

Supply, installation, testing, commissioning (SITC), on-site operation & maintenance of sound equipment system, for creating high quality acoustic ambiance and subsequent dismantling, packing and transportation to the designated centre of the Council

Scope of Work:

The scope of work shall include supply of all the materials/equipment at Allahabad strictly as per the specifications. The exact address for delivery will be intimated during placement of order. Subsequently, all equipment and components will have to be installed and commissioned at the site as per directive of the concerned department for full functionality before commencement of the event. Necessary manpower and tools required for such activity must be provided at site. In addition to that, necessary manpower will have to be deployed for operation and maintenance of the entire system on site during the period of event (tentative period: from 10th January 2019 to 5th March, 2019). At the end of the event, dismantling, packing and transportation of all equipment to the designated centre of the Council department will need to be executed by the supplier. The work shall also include erection and grouting of masts/poles using cement concrete, excavation of cable trench, laying of cables, covering the trench with adequate protection of the cables with excavated earth and fabrication of temporary cabin for placement of the amplifier clusters.

A tentative site plan is attached and based on which the installation will have to be done. The total area has been divided into two zones:

Zone1: The span of this trail is around 200 meters.

Zone 2: The span of this trail is around 210 meters.

The solution is proposed to play pre-recorded audio clips to an array of high quality environmentally protected speakers distributed along the trail of the two zones. Provision has been kept for emergency announcements through hand held wire-less microphones. For creating proper ambiance, high quality audio amplifiers are to be used to drive the array of speakers. It is proposed to place an array of two speakers together in each MS pole at a height of around 5 meters above ground surface. These poles are proposed to be placed at a distance of every 9 meters. Accordingly, audio amplifiers along with mixer, media player and a wireless microphone are to be used for each zone. It is also needed to install a temporary control room made from pre-fabricated structure for placement of the equipment for each zone. Cabling from control room equipment to the array of speakers would be drawn through underground trench using armored cables as per specifications provided.

SITC shall be strictly as per technical specifications provided.

Time of Completion: Time of completion is the quintessence of the project. The SITC must be completed within three weeks after placement of the purchase order which is not negotiable under any circumstances.

Detailed Specification

Sl. No.	Description	Quantity
1	<p>High Quality Horn-loaded Speaker Transducer: Minimum 5" Full range Enclosure: Industrial Fibre Glass (FRP) Front Grill: Steel make Frequency Range: 180 Hz. To 8 KHz. @ -10 dB Direct mode or better Frequency Response: 250 Hz. To 6 KHz. @ -3dB Direct mode or better Rated Power: Minimum 110 dB @ 30 Watt Nominal Impedance: 8 Ohms Power Taps @ 100V: 7.5W, 15W, 30W IP Certification: IP 65(Relevant Certificates are to be submitted) Mounting option: preferable customized U bracket and all required accessories for mounting and installation on 6-meter mast <i>Make: Bose/Sonodyne/DNH Speakers/AtlasIED</i></p>	92 Nos.
2	<p>Booster amplifier Power: minimum 500 Watts Frequency response: 50hz - 15khz (± 3db) @ 100v Input connections: Transformer balanced input with male and female XLR input/output sockets Power output: 500 watts RMS into 100- & 70-volt line/ 4 ohms Outputs: 100 & 70 volts/4-ohm speaker outputs via I/O barrier strip. Line out to feed additional power amplifiers available from one of the paralleled XLR inputs Controls: Power switch, Input attenuator Protection: through built in cooling fan with temperature sensor Indicators of Amplifier status: power on, output meter; mains fail, high temp trip etc. Signal to noise ratio:-82db or better Input sensitivity: Max 300mv (set @ 1v) Input impedance: 10 KOhm or better THD: less than 0.5% @ 1khz; Distortion at max power: 0.7% or better Power source AC: 200V to 250V - 50hz Form Factor: Rack mount 2U <i>Make: Bose/Australian Monitor/Precision Audio/AtlasIED</i></p>	6 Nos.

3	<p>8 Input line mixer</p> <p>Sensitivity (1 w 1m): Mic Sens 4.36mv, -45dBu imp 1k3ohm (trim in centre 0db) Line sens 0.775v, 0dbu imp >100k RCA 200mv, -12dbu imp 30kohm (trim in centre 0 db) Max level in XLRMic: -15 dBu line +30 dbu Max level out: +21 dBu Frequency response: 20 hz - 20 KHz (+0,-3 db) Outputs: Nominal level 0 dBu into 1 k Ohm imp 100 ohm Master out: Nom -6 db into 200 Ohm Mono headphone: out Imp 10 Ohm Mono rec out: Nom -12 db into 10 KOhm imp 10 KOhm Crosstalk: > 70 db Tone controls: Bass +/- 12 db Mid +/- 12 db Treble +/- 12 db Signal to noise ratio: > 90 db (all pots at center position) THD: < 0.1% @ 1khz Phantom power: 15 VDC Form Factor: Rack Mount 1U Power input: AC 230v/50hz or 115v/60hz, DC: 24 volts With Protective Fuses</p> <p><i>Make: Bose/Australian Monitor/Ashly/Rane/Yamaha</i></p>	2 Nos.
4	<p>Blue Ray DVD player with USB playback facility</p> <p>Facility of playing of MP3 files through USB/DVD/CD Provision for selection of track and repeated play of it. Power: 220V AC All accessories <i>Make: Philips/Sony/Samsung/Panasonic/LG</i></p>	4 Nos.
5	<p>Wireless UHF Handheld Microphone</p> <p>Receiver's audio frequency response 50 to 16,000 Hz (-3 dB),Dynamic Microphone, Microphone's Frequency response: 50 to 16,000 Hz (-3 dB), THD @ ≤ 0.9%, Microphone's AF frequency AF frequency response 80-14,000 Hz</p> <p><i>Make: Sennheiser/Shure/AKG</i></p>	2 Nos.
6	<p>18 RU Rack</p> <p>with Clear glass lockable door,Skeleton frame,Left,Right & Top panel,2 RU Tray & wheel set with power board and cooling fans</p> <p><i>Make: Australian Monitor/Valrack/Netrack</i></p>	2 Sets

7	<p>2 core 2.5 Sq. mm. high quality Armoured Copper Speaker Cable.</p> <p>Size: 2.5 sq mm Core: 2 Core Conductor Material: Copper Current Rating: 45Amp Thickness of PVC Insulation: Minimum 0.8mm Thickness of PVC inner sheath: Minimum 0.4mm Should be ISI compliant</p> <p><i>Make: Polycab/Mascape/Finolex</i></p>	1000 Mtrs.
8	<p>All necessary Interconnecting Cables & supporting electrical, electronic and mechanical components required for connecting UPS input and output, amplifier cluster, BlueRay Player and wireless microphone in 18U rack assemblies. All necessary power distribution cables from UPS should also be arranged.</p>	1 Lot for each zone

9	<p>On-Line UPS having 30 minutes backup time (minimum 5000 VA)</p> <p>With SMF Batteries, Battery Rack & Battery connecting cables</p> <p>Specification: Rating: Minimum 5000 VA Battery Backup time: 30 minutes at 85% Load</p> <p>Input Phase: Single Rated voltage: 220VAC / 230 VAC / 240 VAC Voltage range: 160-285 VAC full load Frequency: 50/60 Hz Power factor: 0.97 (conditions: rated voltage, full pure resistive load, fully charged battery)</p> <p>Output Phase: Single Power factor: 0.7 Voltage: 220VAC / 230 VAC / 240 VAC $\pm 2\%$ Line regulation: $\leq 2\%$(0 to 100% linear load) Voltage harmonic distortion: $\leq 3\%$(0 to 100% linear load) (rated input voltage, rated input $\leq 6\%$(0 to 100% non-linear load) Dynamic variation: $< 5\%$ in 20 ms Frequency: 50 / 60 Hz ± 0.2Hz Frequency range: 46-54 Hz Inverter overload capability (in Normal mode, 25°C): 108%~150% 30s Inverter overload capability (in Battery mode, 25°C): 108%~150% 30s Bypass overload capability: 200% for < 60 mins, 300% for 5s Crest factor: 3:1 Bypass operating voltage: 80 to 264V Transfer time: Normal to Battery: 0ms DC component: ≤ 200mV Efficiency: Battery mode: $\geq 83\%$ (rated battery voltage, full linear load) Normal mode: $\geq 88\%$ (rated mains voltage, full linear load, battery fully charged) Protection: IP20</p> <p>Other features: Compact Tower design, Generator Compatible, True Online Double Conversion UPS with Zero transfer time, High Capacity battery charging capability, Electro Magnetic Conduction (EMC) compliant to Class B delivers strong immunity protection levels.</p> <p>ESD immunity: IEC61000-4-2 Level 4 RS immunity: IEC61000-4-3 Level 3 EFTB immunity: IEC61000-4-4 Level 4 Surge immunity: IEC61000-4-5 Level 4 Conducted Emission: EN50091-2 Class B</p>	2 Sets
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	<p>Radiated Emission: EN50091-2 Class B Ambient temperature: 0°C to 40°C Relative humidity: Upto 90% Condensing</p> <p>The UPS should be fully compatible for operation on Generator & Cold Start on Full Load Capacity</p> <p>make: APC/Emerson/Numeric</p>	
10	<p>Tubular Steel Pole confirming to IS2712: Part II Stepped pole shall be made of one length of tube, seamless or welded, the diameter being reduced in parallel steps Length: 5 Mtrs. Top Dia: 70 mm Bottom Dia: 130 mm Thickness: 3 mm base Plate: 300 x 300 x 12 mm</p> <p>The poles shall be coated with black bituminous paint throughout, internally and externally upto the level of 1000mm from the bottom. The remaining part of the exterior shall be painted with grey colour enamel paint over one coat of red oxide primer. <i>(Detailed drawing is attached)</i></p>	44 Nos.
11	<p>Installation of Poles</p> <p>Each pole should be mounted on a concrete base with nut and bolt. <i>(Detailed drawing is attached)</i></p>	44 Nos.
12	<p>Preparation of underground Trench</p> <p>Excavation of trench and covering the trench with excavated earth after laying of cables using sand, brick and earth. <i>(Detailed drawing is attached)</i></p>	410 mtrs.
13	<p>Cable laying through the trench and poles</p> <p>laying of cables through the excavated trench from the amplifier cluster of each zone up to the speakers mounted on poles as per distribution topology</p>	1 Lot
14	<p>Supply and installation of Control cabin made from pre-fabricated structure</p> <p>The cabin should accommodate 18U rack, UPS and one chair for the operator having size minimum 6'x6' x 8' height</p> <p>Floor: MS Tubular Pipes, Floor Material - BWP Marine Grade Ply Board 12 MM Thick, Wall Material - BWP Marine Grade Ply Board 6 MM Thick</p> <p>Roof: Double Slant, Roof Material - Aluminum Top Insulated,</p>	2 Sets

	Window - Sliding Glass in E- Channel one on each side, Paint Texture coating : White/Ivory/Grey, It should be fire resistant Strength: Can Withstand high velocity of wind, Floor Resting On MS Legs. With two small chairs.	
15	Installation, commissioning and testing of the entire system on site	
16	Deployment of trained man-power for operation and maintenance of the system during the event The operator should be responsible to regular switch on and off the system, play of audio clips as and when required, looking after its performance for smooth running, periodical maintenance, emergency announcement, resolving any technical faults, liaison with the manufacturer for after sales service. Rate per man-shift must be quoted explicitly Necessary accommodation and all necessary transportation along with other amenities should be arranged by the bidder.	360 man-shifts
17	Dismantling and packing of all equipment, poles and control cabin etc. Packing should be done properly for safe transportation.	
18	Transportation of all components form the place of installation to National Council of Science Museums, Kolkata	

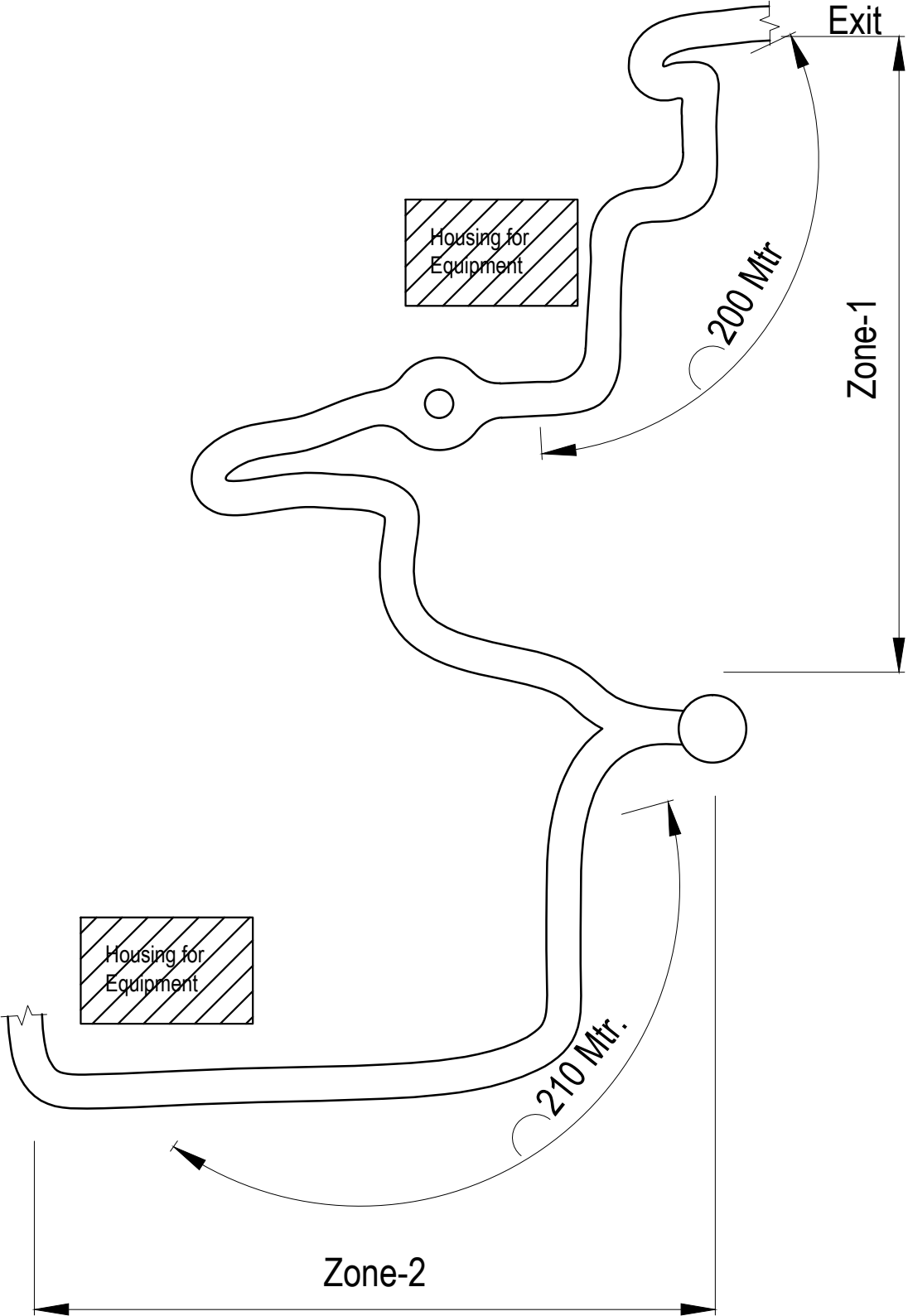
Warranty: One-year replacement warranty for all equipment to be provided throughout India.

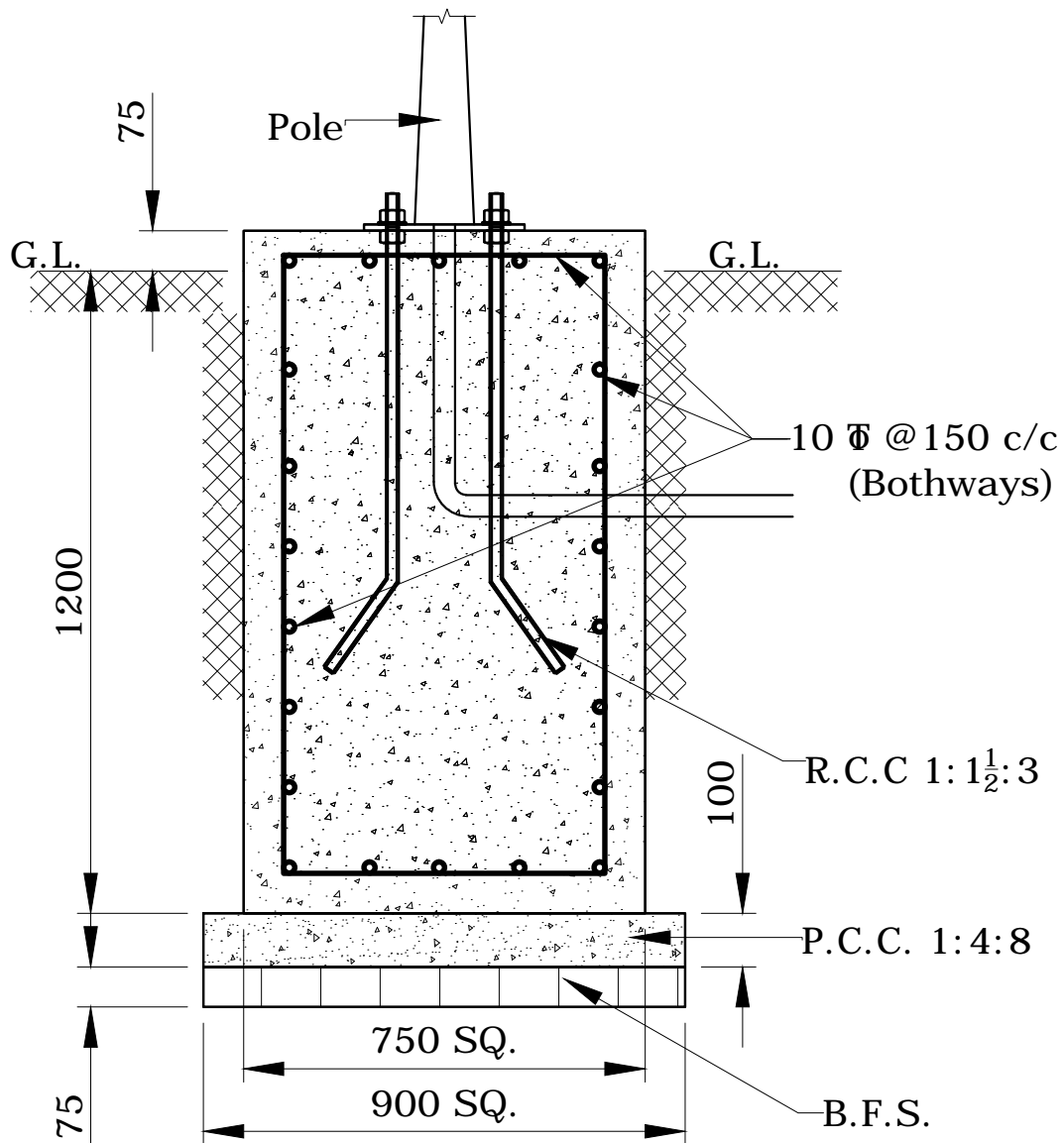
Terms and conditions:

1. All equipment, cables, poles, control cabin and other allied materials are to be supplied in Allahabad strictly as per technical specifications provided. The bidders must quote item wise rate.
2. Makes and models of all equipment must be mentioned clearly.
3. The supplier must arrange for all necessary tools, equipment, skilled/unskilled manpower required for the complete installation, commissioning and testing before the date of commencement of the event.
4. The supplier must arrange for trained man power for operation and maintenance of the system during the event for 60 days. Rate for man power for each shift must be mentioned explicitly.

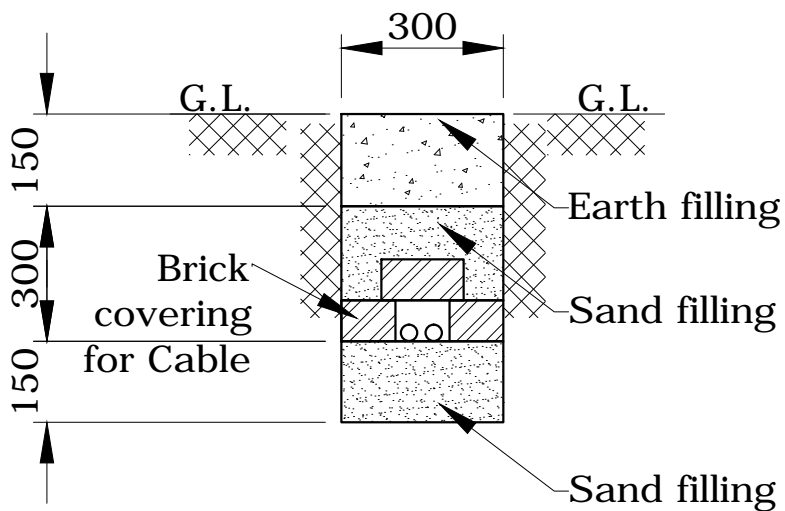
5. All items and services must be quoted separately indicating unit prices. Selection of the quantity of item and service may be changed (reduction or addition or complete deletion) at the time of placement of order based on the individual rates.
6. Time of completion is the quintessence of the project. The SITC must be completed within three weeks after placement of the purchase order which is not negotiable under any circumstances.

LAYOUT FOR CREATING HIGH QUALITY ACOUSTIC AMBIANCE





Foundation for Tubular Pole



Details of Cable Trench

NATIONAL COUNCIL OF SCIENCE MUSEUMS			
UNIT: C.R.T.L.		PROJ. — KUMBHAMELA	
DRG. NO. CIVIL-03/28/18	DATE 03/12/18	SCALE N.T.S.	TOLERANCE ±0.25mm
TITLE: — Foundation Details of Tubular Pole & Cable Trench			
DRN. BY <i>[Signature]</i>	CKD. BY	APPRD. BY	

Specification for tubular steel pole conforming to IS2712: Part II

Type: Stepped pole shall be made from one length of tube, seamless or welded, the diameter being reduced in parallel steps.

Size:

Sr.No	Poles (in mtr.)	Top Dia (in mm)	Bottom Dia (in mm)	Thickness (in mm)	Base plate (in mm)	Arm Bracket (in mm)
1.	5	70	130	3	300x300x12	NIL

Colour: The poles shall be coated with black bituminous paint throughout, internally and externally upto the level of 1000m from bottom. The remaining portion of the exterior shall be painted with grey colour enamel paint over one coat of red oxide primer.

