signed: *[insert signature of authorised representative(s) of the Disclosing Party]*  
in the capacity of *[insert title or other appropriate designation]*  
in the presence of *[insert identification of official witness]*

For and on behalf of the Receiving Party

Signed: *[insert signature of authorised representative(s) of the Receiving Party]*  
in the capacity of *[insert title or other appropriate designation]*  
in the presence of *[insert identification of official witness]*