RISL

RajCOMP Info Services Ltd.
(A Government of Rajasthan undertaking)

email: info.risl@rajasthan.gov.in
website: www.risl.rajasthan.gov.in

Ref No.:- F3.3(437)/RISL/PUR/2022/850 **Date: 10/02/2023**

Corrigendum – 2

The clarification and subsequent changes in RFP after Pre-Bid queries for the work of "Construction & Maintenance of Rajiv Gandhi Knowledge Service & Innovation Hub at Jodhpur" NIB No F3.3(437)/RISL/PUR/2022/297 dated 23/01/2023, Tender ID 2023_RISL_316150_1 is revised and uploaded on e-proc.

Technical Director
(Civil & Electrical), IT&C

CONSTRUCTION AND MAINTENANCE OF RAJIV GANDHI KNOWLEDGE SERVICE &INNOVATION HUB JODHPUR

Annexure B (Corrigendum-II)

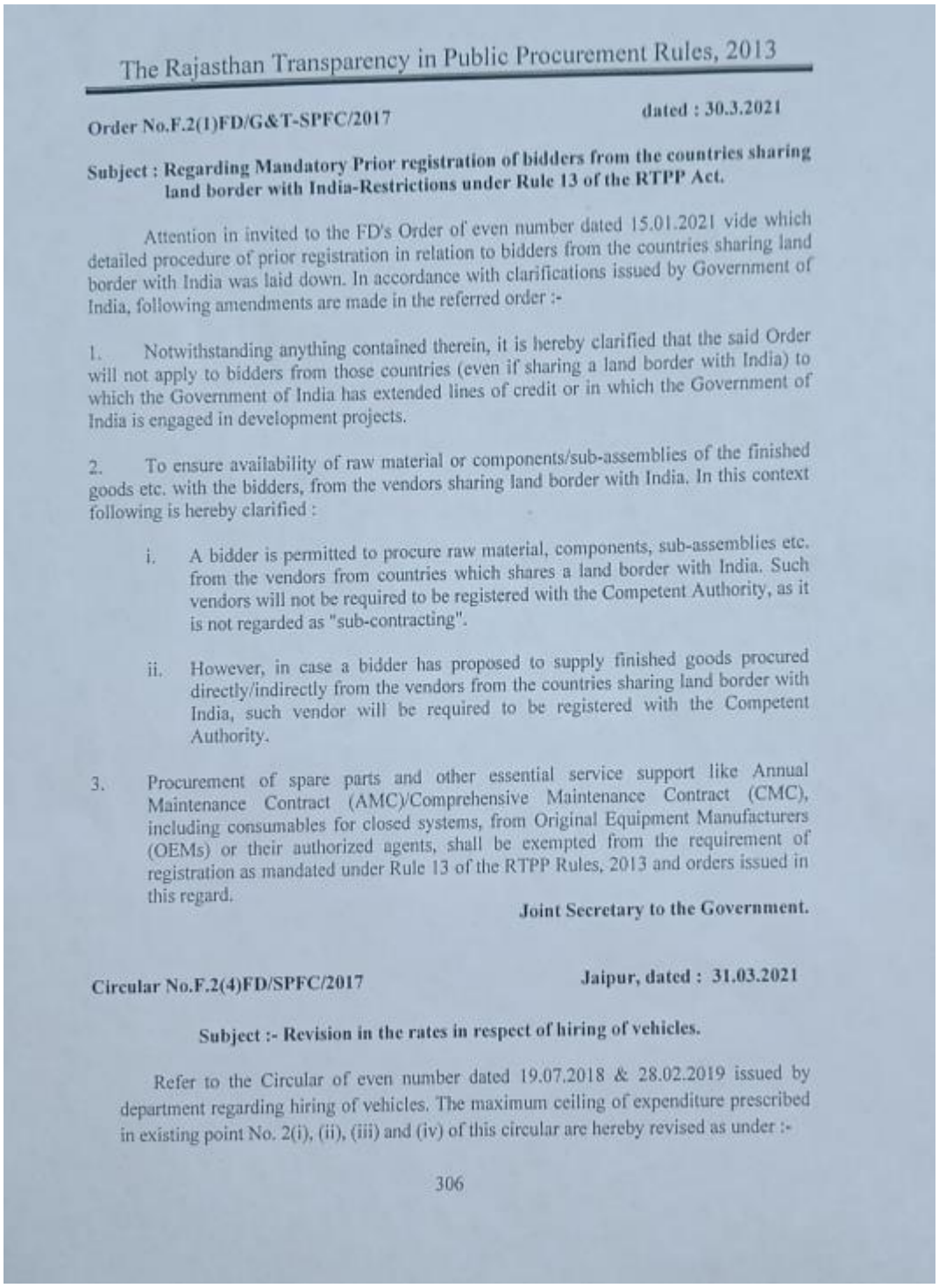
Clarifications of Pre-Bid Queries dated 03-Feb-2023

RISL
RajCOMP Info Services Ltd.

IT Building, Yojana Bhawan, Tilak Marg, C-Scheme Jaipur, Rajasthan 302005

Contents

1. Land Border Rule



The Rajasthan Transparency in Public Procurement Rules, 2013

Order No.F.2(1)FD/G&T-SPFC/2017 **dated : 30.3.2021**

Subject : Regarding Mandatory Prior registration of bidders from the countries sharing land border with India-Restrictions under Rule 13 of the RTPP Act.

Attention in invited to the FD's Order of even number dated 15.01.2021 vide which detailed procedure of prior registration in relation to bidders from the countries sharing land border with India was laid down. In accordance with clarifications issued by Government of India, following amendments are made in the referred order :-

1. Notwithstanding anything contained therein, it is hereby clarified that the said Order will not apply to bidders from those countries (even if sharing a land border with India) to which the Government of India has extended lines of credit or in which the Government of India is engaged in development projects.

2. To ensure availability of raw material or components/sub-assemblies of the finished goods etc. with the bidders, from the vendors sharing land border with India. In this context following is hereby clarified :

   i. A bidder is permitted to procure raw material, components, sub-assemblies etc. from the vendors from countries which shares a land border with India. Such vendors will not be required to be registered with the Competent Authority, as it is not regarded as "sub-contracting".

   ii. However, in case a bidder has proposed to supply finished goods procured directly/indirectly from the vendors from the countries sharing land border with India, such vendor will be required to be registered with the Competent Authority.

3. Procurement of spare parts and other essential service support like Annual Maintenance Contract (AMC)/Comprehensive Maintenance Contract (CMC), including consumables for closed systems, from Original Equipment Manufacturers (OEMs) or their authorized agents, shall be exempted from the requirement of registration as mandated under Rule 13 of the RTPP Rules, 2013 and orders issued in this regard.

Joint Secretary to the Government.

Circular No.F.2(4)FD/SPFC/2017 **Jaipur, dated : 31.03.2021**

Subject :- Revision in the rates in respect of hiring of vehicles.

Refer to the Circular of even number dated 19.07.2018 & 28.02.2019 issued by department regarding hiring of vehicles. The maximum ceiling of expenditure prescribed in existing point No. 2(i), (ii), (iii) and (iv) of this circular are hereby revised as under :-

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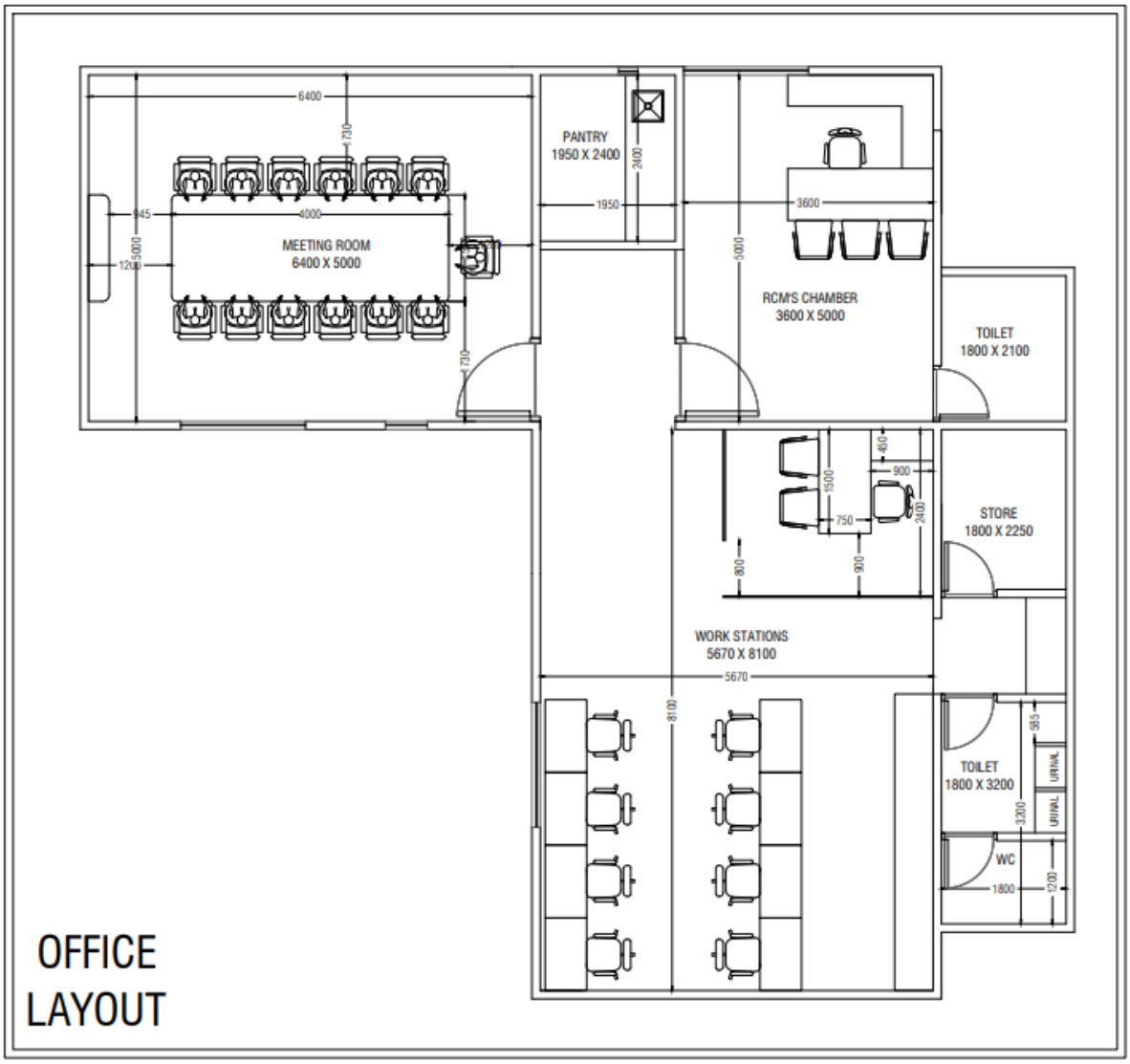
2. EIL Office Layout



3. Cast resin type Bus Duct Specification (BOQ 3 item no 363-366)

CCR 600A – 6300A COMPACT CAST RESIN BUSBAR PRODUCT FEATURES

1. Standards & Certification:

1. CCR Busbar system should be designed and manufactured as per IEC 61439-6 standard, which requires below listed tests. Each busbar rating Should be type tested individually and comply with recent IEC 61439-6 standards for all type tests and certified by independent authorized testing laboratory as KEMA/DEKRA including below test:
    a. Strength of material and parts,
    b. Resistance to corrosion,
    c. Properties of insulating materials,
    d. Verification of thermal stability of enclosures,
    e. Verification of resistance of insulating materials to abnormal heat and fire due to internal electric effects,
    f. Mechanical impact,
    g. Marking,
    h. Ability to withstand mechanical loads ,
    i. Test procedure for a straight busbar trunking unit,
    j. Test procedure for a joint,
    k. Resistance of the enclosure to crushing,
    l. Degree of protection of assembly,
    m. Clearances and creepage distances,
    n. Protection against electric shock and integrity of protective circuits,
    o. Effective earth continuity between the exposed conductive parts of the assembly and the protective circuit,
    p. Short-circuit withstand strength of the protective circuit,
    q. Dielectric properties,
    r. Power-frequency withstand voltage,
    s. Impulse withstand voltage,
    t. Verification of temperature rise,
    u. Short- circuit withstand strength, Annex BB Phase conductor characteristics, Annex CC Fault-loop zero-sequences impedances, Annex DD Fault-loop resistances and reactances.

2. BUS DUCT/BBT OEM should have ISO 9001, ISO 14001, ISO 18001, and ISO 27001 certification.

3. Each product should have a “Type Label” including coding system, which identifies the brand, type of the unit, number of conductors and electrical details. The same coding is on the related certificate and the catalogue.

4. CCR product and production method are “Under Regular Surveillance” and they are continuously monitored for conformity by KEMA KEUR and UL.

5. CCR Busbar should have high flame resistance and circuit integrity properties under fire conditions according to IEC 60331-1 and BS 8602 standard

6. CCR Busbar provides IP68 protection against outdoor conditions

7. CCR is certified according to IEC 60068-3-3 / 60068-2-57, IEEE-693 with using BUS DUCT/BBT OEM seismic bracing products.

2. Electrical Characteristics

CCR Busbar systems nominal voltage is 1000 V.

2.1 Structure

a. Housing is manufactured with specially developed metal protection and cast resin material.
b. Conductors between phases are epoxy coated and tin plated at the joints.
c. Housing is sealed by composite material that is resistant to dust, water, moisture, magnetic, chemical corrosion.
d. Busbar systems can be easily re-jointed or re-connected in order to adapt to a change in design or system load requirements. A protection rating of IP68 and the same flame-retardant functionality remains constant, even when the busway is re-jointed or re-connected.
e. CCR Busbar system should have "Sandwich-Compact" structure. Conductors are packed and placed into the housing without leaving air gap in order to provide low reactance.
f. Access to only one side of the busway shall be required for tightening the joint bolts.

2.2 Conductors

1. Aluminum or Copper conductors are epoxy coated and tin plated at the joints upon the
2. wire configuration and required numbers, which are described below.
3. CCR busbar system should have aluminum conductors between 600A – 5400A.
4. CCR busbar system should have copper conductors between 850A – 6300A.
5. CCR busbar system should have the following number of conductors and wire configuration;
   a. Conductors: (3 full size conductors + PE (housing)).
   b. Conductors: (4 full size conductors + PE (100% earth conductor + housing)),
   c. 4½ Conductors: (4 full size conductors + PE (50% earth conductor + housing)),
   d. Conductors: (5 full size conductors + PE (100% earth conductor + housing)),

- Phase conductors and neutral conductor have the same cross-section and they are
- insulated.
- Aluminum conductors are EC grade aluminum. Minimum conductivity is
- 34m/mm².
- Copper conductors are minimum 99,95% electrolytic copper. Minimum conductivity
- is 56m/mm²
- The minimum short-circuit values of the busbar channels should be as follows;

- Al Conductors;
- 600A : 1 sec value 25kA, peak value 52,5kA
- 800-1250A : 1 sec value 35kA, peak value 73,5kA
- 1600A : 1 sec value 60kA, peak value 132kA
- 2000A : 1 sec value 80kA, peak value 176kA

- 2500A and above : 1 sec value 100kA, peak value 220kA
- Cu Conductors;
- 850A : 1 sec value 23kA, peak value 48,3kA
- 1000A : 1 sec value 50kA, peak value 105kA
- 1250-1600-2000A : 1 sec value 80kA, peak value 176kA
- 2500A and above : 1 sec value 95kA, peak value 210,5kA

2.3 Insulation

- Insulation system is suitable for 1.000 V continuous operation. Specially formulated Class B epoxy insulation should be applied as insulation material which provides high insulation resistance and high peak temperature resistance. Epoxy is UL V0 class and halogen and toxic free properties.

2.4 Joint Structure

- Busway joint enclosure insulation materials: Resin based, gasket or packing formed to allow mechanically compressed sealing functionality. It also allows several openings of the joint enclosure without losing its IP68 water & dust proof capability.

- Electrical and mechanical connection is making by placing conductor joints into the joint blocks of the connected conductors and followed by tightening and fastening of the joint bolts. CCR Busbar also includes special accessories from BUS DUCT/BBT OEM including Belleville spring washer, that retains its original contact pressure ensuring proper electrical contact. Offers securer, more reliable and virtually maintenance-free joint.
- All parts of the joint structure are plated with tin against contact losses due to corrosion in order to get safe and reliable earth connections and have very low resistance values entire length.

2.5 Protection

- Protection degree of the housing and joints are IP68

2.6 Accessories

- CCR Busbar system should have all necessary accessories (elbows, offsets, panel-transformer connections, reductions, etc.) BUS DUCT/BUS DUCT/BBT OEM supply special dimensioned units in short time, if the project conditions require.
- For horizontal runs, a horizontal expansion unit should be used at every 40m and expansion points of the building.
- For vertical applications, a vertical expansion unit should be used at every floor. Busbar system must be rigidly fixed by supports at every floor.

4. Calculation of bid capacity (Revised) – **Change in value of N** (Number of years prescribed for completion of the works)

Bidders who meet the minimum qualification criteria will be qualified only if their available bid capacity is more than the total bid value. In case of a joint venture, the available bid capacity will be applied for each partner to the extent of his proposed participation in the execution of the works. The available bid capacity will be calculated as under:

Assessed Available Bid capacity = (A * N * 2 - B)

Where

A = Maximum value of civil engineering works executed in any one year during the last five years (updated to the price level of the year March 2022) taking into account the completed as well as works in progress.

N = Number of years prescribed for completion of the works for which bids are invited. (**N= 1.25** year in Present bid)

B = Value (updated to the price level of the year March 2022) of existing commitments and on-going works to be completed during the next N years (period of completion of the works for which bids are invited)

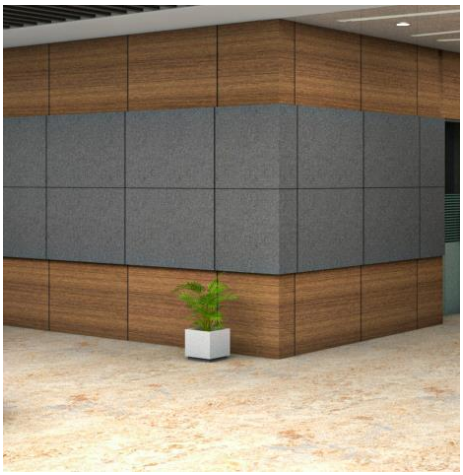
Note: *The statements showing the value of existing commitments and on-going works as well as the stipulated period of completion remaining for each of the works listed should be countersigned by the Engineer in charge, not below the rank of an Executive Engineer or equivalent.*

Even though the bidders meet the above qualifying criteria, they are subject to be disqualified if they have:

1. Made misleading or false representations in the forms, statements and attachments submitted in proof of the qualification requirements; and/or
2. Record of poor performance such as abandoning the works, not properly completing the contract, inordinate delays in completion; litigation history, or financial failures etc.; and/or
3. Participated in the previous bidding for the same work and had quoted unreasonably high bid prices and could not furnish rational justification to the employer.
4. The bidder is debarred / blacklisted in participation of bids by any Government of Rajasthan Department.

5. Technical Specification for Specialized Designer Interior & Modular Furniture

24.1. Modular Rigid PVC/Polyolefin Metal Panelling (Refer BOQ 12 Item No. 2)



1. Factory-made removable type self-inter-lockable metal panels with a front sheet of preformed textured hot-dip galvanized sheet with rigid polyvinylchloride (PVC) film/Polyolefin film on one side and on the other side a coating to avoid rust (sheet thickness 0.6mm). The panelling design shall comprise of a specially designed combination of perforated and non-perforated panels through CNC laser cutting, bending & punching. The panelling/partition shall be Greenguard gold certified/tested (from UL/Intertek). Necessary certificate / test-reports as asked in above specifications should be valid on bid due date and should be submitted at the time of approvals.Panels shall be designed to achieve shape and design as per the design consultant and shall be fixed using GI/CRCA hook fitting on the structure. Overall system thickness for panelling shall be 60mm to 90mm and for partition shall be 70mm to 120mm.
2. The panel shall comprise of perforation for making the cladding and partitions acoustically sound.
3. Tiles Perforation – To achieve acoustics without deteriorating the aesthetical appeal of the office room interior it is necessary that the at-least twenty five percent of the wall panelling tiles have micro-perforations (less than 1.6mm dia. each) all over the surface with a density of 5000 holes per square feet. This feature shall be audit certified (from UL/Intertek) on modular wall panelling tile to have clean perforations and providing smooth finish on the front fascia of tiles. The tile shall have 5000 holes per square feet on the front side of the tile. Necessary certificate / test-reports as asked in above specifications should be valid on bid due date and should be submitted at the time of approvals.
4. As per the design, the panel shall comprise of perforation for making panelling and partitions acoustically sound. Acoustic grade fire retardant fabric (minimum 1mm thick) will be fixed (on the backside of perforated tiles) at some parts of the office room facility.
5. There shall be the possibility of a wide variety of colours and images to be used on the wall elements to give the aesthetic and state of the art look to the office interior. ACP (Aluminum Composite Panels) shall be deemed unacceptable.

6. The structure shall allow an uninterrupted flow of wires/cable/tubes of a maximum diameter of 25mm.
7. The panel shall be designed in such a manner that it takes care of the undulation of walls and gives perfect flat surface finish and compile easy service & maintenance procedure.
8. To provide an acoustically superior environment and ensure proper attenuation of airborne sound, it is necessary that the sound transmission class (STC) value of wall panelling and the partition shall be minimum 35 (According to IS: 9901 (Part III) – 1981, DIN 52210 Part IV- 1984, IS0: 16283 (Part I) - 2014. Necessary certificate / test-reports as asked in above specifications should be valid on bid due date and should be submitted at the time of approvals.
9. Seismic safety of user & equipment is a prime concern area. The metal panelling/partition shall sustain the seismic vibrations as per design spectrum IS 1893 for zone 2 vibrations. The test shall be carried out by an authorized government agency. Necessary certificate / test-reports as asked in above specifications should be valid on bid due date and should be submitted at the time of approvals.
10. The wall panelling shall be robust & strong enough to sustain the routine loads/minor impacts of a typical office room environment. The wall panelling/partition structure shall have audit certified design feature (from UL / Intertek) of Load-bearing capacity of 300 Kgs to hold any display unit on clamp having a minimum length of 750mm. The necessary certificate / test reports should be submitted at the time of approvals.
11. Audit certified design feature (from UL / Intertek) of modular wall panelling tile having secure locking arrangement for equidistant mounting. Locking arrangement enables easy replacement without using any tool within 20 seconds. The feature shall provide easy flexibility of locking all tiles in one column through gravity. Necessary certificate / test-reports as asked in above specifications should be valid on bid due date and should be submitted at the time of approvals.
12. The modular metal panelling shall comply to the lead-free directive to ensure restriction of hazardous substances so that the final product does not contaminate the environment. The final product i.e., modular metal panelling does not contain hazardous substances and we give a healthy life to our coming generations it is necessary that the modular metal panelling system shall be RoHS certified/tested (from UL / Intertek). Necessary certificate / test-reports as asked in above specifications should be valid on bid due date and should be submitted at the time of approvals.
13. From fire safety point of view the metal wall panelling tiles shall be class A fire rated as per the norms of comparative measurements of surface flame spread and smoke density measurements with that of select grade red oak and fiber-cement board surfaces under the specific fire exposure conditions. The proposed wall panelling tiles shall be class A certified/tested as per ASTM e84 (from UL / Intertek) for surface spread of flame and smoke generation. This is mandatory to ensure that the materials used in the interiors do not provoke fire. The necessary certificate / test reports should be submitted at the time of approvals.

24.1.1. Design

1. The front tile (PVC/Polyolefin pre-coated metal sheet) shall be perforated/ non-perforated as per the design requirement. These tiles shall be bent through CNC, machine punched & laser Cut to achieve perfect accuracy.
2. The structure shall be made from a modular, heavy-duty powder-coated CRCA/GI frame (minimum sheet thickness 1mm) and shall allow an uninterrupted flow of wires/cable/tubes of maximum diameter 25mm.
3. The structure shall be securely connected from wall, roof and floor. It shall be made up of a minimum of 1mm thick vertical Upright. Grid of the desired dimension shall be formed.

24.1.2. Surface Finish

24.1.2.1. For Panels

1. Front Panel: PVC /Polyolefin pre-coated GI sheet (sheet thickness: 0.6mm and coating thickness: at least 0.11mm)

24.1.3. Structure

1. Powder-coated CRCA sheet / GI Pipe (Sheet thickness minimum 1.6mm)
2. The tile sheet shall have the possibility of being formed mechanically per the specific needs of the project. The tile shall have backing of cement fiber board / polystyrene.

24.1.4. Material Selection

1. Available Width- 100mm to 1200mm (in multiples of 100 & 150mm).
2. Available Height- 100mm to 750mm (in multiples of 100 & 150mm).
3. Thickness- minimum 10mm for perforated tiles with acoustic fleece.
4. Minimum 25mm for perforated/non-perforated tiles.

24.1.5. Material Testing/Certification

24.1.5.1. PVC/ Polyolefin pre-coated sheet

1. Fire rating and Low flame spread: EN ISO 11925-2, EN 13823 and ASTM e-84

24.1.5.2. Powder coating

1. Adhesion test: EN ISO 2409 / ASTM: D 3359
2. Impact resistance test: ASTM D 2794 (5/9’ ball)
3. Conical Mandrel test: ASTM D522
4. Salt spray test: 1000 hours as per ASTM B117
5. Resistance to humid atmosphere test as per ISO 6270

24.1.6. Component Specification

24.1.6.1. Floor Mounting

1. I-section / C-Section made from minimum 1.6mm thick C channels, Sections shall be grouted on the floor with the help of M8/10 Anchor Fasteners.
2. These
3. Bidder shall ensure proper laser marking and levelling before proceeding with any floor grouting.

24.1.6.2. C Section (Upright) fixing

1. 40mm wide rolled section (UPRIGHT) (1.6 mm thick powder coated CRCA / GI sheet).
2. These uprights shall be mounted over the floor section mountings
3. The installation to be carried out with Uprights spaced at 1200mm (centre to centre) securely fixed to the floor
4. The uprights shall be firmly held with L-shaped wall mounts made up of a minimum 1.6mm thick CRCA steel sheet duly powder coated.
5. The L clamp and the upright will be bolted together with M6 bolts.
6. End Cap

7. Minimum 0.7mm thick PVC / Polyolefin Coated GI tile; (similar to panel tile) shall be bolted on the extreme end-uprights, Corners to hide the grid structure.

24.1.7. Panel

1. The panels shall be fixed on the uprights.

24.1.8. Door Profile

1. The door frame shall be fixed with these profiles only to have proper integration of doors with the overall system.

24.1.9. Feature

1. Raw material for tile & powder coating shall not affect the environment.
2. Easy and quick installation
3. Low cleaning effort
4. Vendor to demonstrate one portion at wall panelling & ceiling at their premises before dismantling & shipping to site. In short, a FAT (Factory acceptance test) to be carried out at vendors works for ceiling & panelling
5. 100 % modular design
6. The tile shall be bend resistant.

24.2. Modular Metal Hexagonal Paneling (Refer BOQ 12 Item No. 3)

1. The material of construction and technical specification shall remain the same as per modular rigid PVC/Polyolefin metal panelling (Sr No. 1 modular rigid PVC/Polyolefin metal panelling) however in the front tiles shall have hexagonal shape and the tile's periphery shall be made up of metal sections.
2. The structure shall allow an uninterrupted flow of wires/cable/tubes of a maximum diameter of 25mm.
3. The panel shall be designed in such a manner that it takes care of the undulation of walls and gives perfect flat surface finish and compile easy service & maintenance procedure.

24.3. Modular Printed Metal Paneling (Refer BOQ 12 Item No. 4)

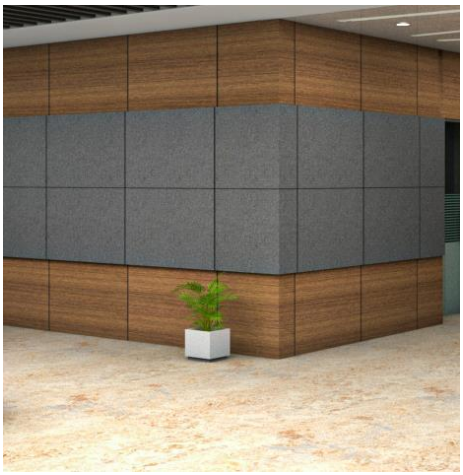
1. The printed panelling shall have the same technical specifications as that of acoustic metal panelling (Wall Finishing - Sr No. 1 modular rigid PVC/Polyolefin metal panelling). However, in addition to it, the front tile shall be digitally printed. Graphics shall be approved by the Customer.
2. Digital printing shall be done on modular metal Panelling. Pasting stickers/flex/vinyl on metal tile shall be deemed unacceptable.
3. The structure shall be made from a modular, heavy-duty powder-coated CRCA frame (minimum sheet thickness 1mm) and shall allow an uninterrupted flow of wires/cable/tubes of maximum diameter 25mm.
4. The structure shall be securely connected from the wall, roof and floor. It shall be made up of a minimum of 1mm thick vertical slotted rolled C sections (Upright) and horizontal rolled 'C' connectors. Grid of the desired dimension shall be formed by Vertical and horizontal sections having 20 to 50mm pitch.
5. For Structure: - Powder coated CRCA steel sheet. (Sheet thickness minimum 1.0mm with powder coating).

24.4. PET Panelling (Refer BOQ 12 Item No. 5)

1. Computationally generated partition/paneling form made up of polyethylene terephthalate, the material shall be resistant to moisture. The elements shall be arranged in a defined pattern with proper spacing. The panels shall be fixed on bison board/painted walls/steel structure with appropriate fixing/installation method. The proposed acoustic panels shall be Greenguard Gold certified/tested (from UL/Intertek). The necessary certificate/test report valid on the bid date and to be submitted at the time of approval.. The panels should be available in 9mm & 12mm thickness. Material NRC should range between NRC: 0.8 - 0.85.

2. To ensure restriction of hazardous substances; the acoustic panel/board shall be RoHS certified/tested (from UL/Intertek). The necessary certificate/test report valid on the bid date and to be submitted at the time of approval..

24.5. Modular rigid PVC/Polyolefin metal partition (Refer BOQ 12 Item No. 8)



1. The material of construction and technical specification shall remain the same as per modular rigid PVC/Polyolefin metal panelling (Sr No. 1 modular rigid PVC/Polyolefin metal panelling) however in partition the cladding shall be done on both side of the section/grid work.
2. The panel shall comprise of perforation for making the cladding and partitions acoustically sound.
3. Tiles Perforation – To achieve acoustics without deteriorating the aesthetical appeal of the office room interior it is necessary that the at-least twenty five percent of the wall panelling tiles have micro-perforations (less than 1.6mm dia. each) all over the surface with a density of 5000 holes per square feet. This feature shall be audit certified (from UL/Intertek) on modular wall panelling tile to have clean perforations and providing smooth finish on the front fascia of tiles. The tile shall have 5000 holes per square feet on the front side of the tile. Necessary certificate / test-reports as asked in above specifications should be valid on bid due date and should be submitted at the time of approvals.
4. As per the design, the panel shall comprise of perforation for making panelling and partitions acoustically sound. Acoustic grade fire retardant fabric (minimum 1mm thick) will be fixed (on the backside of perforated tiles) at some parts of the building interiors.
5. There shall be the possibility of a wide variety of colours and images to be used on the wall elements to give the aesthetic and state of the art look to the building interior. ACP (Aluminum Composite Panels) shall be deemed unacceptable.
6. The structure shall allow an uninterrupted flow of wires/cable/tubes of a maximum diameter of 25mm.
7. The panel shall be designed in such a manner that it takes care of the undulation of walls and gives perfect flat surface finish and compile easy service & maintenance procedure.
8. To provide an acoustically superior environment and ensure proper attenuation of airborne sound, it is necessary that the sound transmission class (STC) value of wall panelling and the partition shall be minimum 35 (According to IS: 9901 (Part III) – 1981, DIN 52210 Part IV- 1984, IS0: 16283 (Part I) -2014. Necessary certificate / test-reports as asked in above specifications should be valid on bid due date and should be submitted at the time of approvals.

9. Seismic safety of user & equipment is a prime concern area. The metal panelling/partition shall sustain the seismic vibrations as per design spectrum IS 1893 for zone 2 vibrations. The test shall be carried out by an authorized government agency. Necessary certificate / test-reports as asked in above specifications should be valid on bid due date and should be submitted at the time of approvals.
10. The wall panelling shall be robust & strong enough to sustain the routine loads/minor impacts of a typical office room environment. The wall panelling/partition structure shall have audit certified design feature (from UL / Intertek) of Load-bearing capacity of 300 Kgs to hold any display unit on clamp having a minimum length of 750mm. The necessary certificate / test report to be submitted at the time of approval..
11. Audit certified design feature (from UL / Intertek) of modular wall panelling tile having secure locking arrangement for equidistant mounting. Locking arrangement enables easy replacement without using any tool within 20 seconds. The feature shall provide easy flexibility of locking all tiles in one column through gravity. Necessary certificate / test-reports as asked in above specifications should be valid on bid due date and should be submitted at the time of approvals.
12. The modular metal panelling shall comply to the lead-free directive to ensure restriction of hazardous substances so that the final product does not contaminate the environment. The final product i.e., modular metal panelling does not contain hazardous substances and we give a healthy life to our coming generations it is necessary that the modular metal panelling system shall be RoHS certified/tested (from UL / Intertek). Necessary certificate / test-reports as asked in above specifications should be valid on bid due date and should be submitted at the time of approvals.
13. From fire safety point of view the metal wall panelling tiles shall be class A fire rated as per the norms of comparative measurements of surface flame spread and smoke density measurements with that of select grade red oak and fiber-cement board surfaces under the specific fire exposure conditions. The proposed wall panelling tiles shall be class A certified/tested as per ASTM e84 (from UL / Intertek) for surface spread of flame and smoke generation. This is mandatory to ensure that the materials used in the interiors do not provoke fire. The necessary certificate / test reports should be submitted at the time of approvals.

24.6. Modular Fabric Partition (Refer BOQ 12 Item No. 9)

1. Flat fabric partition made up of a minimum 600mm wide by minimum 300mm high tiles fitted as per the acoustical requirement. Fabric Make: Response or equivalent.

24.7. Straight Modular Glass Partition Material (Refer BOQ 12 Item No. 10)

1. Full height glass partitions walls shall be made of minimum 10mm thick toughened glass. The glass shall be fixed using modular metal sections at top, bottom & sides. The section's size shall be minimum 45 x 20mm and shall be installed on to the floor, wall and ceiling. The sections shall be used only on top, bottom, and extreme ends (adjacent to walls) only.
2. The glass partition shall be Greenguard Gold certified/tested (from UL/Intertek). The necessary certificate/test report should be valid on the bid date and to be submitted at the time of approval.. NOTE: - The nature of installation shall be replaceable, expandable and flexible to cater the future expansion/technical up-gradation.
3. The modular glass partition shall have below features:
   a. It shall be capable to accommodate horizontal/vertical raceways at any height (as instructed by EIC).
   b. The modular glass partition system shall have inbuilt feature to insert metal panel tiles as specified in sr. no. 1 (modular rigid PVC /Polyolefinmetal panelling). This is to ensure proper integrated look of glass partition with that of adjacent paneling system and meet acoustic requirements. The metal tiles shall have micro-perforations (less than 1.6mm diameter each) all over the surface with a density of 5000 holes per square feet. This feature shall be audit certified (from UL/Intertek) on modular wall paneling tile to have clean perforations and providing smooth finish on the front fascia of tiles. The necessary certificate / test reports should be submitted at the time of approvals.

24.8. Paint (Refer BOQ 12 Item No. 6)

1. Painting to new walls with 3 coats of plastic emulsion paint of approved brand and shade after thoroughly brushing the surface to remove all dirt and remains of loose powdered materials including cost and conveyance of all materials to work site and all operational, incidental, labour charges etc. complete for finished item of work over one coat of primer total 3 coats.

24.9. Wall Putty (Refer BOQ 12 Item No. 7)

1. Material for 1mm thick Putty on all exposed portions of beams, columns and walls as directed by the consultants including mixing, scraping, and levelling the surface, cleaning and complete in all respects to receive the paints & finishes.

24.10. 12mm thick frameless tempered clear glass door (Refer BOQ 12 Item No. 11)

1. With door spring and locking arrangements and both way handle and patch fittings.

24.11. Metallic Door (with OR without Vision Panel) (Refer BOQ 12 Item No. 12)

1. With door hinges and locking arrangements and both way handle. Prepare with rigid thermo fused film metal panels. Specification: 0.6mm thick Metal panel sheets, internal cavity filled with adequate quantity of honeycomb. Material of the partition and that of metal door will remain the same. Material of the partition and that of metal door will remain the same. The door thickness shall be minimum 45mm and frame thickness shall be minimum 115mm.

24.12. Designer Metal Baffle Ceiling (Refer BOQ 12 Item No. 13)

1. The baffles shall be made up of CRCA powder coated sheet. These baffle planks shall be bent through CNC to have dimensions as 80X50mm or as per the design approval or as per EIC approval.
2. Centre to centre distance shall be minimum 150mm.
3. Designer metal baffle ceiling shall be Greenguard gold certified/tested (from UL / Intertek). The necessary certificate / test reports should be submitted at the time of approvals.

4. To ensure restriction of hazardous substances; so that the final product does not contaminate the environment and we give a healthy life to our coming generations it is necessary that the metal ceiling system shall be RoHS certified/tested (from UL / Intertek). The necessary certificate / test reports should be submitted at the time of approvals.
5. It is well known that metal is resistant to fire as compared to wood & fabric. However, from fire and safety point of view, to ensure that the used material is not subjected to any kind of surface treatment which provokes fire. The proposed ceiling tiles shall be class A certified/tested as per ASTM e84 (from UL / Intertek) for surface spread of flame and smoke generation. This is mandatory to ensure that the materials used in the interiors do not provoke fire. The necessary certificate / test reports should be submitted at the time of approvals.
6. Specifications (Finish and component details)
7. Ceiling Baffle tile: minimum 0.7mm thick CRCA powder coated sheet.
8. Carrier made of 0.60 mm CRCA steel sheet, powder coated to matching baffle colour or black as directed by the Customer. Ceiling to have arrangement to fix, hang and lock the baffles of required sizes and at required intervals. the size of punched carrier would be 35x20x35mm bent channel with holes for suspension and fixing secondary channel.
9. The baffles top edge will have a flange of 5mm to fix in the carrier profile.
10. Mother C Channel: minimum 0.8mm thick CRCA steel sheet with laser cut profiles.
11. Suspension: The carriers would be placed at every 1200mm (maximum) and suspended by means of a secondary angle, channel fixed to the carrier at every 900 to 1200 mm and this secondary member in turn would be suspended by 8mm rod fixed to the slab by means of 8mm diameter, dash fastener.
12. Top clamp: 1mm thick CRCA steel Sheet for holding the threaded rod.
13. End Cap: minimum 0.75mm thick CRCA powder coated sheet. End cap similar to main ceiling baffle.
14. Entire structure will be in powder coated CRCA sheet.
15. Metal Strip where baffle planks will be hanged shall be sleek & sturdy.
16. Color: As per approval.
17. The ceiling shall have additional perforated sheet between adjacent baffles to conceal the above ceiling services (HVAC & firefighting services) and enhance the aesthetic appeal.

24.13. Designer Metal Ceiling (Refer BOQ 12 Item No. 14)

1. Designer metal ceiling of powder coated tiles of minimum size 550X1150mm.
2. Tiles Perforation – To achieve acoustics without deteriorating the aesthetical appeal of the office interior it is necessary that the at-least twenty five percent of the ceiling tiles have micro-perforations (less than 1.6mm diameter each) all over the surface with a density of 5000 holes per square feet. The ceiling tile to have clean perforations and provides a smooth finish on the front fascia of tiles.
3. The proposed ceiling metal tiles shall be Class A certified/tested as per ASTM e84 (from UL / Intertek) for surface spread of flame and smoke generation. This is mandatory to ensure that the materials used in the interiors do not provoke fire. The necessary certificate / test reports should be submitted at the time of approvals.

4. The ceiling shall have a noise absorption coefficient (NRC) value of 0.60 according to IS:8225-1987, ISO: 354-1985 and ASTM 423-90. The necessary certificate / test reports should be submitted at the time of approvals.
5. To ensure restriction of hazardous substances; so that the final product does not contaminate the environment and we give a healthy life to our coming generations it is necessary that the modular metal ceiling system shall be RoHS certified / tested (from UL / Intertek). The necessary certificate / test reports should be submitted at the time of approvals.
6. Designer metal ceiling shall be greenguard gold certified/tested from UL / Intertek. The necessary certificate / test reports should be submitted at the time of approvals.
7. The structure shall be made from a heavy-duty powder coated CRCA steel sheet (minimum sheet thickness 0.8 to 1.6mm). It shall be securely grouted from the roof with help of an anchor fastener and GI self-threaded rods.

24.14. Designer Metal Mesh Ceiling (Refer BOQ 12 Item No. 15)

1. Modular acoustic rectangular panel ceiling tiles with inbuilt mesh, made up of minimum 0.6 mm thick metal sheet. Ceiling tile shall be available in minimum 550mm x 1100mm.
2. The tiles shall be installed on ceiling understructure.
3. The tile shall permit integration of ceiling lights as per the requirement.
4. The periphery of the complete ceiling shall be covered by 100 to 500mm calcium silicate board as per the site requirement.

24.15. PET Acoustic Panel Ceiling - Linear Design (Refer BOQ 12 Item No. 16)

1. Computationally generated ceiling form made up of polyethylene terephthalate, the material shall be resistant to moisture. The panels/elements shall be arranged in a defined pattern with proper spacing. The arrangement shall be held in place using the customized metal systems. The width of the polyethylene terephthalate slots shall be minimum 150mm and maximum 1700mm. Maximum single piece length shall be 3000mm. The thickness options shall be 9mm & 12mm. Material NRC should range between NRC: 0.8 - 0.85. The ceiling shall be light in weight and easy to handle.
2. The proposed PET acoustic ceiling panels shall be Greenguard Gold certified/tested (from UL/Intertek). The necessary certificate/test report valid on the bid date and to be submitted at the time of approval..
3. To ensure restriction of hazardous substances; the acoustic panel/board shall be RoHS certified/tested (from UL/Intertek). The necessary certificate/test report valid on the bid date and to be submitted at the time of approval..

24.16. Designer acoustic metal false ceiling with planks (Refer BOQ 12 Item No. 17)

1. Factory made acoustic modular metal false ceiling of powder coated panels. Make shall comprise of perforated and non-perforated metal panels made through CNC laser cutting, bending & punching. Panel shall be of 0.6mm CRCA sheet of approved powder coating finish. Panels shall be designed to achieve shape and design as per the design consultant with the combination of acrylic panels with lights, designed to enhance visual feel, with provision for easy installation and maintenance, integrated lighting and scope for integration of building services like HVAC and fire detection/ fighting system. Metal modular false ceiling shall have Noise absorption coefficient (NRC) value 0.60 according to IS:8225-1987, ISO: 354-1985 and ASTM 423-90.
2. It is well known that metal is resistant to fire as compared to wood & fabric. However, from fire and safety point of view, to ensure that the used material is not subjected to any kind of surface treatment which provokes fire. The proposed ceiling tiles shall be Class A certified/tested as per ASTM e84 (from UL / Intertek) for surface spread of flame and smoke generation. This is mandatory to ensure that the materials used in the interiors do not provoke fire. The necessary certificate / test reports should be submitted at the time of approvals.
3. To ensure restriction of hazardous substances; so that the final product does not contaminate the environment and we give a healthy life to our coming generations it is necessary that the modular metal ceiling system shall be RoHS certified/tested (from UL / Intertek). The necessary certificate / test reports should be submitted at the time of approvals.
4. Designer metal ceiling shall be greenguard gold certified/tested. The necessary certificate / test reports should be submitted at the time of approvals.

5. To avoid dark spots/areas in the room it is necessary that continuous linear lights are used across the width/length of the room. Audit certified design feature (from UL / Intertek) of integrated channel in ceiling for quick installation & replaceability of continuous linear light. The ceiling system having integrated inbuilt channel for installation of cove lights and shall permit quick and easy replacement of cove light without using any tools. Replacement to be carried out within 120 Seconds per meter. The necessary certificate / test reports should be submitted at the time of approvals.
6. Seismic safety of user & room equipment is a prime concern area. The metal ceiling shall sustain the seismic vibrations as per design spectrum IS 1893 for zone 2 vibrations or better. The test shall be carried out by authorized government agency. The necessary certificate / test reports should be submitted at the time of approvals.
7. Structure shall be made from heavy duty powder coated CRCA steel sheet (minimum sheet thickness 0.8 to 1.6mm). It shall be securely grouted from roof with help of anchor fastener and GI self-threaded rods. It shall be formed with the help of slotted rolled W sections (stiffener) and Master C section with help of M6 cage nut and bolts.
8. Panels are then fitted on hook system individually on the grid frame work. The panels are also hold by safety wire to ensure that these tiles do not full during seismic vibrations.
9. The ceiling system shall have double safety system to take care of seismic vibrations.
10. The ceiling planks shall have locking redundancy to enhance seismic impact resistance.
11. The powder coated metal sheet shall have possibility of being formed mechanically per the specific needs of the project. The powder coating shall be able to undergo stretching up to 100% and therefor follow (adhere to) bend with the steel in all its deformation.
12. The master section shall have laser cut profile to enable fixing of perforated, non-Perforated & diffused continuous LED section with acrylic sheet.

13. Dimensional Details
    a. Non- Perforated Tile: - Machine profiled CRCA Steel sheet of 290mm (Wide) available in various length of 600mm to 1800mm in multiple of 300mm.
    b. Perforated Tile: - Machine profiled CRCA Steel sheet with fleece of 146mm (Wide) in various length of 600mm to 1800mm in multiple of 300mm.
    c. Type- Hook on with double locking arrangements. (Key requirement). Shall be easily openable to access above ceiling services. Special connection joineries to take care of seismic vibration.

14. Material Testing/Certification
    a. Powder coating shall qualify 1000 hours' salt spray test.

15. Component Specification
    a. Master Section
        i. 1.2mm thick CRCA steel sheet section length 1200mm. the installation to be carried out with runner's spaces at 1200/1500/2100mm centre to centre securely fixed to the hanging W section by means at M6 Nut and bolts.

    b. Hanging W Section
        i. Specially machine profiled W section 65x15x0.8mm.the section shall be 2400 mm long & shall run across the length at the room.
        ii. Centre to Centre distance between W section shall be 1000mm.

iii. These sections are securely fixed to the slab by means of Metal fastener and 08mm GI rod fully threaded (with hex nut for precision level adjustment)
iv. The two-master section shall be attached to each other by means at fixing pate 45x34mm & M6 cage nut & bolts.

c. U Section
i. Machine profiled 'U' Section 150x77x0.6mm section to accommodate continues running light
ii. It shall have provision for fixing acrylic sheet
iii. This whole assembly shall be hung from roof slab with help of anchor fastener and full threaded GI rod.

16. Ceiling Plank
a. It shall have Laser cut holes/cut-outs for light fixing as per defined lux requirement and approved layout.
b. Non-perforated tile slots to be punched to accommodate AC grills.

24.17. PET Acoustic Panel Ceiling - Hexagonal Design (Refer BOQ 12 Item No. 18)

1. Computationally generated ceiling form made up of polyethylene terephthalate, the material shall be resistant to moisture. The hexagonal panels/elements shall be arranged in a defined pattern with proper spacing. The arrangement shall be held in place using the customized metal systems. The diagonal width of the polyethylene terephthalate panels shall be minimum 1000mm. The thickness options shall be 9mm & 12mm. Material NRC should range between NRC: 0.8 - 0.85. The ceiling shall be light in weight and easy to handle.
2. The proposed PET acoustic ceiling panels shall be Greenguard Gold certified/tested (from UL/Intertek). The necessary certificate/test report valid on the bid date and to be submitted at the time of approval..
3. To ensure restriction of hazardous substances; the acoustic panel/board shall be RoHS certified/tested (from UL/Intertek). The necessary certificate/test report valid on the bid date and to be submitted at the time of approval..

24.18. Calcium Silicate Ceiling (Refer BOQ 12 Item No. 19)

1. Plain calcium silicate acoustic boards for false ceiling with 08mm approximately thick, structure for underside of suspended grid formed of GI perimeter channels. Wood screws and metal expansion raw plugs for fixing with wall. Plastic emulsion paint of approved make and shade for finishing surface of calcium silicate boards. Specification: calcium silicate board is manufactured from a mixture of portland cement, fine silica, special cellulose fibers and selected fillers to impart durability, toughness, fire and moisture resistance.

24.19. Designer PET Chandelier (Refer BOQ 12 Item No. 20)

1. Computationally generated chandelier made up of polyethylene terephthalate, the material shall be resistant to moisture. The hexagonal panels/elements shall be arranged in a defined pattern with proper spacing. The arrangement shall be held in place using the customized metal systems. The panel thickness shall be 9mm. Material NRC should range between NRC: 0.8 - 0.85. The ceiling shall be light in weight and easy to handle.

24.20. Designer Acoustic Flooring (Refer BOQ 12 Item No. 21)

1. To avoid distraction of operators because of unwanted noise generated from movement of chairs/people in the control/office room it is necessary that the proposed flooring shall damp such impact noises. Acoustic flooring (shall reduce impact sound by 14dB (ISO 717-2)). It shall be twin-layer linoleum built up from minimum 2mm acoustic laminate and a 2mm corkment backing. Flooring shall be decorative type of approved shade, pattern, texture and design and of approved manufacturer. Dimensions shall be as per the final approved design and site requirement. Flooring shall be laid over concrete floor with laying compound strictly as per manufacturer's specification. The designer acoustic flooring shall be Greenguard gold tested / certified. The necessary certificate / test reports should be submitted at the time of approvals.

24.21. Vitrified Flooring

1. Fully vitrified, 8mm thick non-porous, homogenous, abrasion resistant, minimum size 600 mm x 600 mm x 8mm of approved colour and shall be laid over concrete floor with laying compound strictly as per makes given. Total thickness of the flooring shall be 40mm thick including the thickness of the tiles, under bed. Tiles will be laid with 2 mm gap using spacers and gap will be filled with black colour epoxy latictere.

24.22. Granite Stone for Floor Highlighter/steps

1. Granite Stone for floor Highlighter/steps in required design and pattern, with 12 mm (average) thick cement mortar 1:3 (1 cement: 3 coarse sand) laid and joint with white cement slurry including pointing with white cement slurry admixed with pigment of matching shade as directed by the Engineer-in-Charge.

24.23. Designer Privacy film for glass partitions & glass door (Refer BOQ 12 Item No. 22)

1. The film to be installed on clear glass to provide the look of sandblasted glass.

24.24. Sign Board (Refer BOQ 12 Item No. 24)

1. Providing and fixing Name plate for individual cabin and rest of the area. Signage's are made up of laser cut Anti-Corrosive high grade AISI 316 Stainless Steel of 2mm thick sheet with laser cut method for impression and with satin finish.
2. Approx. Dimensions: 300 mm X 170 mm X 2 mm. Design and detailing provided by as per engineer in charge.

24.25. Curtains for windows: Roll Down Curtains Sign board (Refer BOQ 12 Item No. 23)

1. Supply and installation of manual roller blinds having aluminium roller tube along with fabric pasted on it with glue having control unit for manual operations and bottom bar aluminium powder coated for weight purpose, including fabric fitting and accessories of approved make and colour etc. complete. OR as per engineer approval.

24.26. 12mm Glass Railing with stainless steel (Refer BOQ 12 Item No. 25)

1. Fixing of 900mm high Side Fixed Handrail system including 10-12mm clear toughened glass railing with Customized SS 304 Railing system as per Customer’s approval. The glass shall be held with SS 304 stud with flat headed bolt single point spider fittings as per design. The 50 diameter SS pipe shall be held firmly with the 63.5x12 mm thick SS flat vertical bar through SS bracket at every junction with M4SS set screws. The entire assembly shall be fixed through two SS connect holder brackets. The system will be Complete as per requirement of site.

24.27. Round LED Lights (Refer BOQ 12 Item No. 28)

1. High performance LED downlighter with high system efficacy for good quality and uniform lighting. Conforms to general lighting norms for office and other indoor applications.
2. Colour Temperature (K)- 3000 K / 4000 K / 5700K
3. LED Efficacy (lm/W) – 100 to 160

4. CRI >70
5. Power Consumption 6W to 24W
6. LED's life >25,000 hours @ L70

24.28. Master LED tube (Refer BOQ 12 Item No. 26)

1. It integrates a LED light source into a traditional fluorescent form factor. Its unique design creates a perfectly uniform visual appearance which cannot be distinguished from traditional fluorescent. For those that are looking for value for money within limited budget and re-lamping efforts for better light effect and lifetime.
2. Lumen Output - 2000 – 3000
3. Colour Temperature (K)- 3000 K / 4000K / 5700K / 6500K
4. LED's life >25,000 hrs @ L70
5. CRI >70
6. Input Voltage Range (V) 150 - 270
7. LED Efficacy (lm/W) >150
8. Power Consumption (W) 20W to 32W

24.29. LED based square Lights (Refer BOQ 12 Item No. 27)

1. LED office General Lighting Solutions which offer excellent energy saving and maintenance free operation. The luminaire should have a slim design which is suitable for recessed mounted application for office Spaces. Powered by Long lasting LED light source and high efficiency optical system the luminaire offers a uniform and uninterrupted Lighting.
2. Light source: LED
3. Light color: 3000 K / 4000 K / 5700K
4. Power consumption: 29 to 38 W
5. Input Voltage Range (V) - 150 - 270
6. LED's life >21,500 hours @ L70

24.30. LED based strip Lights (Refer BOQ 12 Item No. 29)

1. It will be a continuous rail of LED light, high brightness, neutral, or warm white with wall washing applications. Its slim profile and simple daisy-chain system allows high design flexibility to form long.
2. Light source: LED
3. Light color: 6500K
4. Power consumption: 3W/m to 5W/m
5. Operating Voltage Range (V) 100 – 300
6. Operating Frequency (Hz) 50 ± 3%
7. Colour: White
8. Lifetime: 15000 burning hrs. (At L70)

24.31. Designer Ceiling light Wipro Vertica/ Equivalent (As per EIC Approval) (Refer BOQ 12 Item No. 30)

Designer Ceiling light Wipro Vertica/ Equivalent (As per EIC approval)
The light shall be premium lighting and shall be used in open ceiling spaces to create lighting effects. Surface and pendant mount provision with the help of accessories.

Aluminium Body Powder Coated in White or Black
Clean diffuser
High power high lumen output LED
High efficiency reflector optics
Effective thermal management
OR

as per EIC approval.

24.32. Designer Ceiling light Wipro Celeste/Equivalent (As per EIC approval) (Refer BOQ 12 Item No. 31)

Designer ceiling light Wipro Celeste/Equivalent (As per EIC approval)
High Efficiency Translucence (HET) diffuser. Housing made up of fiber reinforced plastic outer surface painted. High efficacy LEDs. Diffused Glass dome.
OR
as per EIC approval.

24.33. Designer Ceiling light Wipro Orbit/Equivalent (As per EIC approval) (Refer BOQ 12 Item No. 32)

Designer Ceiling light Wipro Orbit/Equivalent (As per EIC approval)
High efficacy and long-life LEDs

Housing made of CRCA and white matt powder coated

High Efficiency Translucence (HET) diffuser made of PMMA (acrylic) milky white

Suspension system made of steel wire of 2mm dia and accessories are chrome plated Or conduit made of MS pipe and white powder coated

Easy to mount on true ceiling and quick to service.

OR

as per EIC approval.

24.34. Reception counter (Refer BOQ 12 Item No. 33)

1. The furniture work surface shall be straight in shape to maintain grand aesthetic appeal. It shall be made of minimum 25mm thick MDF finish.
2. The working side edge: - Audit certified design (from UL / Intertek) feature on front modular Polyurethane (PU) Edge. High density Poly Urethane Foam moulded on industrial grade aluminum core to form minimum 50mm deep tapered edge to be installed on worktop. The edge shall be mechanically replaceable within 30 minutes in case of damage or wear without opening or removing the top. The necessary certificate / test reports should be submitted at the time of approvals.
3. The under-structure shall be minimum 18mm thick MDF board.
4. Accessories: 2 nos. Flap each having provision and SITC of 2 nos 16 Amp modular Switch and 3 nos 6/16 Amp modular Socket with 2 nos. CAT-6A LAN I/O point as per approved make and wire flow can be made as per requirement of Engineer in Charge
5. Design as per engineer in charge approval.
6. Approximate minimum dimensions – 3000mm(W) X 750mm(D) X 750mm(H)

24.35. 3 & 2 - Seater Sofa (Refer BOQ 12 Item No. 34 for 3- Seater & Item No. 35 for 2- seater sofa)

1. The top shall be of Upholstery with PU Finish. The sofas are made of solid wood base, reinforced with supportive addendum in the seat. Engineered wood panels form/support the overall design structure, they synergise with the solid wood to offer unparalleled life to the product. Foam padding of multi-

density and varying thicknesses provide cushion for the sofa. PU foam used is made Hennecke foam plants using German Technology capable of producing the high-quality flexible polyurethane foam. It provides unparalleled comfort, ease of use and durability. The foam used is 32 Density for seating areas and 28 Density for backrest. The supersoft foam used is in seating areas in 32-35 Density High-resilience (HR) foam which is unique and rarely used by manufacturers. Webbing: Interwoven high tensile elastic bands for optimum comfort and endurance.

24.36. Single Seater Sofa (Refer BOQ 12 Item No. 36)

1. Single Seater sofa chair without Arm, SS Base Stand, Gas Lift, Leatherette Tapestry. (This sample to be approved before supply)

24.37. Center Unit (Type 1) (Refer BOQ 12 Item No. 37)

1. Centre unit for sofa, toughened glass, 12mm thick, chrome plated pipe frame.
2. Approximate minimum dimensions – 1200mm(W) X 600mm(D) X 450mm(H)

24.38. Center Unit (Type 2) (Refer BOQ 12 Item No. 38)

1. 18mm thick MDF top for center unit for sofa with injection molded polyurethane nosing on profiled wooden core.
2. Understructure shall be made up of laminated board / sheet metal. Approximate minimum dimensions – 800mm (W) X 450mm(H)

24.39. Center Unit (Type 3) (Refer BOQ 12 Item No. 39)

1. 18mm thick MDF top for center unit for sofa with injection molded polyurethane nosing on profiled wooden core.
2. Understructure shall be made up of laminated board / sheet metal. Approximate minimum dimensions – 600mm (W) / 600mm (Dia.) X 450mm(H).

24.40. Chair (Type 1) (Refer BOQ 12 Item No. 40)

1. High Back with Mesh Backrest,
2. Adjustable Armrest
3. Gaslift for seat height adjustment,
4. Standard 5-prong nylon base.
5. Seat: Fabric
6. Backrest – Mesh

24.41. Chair (Type 2) (Refer BOQ 12 Item No. 41)

1. Medium Back
2. Mesh Back,
3. Silver Epoxy Backbone,
4. Synchronized Mechanism,
5. 3-Way Adjustable Armrest,
6. Gaslift for Seat height adjustment,
7. Standard 5-prong nylon Base,
8. Seat - Fabric and mesh backrest.

24.42. Chair (Type 3) (Refer BOQ 12 Item No. 42)

1. Low back visitor model ABS for seat, Mesh back with extra lumber Support with fine tuning for depth adjustment, with fixed armrest, silver epoxy cantilever base Upholstery: Black Fabric Seat & mesh backrest.

24.43. Auditorium Chair (Refer BOQ 12 Item No. 43)

1. Mid-back Auditorium Chairs (Fixed Type). Colour of the same shall be finalised during the engineering finalisation phase. The colour which goes well with the interiors and suitable for the overall aesthetics of the room shall be considered.

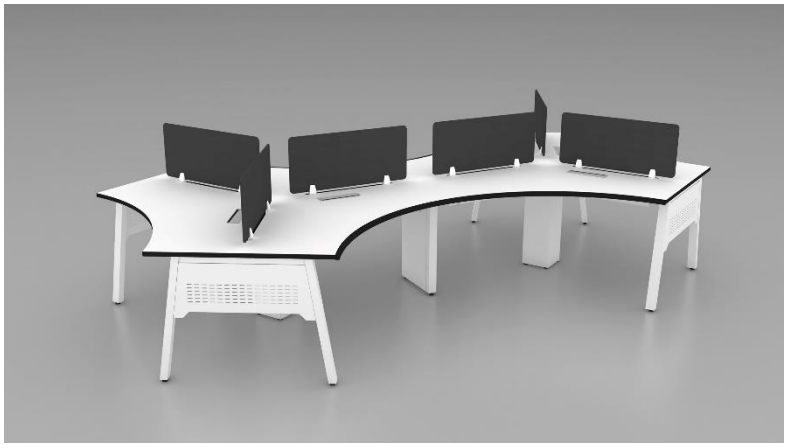
24.44. Workstation Desk (Type 1 & 2) (Refer BOQ 12 Item No. 44 (Type-1) , Item No. 45 (Type-2))

2. Linear shape tabletop shall be of 25 mm thick MDF board.
3. The working side edge: - Audit certified design (from UL / Intertek) feature on front modular Polyurethane (PU) Edge. High density Poly Urethane Foam moulded on industrial grade aluminum core to form minimum 50mm deep tapered edge to be installed on worktop. The edge shall be mechanically replaceable within 30 minutes in case of damage or wear without opening or removing the top. The necessary certificate / test reports should be submitted at the time of approvals.
4. Legs: Ergonomically designed and matching with the open office concept. The leg is made out of sheet metal.
5. The screen shall be made of minimum 8mm thick frosted acrylic or fabric panel.
6. Under structure pipe shall be made up of minimum 1.6mm thick CRCA Laser cut components, powder coated with the matching shade/color/finish.
7. Cable tray: Shall be made up of 1mm thick CRCA sheet, Cable tray is used for running the wires between the desk. Provision of switch socket and wire flow can be made as per requirement of Engineer in charge.
8. Accessories: Flap with provision and SITC of 2 nos 16 Amp modular Switch and 3 nos 6/16 Amp modular Socket with 1 nos CAT-6A LAN I/O point as per approved make and wire flow can be made as per requirement of Engineer in Charge
9. The desk shall be Greenguard gold tested/certified (from UL / Intertek). The necessary certificate / test reports should be submitted at the time of approvals.
10. (Type -1) Approximate minimum Dimensions – 1200mm(W) X 600mm (D) X 750mm(H).
11. (Type -2) Approximate minimum Dimensions – 1500mm(W) X 600mm (D) X 750mm(H).

24.45. Workstation Desk (Type 3) (Refer BOQ 12 Item No. 46)

1. Designer tabletop shall be of 25 mm thick MDF board.
2. The working side edge: - Audit certified design (from UL / Intertek) feature on front modular Polyurethane (PU) Edge. High density Poly Urethane Foam moulded on industrial grade aluminum core to form minimum 50mm deep tapered edge to be installed on worktop. The edge shall be mechanically replaceable within 30 minutes in case of damage or wear without opening or removing the top. The necessary certificate / test reports should be submitted at the time of approvals.
3. Legs: Ergonomically designed and matching with the open concept. The leg is made out of sheet metal.
4. The screen shall be made of minimum 12mm thick frosted acrylic or fabric panel.
5. Under structure pipe shall be made up of minimum 1mm thick CRCA Laser cut components, powder coated with the matching shade/color/finish.
6. Cable tray: Shall be made up of 1mm thick CRCA sheet, Cable tray is used for running the wires between the desk.
7. Provision of switch socket and wire flow can be made as per requirement of Engineer in charge.
8. The spine shall be made up of MDF/aluminum extrusion/CRCA frames. The extrusions/frames shall be duly powder coated with 40+ microns over all surfaces.
9. The desk shall be greenguard gold tested/certified (from UL / Intertek). The necessary certificate / test reports should be submitted at the time of approvals.
10. Accessories: Flap with provision and SITC of 2 nos 16 Amp modular Switch and 3 nos 6/16 Amp modular Socket with 1 nos CAT-6A LAN I/O point as per approved make and wire flow can be made as per requirement of Engineer in Charge
11. Approximately Dimensions: 1500mm(W) X 600mm(D) X 750mm(H)

24.46. Workstation Desk (Type 4) (Refer BOQ 12 Item No. 47)



1. Y shape design desk. Tabletop shall be of 25 mm thick MDF board.
2. The working side edge: - Audit certified design (from UL / Intertek) feature on front modular Polyurethane (PU) Edge. High density Poly Urethane Foam moulded on industrial grade aluminum core to form minimum 50mm deep tapered edge to be installed on worktop. The edge shall be mechanically replaceable within 30 minutes in case of damage or wear without opening or removing the top. The necessary certificate / test reports should be submitted at the time of approvals.
3. Legs: Ergonomically designed and matching with the open concept. The leg is made out of sheet metal.
4. The screen shall be made of minimum 8mm thick frosted acrylic or fabric panel.
5. Under structure pipe shall be made up of minimum 1mm thick CRCA Laser cut components, powder coated with the matching shade/color/finish.
6. Cable tray: Shall be made up of 1mm thick CRCA sheet, Cable tray is used for running the wires between the desk. Provision of switch socket and wire flow can be made as per requirement of Engineer in charge.
7. Accessories: Flap with provision and SITC of 2 nos 16 Amp modular Switch and 3 nos 6/16 Amp modular Socket with 1 nos CAT-6A LAN I/O point as per approved make and wire flow can be made as per requirement of Engineer in Charge
8. The desk shall be Greenguard gold tested/certified (from UL / Intertek). The necessary certificate / test reports should be submitted at the time of approvals.
9. Approximate minimum Dimensions – 1000mm(W1) X 1000mm(W2) X 500mm(D) X 750mm(H).

24.47. Metal storage (Refer BOQ 12 Item No. 48)

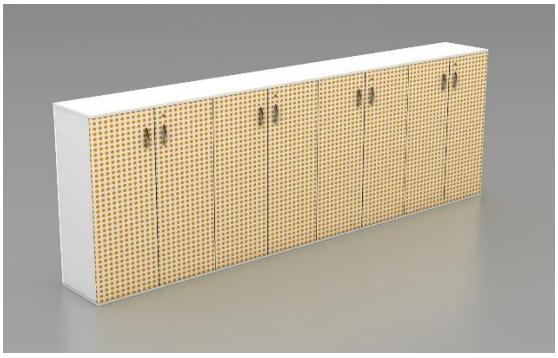
1. Versatile 3-drawer office storage system solution shall be made up of 0.8mm - 1mm CRCA sheets with powder coated finish. The drawers are meant to store stationary items like pens, calculators, staplers, files, folders, documents etc. It comes with sliding drawers and single lock operation along with caster wheels for 360-degree movement. The storage shall be greenguard gold tested/certified (from UL / Intertek). Necessary certificate / test-reports as asked in above specifications should be

valid on bid due date and should be submitted at the time of approvals.Approximate minimum Dimensions – 420mm(W) X 450mm(D) X 550mm(H)

24.48. Side Metal Storage (Refer BOQ 12 Item No. 49)

1. Side metal storage shall be made up of 0.8mm - 1mm CRCA sheets with powder coated finish. The drawers and shutter are meant to store stationary items like pens, calculators, staplers, files, folders, documents etc. It comes with sliding drawers and openable shutter along with caster wheels for 360-degree movement. The side metal storage shall be Greenguard gold tested/certified (from UL / Intertek). The necessary certificate / test reports should be submitted at the time of approvals.
2. Approximate minimum Dimensions – 900mm(W) X 450mm(D) X 550mm(H)

24.49. Metal Storage (Medium Height) (Refer BOQ 12 Item No. 64)



1. Flat pack made up of minimum 0.6mm CRCA powder coated finish with hinged doors and adjustable shelves for different file heights. The storage shall be greenguard gold tested/certified. Necessary certificate / test-reports as asked in above specifications should be valid on bid due date and should be submitted at the time of approvals.Approximate minimum Dimensions – 900mm (W) X 450mm (D) X 1200mm(H).

24.50. Cabin desk (Refer BOQ 12 Item No. 50 for point 7 & Item No. 51 for point 8)

1. The furniture top shall be made up of minimum 25mm thick MDF board.
2. The working side edge: - Audit certified design (from UL / Intertek) feature on front modular Polyurethane (PU) Edge. High density Poly Urethane Foam moulded on industrial grade aluminum core to form minimum 50mm deep tapered edge to be installed on worktop. The edge shall be mechanically replaceable within 30 minutes in case of damage or wear without opening or removing the top. The necessary certificate / test reports should be submitted at the time of approvals.
3. The under structure and complete structure shall be made up of 18mm thick MDF board.

4. The furniture is equipped with handles for easy opening along with soft closing drawers. The Construction shall be of high quality MDF board.
5. The furniture top shall have power box with access flap for wire management. The design shall be as per attached image and as per the Engineer in charge approval.
6. The desk shall be Greenguard gold tested/certified (from UL / Intertek). The necessary certificate / test reports should be submitted at the time of approvals.
7. Approximate minimum dimensions
   c. Table – 2100mm(W) X 750mm (D) X 750mm(H)
   d. Side Runner – 900mm(W) X 450mm(D) X 750mm(H)
   e. Back Runner – 2100mm(W) X 450mm(D) X 750mm(H).
8. Approximate minimum dimensions
   f. Table – 1500mm(W) X 750mm (D) X 750mm(H)
   g. Side Runner – 900mm(W) X 450mm(D) X 750mm(H)
   h. Back Runner – 1500mm(W) X 450mm(D) X 750mm (H)
9. Accessories: Flap with provision and SITC of 2 nos 16 Amp modular Switch and 3 nos 6/16 Amp modular Socket with 1 nos CAT-6A LAN I/O point as per approved make and wire flow can be made as per requirement of Engineer in Charge.

24.51. Open Collaborative Conference (Refer BOQ 12 Item No. 52)

1. It shall be designed for minimum 6 people; it shall have acoustic wrapped fabric fully upholstered on inner and outer side. The countertop at the center shall have laminate finish. The edges shall have 40-50 mm deep molded polyurethane edge. The entire structure shall be self-standing without any need of grouting. It should be designed with Ergonomics in mind. Optional integrated power socket under seat. The fabric shall be washable, appropriate for task seating and should withstand normal wear and tear.
2. Approximate minimum Dimensions – 2700mm(W) X 1500mm(D) X 1800mm(H)
3. Accessories: Flap with provision and SITC of 2 nos 16 Amp modular Switch and 3 nos 6/16 Amp modular Socket with 2 nos CAT-6A LAN I/O point as per approved make and wire flow can be made as per requirement of Engineer in Charge.

24.52. Conference/Meeting Room Desk (Refer BOQ 12 Item No. 53 for 9 Pax, Item No. 54 for 11 Pax , Item No. 55 for 13 Pax)

1. The conference/meeting room furniture shall conform to high standard of engineering as mentioned in the document; meeting the specified codes, standards and designs.
2. The furniture top shall be made up of minimum 25mm thick MDF board with molded Polyurethane (PU) Edge.
3. The under structure shall be made up of 18mm thick MDF board with 2mm thick PVC edge banding tape.
4. Accessories: 6/7 nos. of Flap each having provision and SITC of 2 nos. 16 Amp modular Switch and 3 nos. 6/16 Amp modular Socket with 2 nos. CAT-6A LAN I/O point as per approved make and wire flow can be made as per requirement of Engineer in Charge.
5. The conference room furniture shall be Greenguard gold tested/certified (from UL / Intertek). The necessary certificate / test report to be submitted at the time of approval.
6. Cable Trays and Wiring: - The furniture shall be designed with cable trays to allow for continuous & concealed cable management across the furniture.
7. Approximately minimum dimensions:
8. Conference/meeting room furniture for (09 Pax) Approximately minimum Dimensions – 2700mm (W) X 1500mm (D) X 750mm(H)
9. Conference/meeting room furniture for (11 Pax) Approximately minimum Dimensions – 3600mm (W) X 1500mm (D) X 750mm(H)
10. Conference/meeting room furniture for (13 Pax) Approximately minimum Dimensions – 4200mm (W) X 1500mm (D) X 750mm(H)

24.53. Class Room Table (Refer BOQ 12 Item No. 56)

1. Tabletop shall be of 25 mm thick MDF board.
2. The working side edge: - Audit certified design (from UL / Intertek) feature on front modular Polyurethane (PU) Edge. High density Poly Urethane Foam moulded on industrial grade aluminum core to form minimum 50mm deep tapered edge to be installed on worktop. The edge shall be mechanically replaceable within 30 minutes in case of damage or wear without opening or removing the top. The necessary certificate / test reports should be submitted at the time of approvals.
3. Leg and understructure shall be made up of sheet metal.
4. Approximate Dimensions: 1800mm(W) X 600mm(D) X 750mm(H)
5. Accessories: Provision and SITC of 2 nos 16 Amp modular Switch and 2 nos 6/16 Amp modular Socket with 1 nos CAT-6A LAN I/O point as per approved make and wire flow can be made as per requirement of Engineer in Charge

24.54. Lobby Furniture (Refer BOQ 12 Item No. 65)

1. Shall be designed for minimum 2 people, it shall have acoustic wrapped fabric fully upholstered on inner and outer side. The leg shall be made up of metal. The fabric shall be washable, appropriate for task seating and should withstand normal wear and tear. Fabric Make: Camira (Sprint) / Sunbury / Kvadrat / Response OR Equivalent.

24.55. Open Collaborative Meeting (Refer BOQ 12 Item No. 58)

1. It shall be designed for minimum 4 people; it shall have acoustic wrapped fabric fully upholstered on inner and outer side. The countertop at the center shall have laminate finish. The edges shall have molded polyurethane edge. The entire structure shall be self-standing without any need of grouting. It should be designed with Ergonomics in mind. Provide integrated 16 Amp modular power switch/socket under seat.
2. The fabric shall be washable, appropriate for task seating and should withstand normal wear and tear. Fabric Make: Camira (Sprint) / Sunbury / Kvadrat / Response OR Equivalent.

24.56. Meeting Counter (Refer BOQ 12 Item No. 57)

1. 25mm thick MDF top for center unit for sofa with injection molded polyurethane nosing on profiled wooden core.
2. Understructure shall be made up of laminated board / sheet metal.
3. Approximate minimum dimensions – 1000mm (Diameter) X 750mm(H)

24.57. Dining Counter (Refer BOQ 12 Item No. 59 for point 3, Item No. 60 for point 4, Item No. 66 for point 5)

1. The dining furniture shall have granite top of minimum 12mm thick.
2. The understructure shall be made up of stainless steel (SS304).
3. Approximate minimum dimensions – 1050mm(W) X 1050mm(D) X 750mm(H)
4. Approximate minimum dimensions – 1800mm(W) X 800mm(D) X 750mm(H)
5. Approximate minimum dimensions – 2400mm(W) X 800mm(D) X 750mm(H)

24.58. VIP Dining Counter (Refer BOQ 12 Item No. 61)

1. The dining counter shall have veneer with PU matt finish. The structure shall be made up of veneered MDF/ply structure with matt finish.
2. Approximate minimum dimensions – 7400mm(W) X 2100mm(D) X 750mm(H)

24.59. VIP Dining Chair (Refer BOQ 12 Item No. 63)

1. Chair shall be made up of solid teak wood with matt finish, with artificial leather upholstery with appropriate cushion.

24.60. Dining Counter chair without arm, PP/Fiber with steel base. (Refer BOQ 12 Item No. 62)

Note : Necessary certificate / test-reports as asked in above specifications should be valid on bid due date and should be submitted at the time of approvals.

6. Annexure A of Rajasthan PWD Electrical BSR 2022

Annexure-A

Additional Technical parameters of products/ work

1. PWD specifications for Electrical works -2012 (as amended upto date), relevent IS codes, National Building Code / National Lighting Code / National electric Code / Indian Electricty Rules (all as amended upto date) shall be treated as part of this Electric BSR-2022 for the purpose of detailed specifications & clarifications, if any. Henceforth this BSR-2022 shall be considered as part of all contracts/ agrements, controversy / dispute in interpretation of BSR -2022, decision of Chief Engineer (Electrical) PWD Rajasthan shall be final & binding.

2. Agency must ensure to take prior approval for makes and models in writing before / at the time of layout by Engineer-in-Charge as per specifications with submitting TDS of products & all items used from any particular chapter of this BSR for any individual project, should be of same brand which is approved before execution as per availability.

3. OEM installation mannual guideline practice for execution of work at site must be followed by agency's engineer & verified by department.

4. Agency must ensure to execute all hidden items in presence of engineer-in-charge or site engineer. GPS Photo be attach at the time of measurment.

5. Tests of specified items below must be done in Government approved OEM's authorised Labs / outsource from government approved any authorised Lab by agency & no extra payment shall be made for below mentioned tests & procedures at all :-↓

Sr.No.	Item Name	Tests must be done in Government approved **OEM's authorised Labs** / outsource from government approved any authorised Lab as mentioned below :-
	↓	01 test if quantity in BOQ/execution is more then ↓
1	Wiring accessories (switch / socket)	500 wiring points
2	Wiring accessories Regulator / dimmer	150 Nos.
3	PVC / Steel Conduit (Total of all sizes)	500 wiring points
4	Sheet Steel Box/ M.S. Box/ GI Box/ PVC Box (Total of all sizes)	300 Nos. (Total of all sizes)
5	MCB/RCCB/Isolator (1 Pole to 4 Pole) (Total of all amp rating)	150 Nos. (Total of all amp rating)
6	Ceiling Fan/ Exhaust /fresh air/ wall mounting fan. (Total All sizes)	100 Nos. (Total All sizes)

6. Factory Inspection for testing of specified items below must be done in Government approved OEM's authorised Labs by departmental Engineer. Agency must ensure to make all necessory permission and arrangements for the visit & no extra payment shall be made for all this procedure :-↓

Sr.No.	Item Name	Factory inspection for testing in Government approved OEM's authorised Labs by department engineer as mentioned below :-
	↓	If quantity in BOQ/execution is more then ↓
1	Indoor LED Lighting fixture all types	200 Nos.
2	Outdoor LED Lighting fixture all types	50 Nos.
3	Lattice tower all sizes	5 Nos.
4	Air Conditioner	30 Nos.
5	Air cooling machine/ Chillers	5 Nos.
6	Street light pole	30 Nos.
7	Transformer	compelsary for Each quantity
8	High mast pole	compulsary for each if height is16 Mtr.or more.
9	DG set	compelsary for Each quantity
10	RMU	compelsary for Each quantity
11	Bus Bar Trukning	compelsary for Each quantity

7. Any Items can be send for testing by Engineer-in-Charge in Government Authorised any approved Lab. Payment of testing charge shall be borne by department for that. Agency is liable to make all necessary arrangement to send the sample & get reports from lab without ant extra cost.

8. Agency will submit minimum one year valid gaurentee certificate of Product & Liable product genuineness purchase proof from OEM/ Authorised Dealer .

9. Appropriate/ Routeen type Test Certificates/ reports related to IS code with liable standard warranty proof / certificate of product from OEM / authorised dealer shall be submitted by agency during / at the time of execution & duly verified by Engineer-in-Charge.

10. Agency must ensure to prepare the Satisfactory installation service report from OEM engineer for major items like DG set, Transformer, PSS, RMU, Fire fighting pumps, VRF/VRV, package AC units, ACB, High Mast (16 mtr. or heigher) etc. and submit the same in Engineer In charge office. All record be kept with agreement file.

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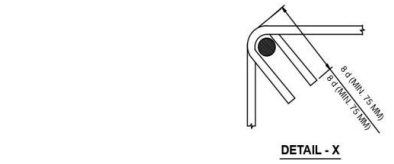
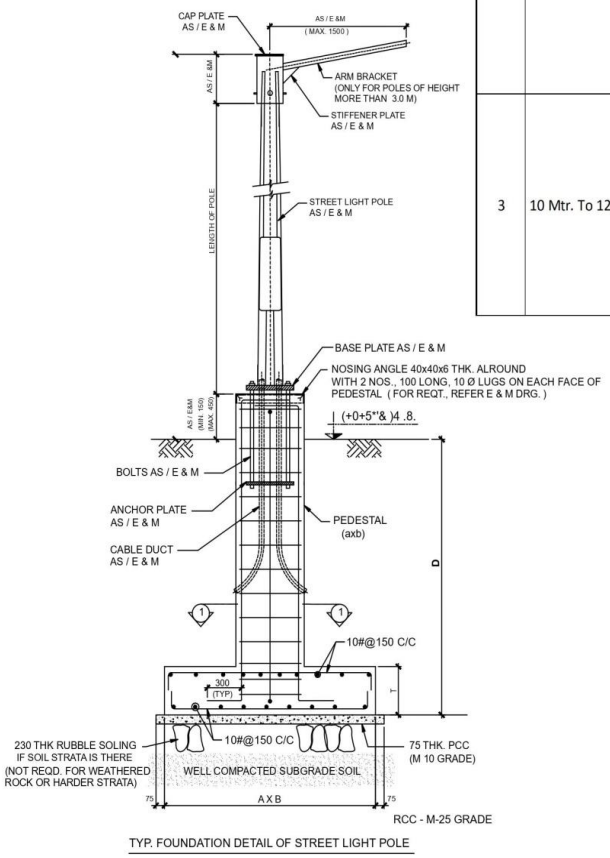
11. Octagonal/ Conical pole drawing (BOQ – 3 item no 318)

OCTAGONAL / CONICAL POLE FOUNDATION DRAWING



STRUCTURAL DETAILS OF STREET LIGHT POLES

Sl. No.	Length of Pole			
1	3 Mtr. To 6 Mtr.	Foundation Depth w.r.t Finished Ground level		800 mm
		Footing	RCC Size A x B	700mm x 700 mm
			Thickness (T)	250 mm
		Pedestal	Size a x b	300 mm x 300 mm
			Main Reinf.	4 - 16 #
			Ties	8 # @ 150 c/c
2	7 Mtr. To 9 Mtr.	Foundation Depth w.r.t Finished Ground level		1000 mm
		Footing	RCC Size A x B	900mm x 900 mm
			Thickness (T)	300 mm
		Pedestal	Size a x b	350 mm x 350 mm
			Main Reinf.	4 - 16 # + 4 - 12 #
			Ties	8 # @ 150 c/c
3	10 Mtr. To 12 Mtr.	Foundation Depth w.r.t Finished Ground level		1250 mm
		Footing	RCC Size A x B	1100mm x 1100 mm
			Thickness (T)	350 mm
		Pedestal	Size a x b	400 mm x 400 mm
			Main Reinf.	4 - 16 # + 4 - 12 #
			Ties	8 # @ 150 c/c



TYP. FOUNDATION DETAIL OF STREET LIGHT POLE

12. High mast lighting system specification (BOQ – 3 item no 324)

High mast suitable for 2 / 3 point suspension system of lantern carriage for wind speed up to 180 Km / Hour

Height of Mast	Unit	16 Mtr.
Material Cunstruction		IS 2062 grade E350 / BS EN 10025 or Equivalent having minimum yield strength of 350 N/Sq. mm
No. of Longitude Welds	No.	Single
Top/ Bottom (diameter of High Mast)	mm.	150/410
Cross section of Mast polygone (No. of Sides)	No.	20 Sides
Nos. of Section of Mast	No.	2
Thickness of Section	MM	3-4
Thickness of Galvanisations (Min.)	Micron	As per BSEN ISO 1461 (For Steel ≤ 3 mm - 55 Microns)
Size of Base Plate (Min.)	MM	570
Thickness of Base Plate (Min.)	MM	25
Foundation Bolts		
Nos of Bolts	No.	8
PCD of Foundation	MM	490
Bolt Diameter/Grade/Tensile Strength	MM	24X850/ EN 8 Grade Minimum tensile strength 600 N/mm2
Lantern Carriage (No. of Half)	No.	2
Material of construction of LC/Lantern carrigae finish		50 NB ERW Class A - M. S. Pipe
Lantern Carriage (No of Arms)	No.	6
Lantern Carriage Minimum Inner Dia	mm	535
Lantern Carriage Minimum Length of Arms	mm	600
Hardwares		Less than 10 mm stainless steel AISI 304 & 12 mm above hot dip galvanized
Nos of fittings LED 400W	No.	8
Winch		

Height of Mast	Unit	16 Mtr.
Nos. of Drum	Drum/Winch	2
Capacity (Min.)	Kg.	SWL 350
Wire Rope (Nos./Thickness)	Nos. (MM)	3/6mm, AISI 304
Input Supply/Power tool /Torque Limitor		415V , 3 Phase/ (Reversible with Plate arrangement for adjusting the tension in the coupling chain between motor & winch/Mechanical
Cable Connectors (Plug & Socket)		5 Pin Male/Female Connectors
Motor	HP	1.0 HP
Trailing Cable (Condcutor/Type/Size)		Copper/EPR insulated PCP scheathed cotton braided/5CX4.0 sqmm

13. Specification of Electrical Panel Multi-Function Meter

1.1.1. Multi-Function Meter

Providing & Fixing of IS: 13875 & IEC :61326 confirming LED Digital type Multi Function Meter of class 1 accuracy as per IS : 1248 including making connection by PVC insulated copper conductor with PVC sleeves / channel etc. as required. All as per pre approved by Engineer in charge. For additional technical parameters of products/ work, refer Annexure "A" attached with Rajasthan PWD BSR 2022.

1.1.1.1. Multi-Function Meter: Type - M1

The multi-function meter should be able to measure the following electrical parameters:

Three phase with universal Auxiliary supply + AMP + HZ + PF + KW + KVA + KVAR + KVARH + KWH + DUAL ENERGY+ ENERGY+THD-I, THD-V & RUN HRS + MD with RS485

1.1.1.2. Multi-Function Meter: Type – M2

The multi-function meter should be able to measure the following electrical parameters:

Three phase AMP + HZ + PF + KW + KVA + KVAR + KVARH+KWH+ ENERGY+THD-I, THD-V & RUN HRS with RS485.

1.1.1.3. Multi-Function Meter: Type – M3

The multi-function meter should be able to measure the following electrical parameters:

Three phase AMP+HZ+PF+KW+KVA+KVAR+T.ENERGY+THD-I, THD-V & RUN HRS

14. Specification for Router and revised specifications for Access switches

1. Router:-

Category	Features
General Features	From day one the Device should support termination of MPLS as well as Internet links (in future if needed) and must be able to use both the links for traffic. Any failure of a link must result in steering traffic on another link without any manual intervention.
	Device should have Internal hot swappable power supply with 1+1 redundancy
	The Device must support minimum 6000 concurrent IPsec tunnel to support full mesh/partial mesh topology
	Device should include a minimum 2 Gbps IPsec throughput
	Device should support minimum 10 Gbps IPv4 forwarding throughput.
	Device should support minimum 3 million IPv4 & 2Million IPv6 routes.
Scalability	From 2nd year the solution should support minimum 2Gbps SD-WAN throughput without hardware change
Interfaces	Device should support 4x 1/10G SFP+ ports and 8 X 1GE SFP ports from day 1. These should be WAN ports
	Device should have 1x RJ45 console port for management
	All the LAN/WAN ports should be in compliance with 802.3 standards
Encapsulation	Generic Routing Encapsulation; 802.1q VLAN; PPP; PPPoE
Security	DES, 3DES, AES-128, or AES-256
Networking and Routing	System should be able to support BFD, VRRP/HSRP, VRF/Multi-VRF, MPLS-L3VPN, DHCP.
	Device Should support Static NAT, Dynamic NAT, NAPT
	System should be able to support IPv6 and IPv4 routing protocols like, BGP, OSPF and Static routing.
	Should support QoS Classification, Prioritization, DSCP remarking, shaping, scheduling, policing.
	Proposed router should support SD-WAN funcationality as well without changing the hardware in the setup.
	Device should be able to support PIM SM across SD-WAN, PIM SM with neighbour support on LAN and WAN interfaces, PIM SSM, PIM SM Bootstrap RP, PIM Rendezvous- Point, IGMP v2/v3

Category	Features
Certifications	Device shall confirm to CB IEC 60950-1 or CB IEC 62368-1 Standards for Safety requirements of Information Technology Equipment
	Device shall conform to EN 55032 or EN 55024 or VCCI-CISPR 32 Standards for EMC (Electro Magnetic Compatibility) requirements.

2. Access Switches: 48 Port Non- POE switch –

S.NO	Technical Specifications
1	Switch should be 1U and rack mountable in standard 19" rack.
2	Switch should support internal field replaceable unit redundant power supply from day 1.
3	Switch should have minimum 2 GB RAM and 4 GB Flash or better.
4	Switch should have dedicated slot for modular stacking, in addition to asked uplink ports. Should support for minimum 80 Gbps of stacking thoughput with 8 switch in single stack.
	Performance :
5	Switch shall have minimum 392 Gbps of switching fabric and 290 Mpps of forwarding rate or better.
6	Switch shall have minimum 16K MAC Addresses and 250 active VLAN.
7	Should support minimum 11K IPv4 routes or more
8	Switch shall have 1K or more multicast routes.
9	Switch should support atleast 16K flow entries or better.
10	Switch should support 128 or more STP Instances.
11	Switch should have 6MB or more packet buffer.
	Functionality :
12	Switch should support IEEE Standards of Ethernet: IEEE 802.1D, 802.1s, 802.1w, 802.1x, 802.3ad, 802.3x, 802.1p, 802.1Q, 802.3, 802.3u, 802.3ab, 802.3z.
13	Switch must have functionality like static routing, RIP, PIM, OSPF, VRRP, PBR and QoS features from Day1
14	Switch should support network segmentation that overcomes the limitation of VLANs using VXLAN and VRFs.
15	Switch shall have 802.1p class of service, marking, classification, policing and shaping and eight egress queues.
16	Switch should support management features like SSHv2, SNMPv2c, SNMPv3, NTP, RADIUS and TACACS+ .
17	Switch should support IPv6 Binding Integrity Guard, IPv6 Snooping, IPv6 RA Guard, IPv6 DHCP Guard, IPv6 Neighbor Discovery Inspection and IPv6 Source Guard.

S.NO	Technical Specifications
18	Switch should support 802.1x authentication and accounting, IPv4 and IPv6 ACLs and Dynamic VLAN assignment and MACSec-128 on hardware for all ports.
19	Switch must have the capabilities to enable automatic configuration of switch ports as devices connect to the switch for the device type.
20	During system boots, the system's software signatures should be checked for integrity. System should capable to understand that system OS are authentic and unmodified, it should have cryptographically signed images to provide assurance that the firmware & BIOS are authentic.
	Interfaces
21	Switch shall have 48 nos. 10/100/1000 Base-T ports and additional 4 nos. SFP+ uplinks ports.
	Certification:
22	Switch shall conform to UL 60950 or IEC 60950 or CSA 60950 or EN 60950 Standards for Safety requirements of Information Technology Equipment.
23	Switches,Router,Transreceivers,Wireless Controller and Access Points should be from the same OEM.
24	Switch shall conform to EN 55022 Class A/B or CISPR22 Class A/B or CE Class A/B or FCC Class A/B Standards for EMC (Electro Magnetic Compatibility) requirements.
25	Switch / Switch's Operating System should be tested for EAL 2/NDPP or above under Common Criteria Certification.
26	The Switch should be supplied with 5 year of warranty.

3. Access switch 24 Port Non- POE switch –

S.NO	Technical Specifications
1	Switch should be 1U and rack mountable in standard 19" rack.
2	Switch should support internal field replaceable unit redundant power supply from day 1.
3	Switch should have minimum 2 GB RAM and 4 GB Flash or better.
4	Switch should have dedicated slot for modular stacking, in addition to asked uplink ports. Should support for minimum 80 Gbps of stacking thoughput with 8 switch in single stack.
	Performance :
5	Switch shall have minimum 128 Gbps of switching fabric and 95.23 Mpps of forwarding rate or better.
6	Switch shall have minimum 16K MAC Addresses and 250 active VLAN.
7	Should support minimum 11K IPv4 routes or more
8	Switch shall have 1K or more multicast routes.

S.NO	Technical Specifications
9	Switch should support atleast 16K flow entries or better.
10	Switch should support 128 or more STP Instances.
11	Switch should have 6MB or more packet buffer.
	Functionality :
12	Switch should support IEEE Standards of Ethernet: IEEE 802.1D, 802.1s, 802.1w, 802.1x, 802.3ad, 802.3x, 802.1p, 802.1Q, 802.3, 802.3u, 802.3ab, 802.3z.
13	Switch must have functionality like static routing, RIP, PIM, OSPF, VRRP, PBR and QoS features from Day1
14	Switch should support network segmentation that overcomes the limitation of VLANs using VXLAN and VRFs.
15	Switch shall have 802.1p class of service, marking, classification, policing and shaping and eight egress queues.
16	Switch should support management features like SSHv2, SNMPv2c, SNMPv3, NTP, RADIUS and TACACS+ .
17	Switch should support IPv6 Binding Integrity Guard, IPv6 Snooping, IPv6 RA Guard, IPv6 DHCP Guard, IPv6 Neighbor Discovery Inspection and IPv6 Source Guard.
18	Switch should support 802.1x authentication and accounting, IPv4 and IPv6 ACLs and Dynamic VLAN assignment and MACSec-128 on hardware for all ports.
19	Switch must have the capabilities to enable automatic configuration of switch ports as devices connect to the switch for the device type.
20	During system boots, the system's software signatures should be checked for integrity. System should capable to understand that system OS are authentic and unmodified, it should have cryptographically signed images to provide assurance that the firmware & BIOS are authentic.
	Interfaces
21	Switch shall have 24 nos. 10/100/1000 Base-T ports and additional 4 nos. SFP+ uplinks ports.
	Certification:
22	Switch shall conform to UL 60950 or IEC 60950 or CSA 60950 or EN 60950 Standards for Safety requirements of Information Technology Equipment.
23	Switches,Router,Transreceivers,Wireless Controller and Access Points should be from the same OEM.
24	Switch shall conform to EN 55022 Class A/B or CISPR22 Class A/B or CE Class A/B or FCC Class A/B Standards for EMC (Electro Magnetic Compatibility) requirements.
25	Switch / Switch's Operating System should be tested for EAL 2/NDPP or above under Common Criteria Certification.
26	The Switch should be supplied with 5 year of warranty.

4. Access switch 24 port POE switch –

S.NO	Technical Specifications
1	Switch should be 1U and rack mountable in standard 19" rack.
2	Switch should support internal field replaceable unit redundant power supply from day 1.
3	Switch should have minimum 2 GB RAM and 4 GB Flash or better.
4	Switch should have dedicated slot for modular stacking, in addition to asked uplink ports. Should support for minimum 80 Gbps of stacking thoughput with 8 switch in single stack.
	Performance :
5	Switch shall have minimum 272 Gbps of switching fabric and 214 Mpps of forwarding rate or better.
6	Switch shall have minimum 16K MAC Addresses and 250 active VLAN.
7	Should support minimum 11K IPv4 routes or more
8	Switch shall have 1K or more multicast routes.
9	Switch should support atleast 16K flow entries
10	Switch should support 128 or more STP Instances.
11	Switch should have 6MB or more packet buffer.
	Functionality :
12	Switch should support IEEE Standards of Ethernet: IEEE 802.1D, 802.1s, 802.1w, 802.1x, 802.3ad, 802.3x, 802.1p, 802.1Q, 802.3, 802.3u, 802.3ab, 802.3z.
13	Switch must have functionality like static routing, RIP, PIM, OSPF, VRRP, PBR and QoS features from Day1
14	Switch should support network segmentation that overcomes the limitation of VLANs using VXLAN and VRFs.
15	Switch shall have 802.1p class of service, marking, classification, policing and shaping and eight egress queues.
16	Switch should support management features like SSHv2, SNMPv2c, SNMPv3, NTP, RADIUS and TACACS+ .
17	Switch should support IPv6 Binding Integrity Guard, IPv6 Snooping, IPv6 RA Guard, IPv6 DHCP Guard, IPv6 Neighbor Discovery Inspection and IPv6 Source Guard.
18	Switch should support 802.1x authentication and accounting, IPv4 and IPv6 ACLs and Dynamic VLAN assignment and MACSec-128 on hardware for all ports.
19	Switch must have the capabilities to enable automatic configuration of switch ports as devices connect to the switch for the device type.
20	During system boots, the system's software signatures should be checked for integrity. System should capable to understand that system OS are authentic and unmodified, it should have cryptographically signed images to provide assurance that the firmware & BIOS are authentic.
	Interfaces

S.NO	Technical Specifications
21	Switch shall have 16 nos. 10/100/1000 Base-T ports and additional 8 nos port port supporting 100MB/1G/2.5G/5G/10G.Switch should also havel 4 nos. SFP+ uplinks ports.
22	All 24 port should support PoE (802.3af) and PoE+ (802.3at) with a PoE power budget of 370 W.
	Certification:
23	Switch shall conform to UL 60950 or IEC 60950 or CSA 60950 or EN 60950 Standards for Safety requirements of Information Technology Equipment.
24	Switch / Switch's Operating System should be tested for EAL 2/NDPP or above under Common Criteria Certification.
25	Switches,Router, Transreceivers,Access Points and Wireless Controller should be from the same OEM.
26	Switch / Switch's Operating System should be tested for EAL 2/NDPP or above under Common Criteria Certification.
27	The Switch should be supplied with 5 year of warranty.

Note:

1. The minor specifications may vary from make to make. However approval of change of makes of IT equipment if any will be decided by DoIT&C- IT team on merit for variations in specifications as per need at the time of giving approval looking to present & future requirements within the specifications mentioned in RFP in interest of Project.
2. The bidder can supply items having better specs mentioned above on the rates quoted by them. No additional cost will be given for advance specification if supplied other than specification mentioned.
3. CCTV & LAN passive preferred makes is different from preferred makes of BMS and other items mentioned in BOQ. For passive copper & fibre networking infrastructure preferred makes are CommScope, Corning & Panduit.

15. Other revisions

S.No.	RFP Volume Name and Number	RFP Page No.	RFP Rule No.	Earlier Rule Detail	Revised Rule
1	Volume 1	22	C.Bidder's Qualification/ Eligibility Criteria-> a. Qualification of the bidder -> Legal Entity	The bidder should be a company registered under Indian Companies Act, 1956 **OR** A partnership firm registered under Indian Partnership Act, 1932 **OR** Registered with any state/central works department in AA class category in civil / electrical (building works)	The bidder should be a company registered under Indian Companies Act, 1956 **OR** A partnership firm registered under Indian Partnership Act, 1932 **OR** Registered with any state/central works department in AA class category in civil / electrical (building works) **OR** Joint Venture is allowed provided that all material procurement will be made on the name of JV and all payments by the department shall be released to JV Unit only. a. Any partner in Joint Ventures must satisfy above Basic Requirement of (2) Technical Experience of Bidder for civil construction work as per definition of Similar work. b. Any partner in Joint Ventures must satisfy above Basic Requirement of (3) Financial Turnover for Civil construction Works. c. Maximum numbers of partners allowed in Joint venture is "Two". d. Number of entities in a joint venture ("JV") shall mean all entities involved / mentioned in

S.No.	RFP Volume Name and Number	RFP Page No.	RFP Rule No.	Earlier Rule Detail	Revised Rule
					the Joint venture agreement enclosed by the bidder. All the members of JV shall be jointly and severally responsible for execution of contract. e. The JV shall nominate a member who shall have at least 51% share of work in the Project as the lead member, who shall have the authority to conduct all business for and on behalf of all the members during the Tender Process, receive instructions for and on behalf of any member of the JV, and in the event if work is awarded to the JV, during contract execution. f. A bidder is allowed to participate in one bid only, submitted either singly or in JV. A bidder who participates in more than one bid will cause the bidder's participation in all the respective bids to be disqualified. g. No foreign member is allowed in JV h. A Copy of Joint Venture Agreement ("JVA") executed by the JV Members on non-judicial stamp paper shall be submitted along with the tender. The complete details of the members of the JV Firm, its Lead member, their share and responsibility in the JV Firm, etc particularly with reference to financial, technical and other obligations shall be furnished in the Joint Venture Agreement. i. The copy for Draft agreement for making JV is separately enclosed as Annexure 26 of RFP

S.No.	RFP Volume Name and Number	RFP Page No.	RFP Rule No.	Earlier Rule Detail	Revised Rule
2	Volume II	398	16.1	**Control ->** Triplex / duplex / simplex as per site requirement, collective selective Control	**Control ->** Quadraplex collective selective Control
3	Volume II	401	16.2	**Control ->** Triplex / duplex /Simplex, collective selective Control	**Control ->** Quadraplex collective selective Control
4	Volume II	797	Item No. 73	**Cast resin Busduct -> Schneider, E+I, Legrand**	**Cast resin Busduct -> Schneider, EAE, Legrand, L&T**
5	Volume II	795	Item No. 42	**Busway / Busduct (Sandwich) -> Schneider/ Star Line / Siemens/GE/ Eaton/ Legrand**	**Busway / Busduct (Sandwich) -> Schneider/ Star Line / Siemens/GE/ Eaton/ Legrand/EAE/L&T**
6	RFP Volume II	Page no. 357	13. Technical Specifications of UPS for BOQ6> 13.1.4 Other technical specification of the 60 kVA UPS	**E. Batteries Parameters**-> No. of battery blocks : 26-40 for Each UPS as per the backup time	**E. Batteries Parameter**-> No. of battery blocks : No. of batteries will be as per back up time required
7	RFP Volume II	Page no. 471	20.2.1.1: General Description	**General Description ->** UPS shall be of maximum 3U size, rack mountable	**General Description ->** UPS can be rack or floor mountable and size as per preferred makes and matching specification of UPS

S.No.	RFP Volume Name and Number	RFP Page No.	RFP Rule No.	Earlier Rule Detail	Revised Rule
8	RFP Volume II	Page no. 472	20.2.1.3 UPS (2x20 kVA) Scope	**B. Specification / features of the UPS system is as follows ->** v. Batteries to support combined 60minutes full load backup.	**B. Specification / features of the UPS system is as follows ->** v. Batteries to support combined 20 minutes full load backup
9	RFP Volume II	Page no. 473	C. UPS other technical specification	**5. Batteries Parameters->** No. of battery blocks ->32-40	**5. Batteries Parameters->** No. of battery blocks : No. of batteries will be as per back up time required
10	Volume III	RFP Page No. 1209 and BoQ14 item S. no. 29		**43" Professional LED panel display →** Contrast Ratio (typ.) : 4000:1	**43" Professional LED panel display →** Contrast Ratio (Dynamic) : 4000:1/1100:1/1000000:1
11	Volume III	RFP Page No. 1209 and BoQ14 item S. no. 30		**75" Professional LED panel display →** Contrast Ratio (typ.) : 4000:1	**75" Professional LED panel display →** Contrast Ratio (Dynamic) : 4000:1/1100:1/1000000:1
12	Volume III	RFP Volume II Page no. 522	22.10 Technical specifications for Smart Interactive	**Earlier Heading →** Technical specifications for Smart Interactive Display Panel of 140" and above	**Heading →** Technical specifications for Display Panel of 136" and above

S.No.	RFP Volume Name and Number	RFP Page No.	RFP Rule No.	Earlier Rule Detail	Revised Rule
			Display Panel of 136" and above		
13	Volume II Page No. 794 item no. 10		Preferred Makes of Electrical	**Air Circuit Breaker →** PREFERABLY SIEMENS 3 WL ETU 76 B / ABB E MAX PR123 / L&T U POWER MTX 4.5/ SCHNEIDER MASTERPACT NW 6E/ LEGRAND	**Air Circuit Breaker →** PREFERABLY SIEMENS 3 WL ETU 76 B / ABB E MAX PR123 / L&T U POWER MTX 4.5/ SCHNEIDER MASTERPACT NW 6E/ LEGRAND **DMX3MP4**

16. Landscape

Sl. No.	Item Description	Referen
1	TOE WALL	
2	Supply and fixing of grey bijolia stone (18mm TH.), on Toe Wall coping (dressed and rubbed) in all respect .	
3	GAZEBO	
4	Supply & installation of marine grade polysteel modular GAZEBO, circular shape & elevation as per the attached design, made of UV stabilized class-1 fire retardant polyster composite with glass fibre reinforcement of 750GSM, self coloured, textured surface finish with scratch resistant aliphatic grade UV stabilized polyurethane paint; Inner frame work made of mild steel hot dip galvanized; All hardwares are to be of stainless steel. To be \individually hand crafted to replicate steel and cast iron and to be installed with ground using foundation boltsas per conceptual picture attached RFP. Each structure of aprox. 6000 kg	
5	PERGOLA	
6	Supply & installation of marine grade polysteel modular pergola, rectangular shape & elevation as per the attached design, made of UV stabilized class-1 fire retardant polyster composite with glass fibre reinforcement of 750GSM, self coloured, textured surface finish with scratch resistant aliphatic grade UV stabilized polyurethane paint; Inner frame work made of mild steel hot dip galvanized; All hardwares are to be of stainless steel. To be \individually hand crafted to replicate steel and cast iron and to be installed with ground using foundation bolts. Each structure of aprox. 7000 kg	

Sl. No.	Item Description	Referen
7	Wrought iron and mild steel welded work) (using angles, square bars, tees and channel grills, grating frames, gates and tree guards of any size and design etc. including cost of screens and welding rods or bolts and nuts complete fixed in position but without the cost of excavation and concrete for fixing which will be paid separately. Each structure of aprox. 5500 kg	
8	Supply and fixing of Pergolas in 100 *50 mm MS hollow sections; including MS posts of 100 *100 mm duly fixed and bolted with red oxide and painted in specified colour as per conceptual picture attached RFP	
9	SITTING DETAILS (12 NOS.)	
10	Providing and Fixing of aluminium extrude section of 100mm x 50mm (in wood finish powder coated) closed with cap on both edges.	
11	Providing and fixing of black / brown granite(18mm TH.) on brick Wall (external face), including coping ,clamps and grooves complete in all respect .	
12	Supplying and fixing of potted plants FRP POTS (from CREDO or similar)including cocopit, plants ,complete in all respect of following models	

Sl. No.	Item Description	Referen
13	csw 14.1 (DA GREY)_ATTR VIS(30" dia and of 27"height)	
14	csw 25.1 (DA GREY)_CL PER(18"x18"and of 18"height)	
15	CSW 5.1 (DA GREY)_ROU COMPE(22" dia and of 15"height)	
16	CSW 23.1 (BLACK)_CAV SLI(30"x25" and of 14"height)	
17	HORTICULTURE WORKS	

Sl. No.	Item Description	Referen
18	Supplying and planting of trees , shrubs , hedges, palms, groundcovers, creepers etc. including digging of pits , refilling with manure & good earth , anti termite treatment.	
19	Date Palm (8' stam)	
20	Plumeria Alba (8'-10')	
21	Terminalia (12')	
22	Tabebuia Avellanedae (10')	

Sl. No.	Item Description	Referen
23	Tabebuia Argentea (10')	
24	Erythrina Indica (8')	
25	Bahunia Blakeana (10')	
26	Murraya exotica (2')	
27	Bougainvelia Globra (1')	

Sl. No.	Item Description	Referen
28	Jatropha (2')	
29	Tecoma Gudhi Choudhi(4')	
30	Calliandra (3')	
31	Nerium drawf (1')	

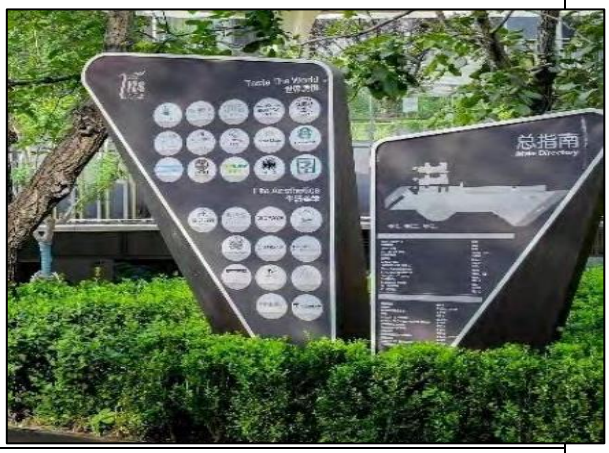
Sl. No.	Item Description	Referen
32	Bombex ceiba (12')	
33	Fountain grass (2')	
34	Spaider Lily (1')	
35	Pandanus grass (6")	

Sl. No.	Item Description	Referen
36	Zephyranthus Lily (4")	
37	Ixora Singapornisis (3')	
38	Chandini Dwarf (1')	
39	Hibiscus(1')	

Sl. No.	Item Description	Referen
40	Tecoma dwarf (1')	
41	Lecophyllum (1')	
42	POTTED PLANTS	
43	Bougainvelia (4')	
44	Plumeria Singapuri(3')	

Sl. No.	Item Description	Referen
45	Ficus Panda(3')	
46	Ravenue Palm(3')	
47	Phonix Palm(4')	
48	Cocopit each bag of 25 kg	
49	Vermi Compost eah bag of 50kg	
50	grass selection no.1 in tile size of 450mmx450mm x75mm	
51	BROWN GRAVEL(0'-4")(HT. OF GRAVEL BED)	

Sl. No.	Item Description	Referen
52	PEBBLE in white or grey color of size approx 60mm- 80mm	
53	Supply and fixing of water fountain of 5.00mtrX2.5mtr with following item and specifications with complete internal plumbing (cpvcpipe and fitting for water feature)and electrical works	
54	WFNSeries-nozzle , Type:geyser nozzle for back stage , size 1/2" of SS finish	
55	Angular Valve	
56	WSP Series Submersible pump: 3 phase (kirloskar make) ,WSP 5.00(5HP-SP/60KLPH)	
57	WEB SeriesABS Eye Bull Nozzle of black of EMAUXmake	
58	WLED Series LED Light :WLED 12W-12V (warm white or 3000k)(IP:69)	
59	WLT SeriesLED Transformers:operating voltage12vDC-12W	
60	WCP-EP Series Electric Control Panel with suitable accessories :Automation on/off, indicator , switches,analogmeter, voltmeter lux, fariles MCB, OLR and Connector etc of make L&T.	
61	SIGNAGE	

Sl. No.	Item Description	Referen
62	Supply and installation of ARTISTIC SIGNAGE (sagar black stone of 1500mmx2100mm 200mm th with water jet cutting of 12 mm filled with corian) with proper bed preparation in ramped soil with 100 mm M20pcc	
63	TOTEM SIGNAGE: Design, composition, Supply and installation of structural steel frame made out of medium duty 50mm square pipe section, red oxide primer with two coat of synthetic enamel painting, providing and fixing 3/4mm thick polycarbonate sheet with 40% transluency, with graphics on single side digitally printed on UV cured 3M media or 3M external grade binly totens to be intenally illuminated with LED paower module double side, high output 7100k numbers as perdsign, 140 degree at the distance .	
64	SCULPTURE	
65	Supply of sculpture of human of 7.5' height statue with art work finish. Fabrication work in 2 inch square pipr.3mm thickness in all parts of statue (tail,body,head) for solid strength.polyurethane foam filling in statue Die plastic and fiber coat finish at outer surface with 3 coats.fire resistant coating atfull statue.base stand in ms 1.5 feet square plate in 3mm thickness. the sculpture will be supplied as per indicative picture given in the tender document and direction of work .	

Sl. No.	Item Description	Referen
66	Supply of Sculpture Of a SWAN of 4.5 ' Height Statue with art work finish in artistic Silver colour. Polyurethane foam filling in statue. Fabrication work in 2 inch square pipe. 3 mm thickness in all parts of statue (tail, body , head) for solid strength. Plastic and fiber coat finish at outer surface with 3 coats. Fire resistant coating at full statue. Base stand in ms. 1.5 feet square plate in 3mm thickness. The sculpture will be supplied as per indicative pictures given in the tender document.	
67	DRIVEWAY & KERB STONE	
68	Providing & fixing of precast cement concrete interlocking paver blocks of M30 grade 60 mm thick from PAVCON/VYARA to be laid and the joint is to be filled with fine sand complete in all respect . 100 MMX 100MMX60 MM dark grey colored pavcon paver blocks 100 MMX 100MMX60 MM light grey colored pavcon paver blocks 100 MMX 100MMX60 MM colored pavcon paver blocks 100 MMX 100MMX60 MM grass paver blocks	
69	Supply and fixing of 18 mm th. Honed finish Black Granite with cutting and edge polish.	

Sl. No.	Item Description	Referen
70	Providing & laying at or near ground level , factory made kerbstone of M-25 grade cement concrete, in position to the required line, level and curvature , jointed with cement mortar 1:3 including making joints with or without grooves .	
71	IRRIGATION	
72	LAND DEVELOPMENT	
73	Trenching in specified soil upto a depth of 60 cm. including removal and stacking of serviceable materials and then disposal by spreading and neatly leveling within a lead of 500 metres and making up the trenched area to proper levels by filling with earth or earth mixed with sludge or/and farm-yard manure before and after flooding with water (excluding cost of imported earth and sludge or farm-yard manure).	
74	Digging holes in all kinds of soil and refilling the same with the excavated earth mixed with well decayed farm yard manure (cost of well decayed farm yard manure to be paid separately).	
75	Holes .90 cm dia, and .90 cm deep	
76	Holes 0.60 m dia and .60 m deep	
77	Holes 0.45 m dia and 0.45 m deep	
78	Supplying and stacking of good earth at site including royalty and carriage upto 5 km complete (earth measured in stacks will be reduced by 20% for payment)	
79	Supplying and stacking at site dump manure from approved source, including carriage upto 5 km complete (manure measured in stacks will be reduced by 8% for payment) :	
80	Screened through sieve of I.S. designation 4.75 mm	
81	Filling mixture of earth and sludge or manure in the desired proportion in trenches, flooding with water and leveling (cost of supplying earth and sludge or manure and mixing excluded).	

Sl. No.	Item Description	Referen
82	**SPRINKLER , DRIP & HYDRANT IRRIGATION SYSTEM** Irrigation of whole site with neccessary plumbing	
83	**Piping Network - PVC** Providing fixing , installation and testing with trenching and Back filling mainline 600 mm and Submain 450 mm in depth of PVC pipes (IS:4985- 88), and fittings & Accessories like tees, elbows, bends, junctions, Reducers etc of 10kg/cm2 pressure; as required/directed at site ,	
84	PVC Pipe 90 mm x 6 kg/cm2	
85	PVC Pipe 75 mm x 6Kg/cm2	
86	PVC Pipe 63 mm X 6kg/cm^2	
87	PVC Pipe 50 mm X 6kg/cm^2	
88	PVC Pipe 40 mm X 6kg/cm^2	
89	**SITE of Drip & Accessories**	
90	Providing and Fixing of Landscape Brown Color for recylced water application - 16 mm - 4 Bar Pressure Rating, 1.2mm Thickness, LEED Compliant, PE pipe -together with all required accessories. Make : Netafim / Rain Bird / Metzer	
91	Providing and fixing of Dripline- 16mm 45 CM 3.5 LPH, 4 Bar Pressure Rating, 1.2mm Thickness together with all required accessories. Make: Netafim, Rain Bird, Metzer (Brown Color)	
92	Providing and fixing of Pressure Comp. Bug Dripper 8 LPH Make : Netafim / Toro / Rain Bird	
93	Providing and Fixing of Take Off Connection (Clamp Saddle or Tee + Riser + Threaded Adaptor+ Pipe Sch 1/2")with All fittings & Accessories	
94	G.I. Lateral stake	
95	**SITE of Pop Up Sprinkler & Accessories**	
96	Providing of Spray Pop-up Sprinkler 4" (4" Pop Up hight from Bottom to Centre of Discharging Nozzle) from (2.4 to 5.4 Mtr Radius) with Check Valve, complete with required nozzle Make : Rain Bird/ Toro/ Nelson	
97	Providing of Swing Joint 1/2" with PP Clamp Saddle Chromed Nut Bolt & Nitrile Rubber Gasket Make: RainBird/Toro/Astore	

Sl. No.	Item Description	Referen
98	**Valves** **SITC of Various Valves with required Fittings & Tapping PP Clamp Saddles with Chromed Nut Bolt & Nitrile Rubber Ring**	
99	PVC Ball Valve 63mm PN 16 Make: GF / FIP / ASTORE	
100	Butterfly Valve 75 mm (for Main line Isolation) Make: Astore, Italy/ FIP/ GF+	
101	3/4" Quick Couppling Valve	
102	3/4" Quick Couppling Valve Key	
103	PP Saddlet Tee 75 X 3/4" with ASTM Pipe (18" Long)	
104	Saddle 75 MM X 1''	
105	1" Double Acting Air cum Vacum Release Valve Make: Bermad/ARI/Plasson with GM valve 1" Make: NIBCO/Zoloto	
106	PVC Flush Valve 40 mm	
107	Rectangular Valve Box 12" Make: Carson Brooks/Rain Bird	
108	Round Valve Box 10" Make: Carson Brooks/Rain Bird	
109	Round Valve Box 6" Make: Carson Brooks/Rain Bird	
110	**Filteration Unit** **SITC of Disc Filter, 80/110 Micron with all required Accesories**	
111	Providing and Fixing of Manual Cleaning Screen Filter capacity of 50 m^3/h 3"	
112	Providing and Fixing of G.I. Header with 3 Butterfly Valve	
113	Providing and Fixing of Road Sleeve of various sizes	
114	Trenching & Back Filling with Installation Charges of 450mm x600m with compacting of soil base	
115	**STONE BOULDERS**	
116	Providing and laying of 4-5 Tonns of weight of stone boulders (random shaped)as per approval .	
117	**PLANTER IN COURTYARD**	

Sl. No.	Item Description	Referen
118	Providing and fixing of black / brown granite(16mm TH.) on brick Wall (external face), including coping ,clamps and grooves complete in all respect .	
119	GEBION WALL	
120	Providing and fixing of M Steel work welded,in built up sections framed work including cutting,hoisting, fixing in position and applying priming coat of redlead paint in columns, beams and joists, channels, 75mm x75 mm anglestees plates with connecting plates or angle cleats.	
121	Supply and installation of 150 mm dia. Pebbles contained in wire mesh for gabion wall.	
122	Supply and installation of Wire mesh (60 mmx80 mm)2 mm dia wire & 2.2 mm binding wire 12 guage containing pebbles.	

17. Base price of Civil and Landscape items

BASIC RATE OF FINISHING MATERIAL			
JODHPUR INNOVATION HUB			
BOQ-1 Item No.	Item Description	Finishing Material	Basic Rate of Finishing Material as mentioned in column c (per sqm)
a.	b	c	d
41	Providing and fixing external grade board solid core flush door shutters ISI 2202-67 marked using Phenol formal dehyderesin in glue both sides with approved steel fittings complete as per annexure 'A' including aldrop, mortice lock : 35 mm thick with decorative teak veneer with veneer polish both side. The rate shall include the work of pressed steel door frame confirming to IS 4351 manufactured from commercial mild steel sheet of 1.25 mm thickness including hinges jamb, lock jamb, bead and if required angle threshold of mild steel angle of section. size as per directed by Engineer-in-charge	Door Veneer	1200
50	P & F 1st quality fully body Vitrified Porcelain Polished tiles with skirting of size 600 x 1200mm height, 10 mm thickand on floor and steps etc.in different sizes (thickness to be specified by manufactuer) with water absortion less than 0.08% and conforming to IS 15622 of approved make in all colour and shade, laid with CM 1 : 4 as per drawing, Tiles will be laid with 2 mm gap using spacers and gap will be filled with matching color epoxy latictere Size 600 x 1200 mm.	Vitrified Tiles (Size 600 x 1200 mm)	900
51	Providing and laying Antiskid Ceramic floor tiles of size 600x600 mm or more (thickness to be specified by the manufacturer), of 1st quality conforming to IS : 15622, of approved make, in all colours, shades, design and print as per selection laid on Cement Mortar 1:4 (1 Cement : 4 Coarse sand) as per drawing, including pointing the joints with white cement and matching pigments etc., complete.	Anti Skid ceramic tiles (Size 600 x 600 mm)	600
52	P & F approved make & shade Full body Vitrified Wall tile with granite pattern, over 12 mm thick bed of cement	Vitrified Wall Tiles	800

BASIC RATE OF FINISHING MATERIAL			
JODHPUR INNOVATION HUB			
BOQ-1 Item No.	Item Description	Finishing Material	Basic Rate of Finishing Material as mentioned in column c (per sqm)
	mortar 1:3 (1 cement : 3 coarse sand) and jointing with white cement slurry @ 3.3kg per Sq.mt, including pointing in white cement mixed with pigment of matching shade complete. It Should be antiskit smooth surface polished. Size 600 x 600 mm.	(Size 600 x 600 mm)	
53	Providing & laying sandwitch platform / water trough (sandwitch of 18 mm thk Granite of approved shade and sample on top and 25 mm thk kota in bottom with 30 mm thk screed of (1:2:4) in between)with sandwitch supports of 25 mm thk two kota on sides and screed in between and 75 mm raised platform with kota on top as per design and approved sample for all floors / all levels / all heights. The rate includes rounding, champhering and mirror polishing of edges, facias of granite, including necessary bonding adhesive like Araldite or equivalent. (Only plan area shall be measured and paid for). Rate shall be inclusive of making holes & cutouts for SS sink, Ovel wash basin, Piller tap, Bib tap-couplin etc. complete.	Granite	2300
54	Providing and fixing 18 mm thick gang saw cut, mirror polished, premoulded and prepolished, machine cut for kitchen platforms, vanity counters, window sills , facias and similar locations of required size, approved shade, colour and texture laid over base cement mortar 1:4 (1 cement : 4 coarse sand) as per drawing, joints treated with white cement, mixed with matching pigment, epoxy touch ups, including rubbing, curing, moulding and polishing to edges to give high gloss finish etc. complete at all levels. Granite of any colour and shade.	Granite	2300

BASIC RATE OF FINISHING MATERIAL			
JODHPUR INNOVATION HUB			
BOQ-1 Item No.	Item Description	Finishing Material	Basic Rate of Finishing Material as mentioned in column c (per sqm)
57	Kotah stone slab flooring with skirting of 100 mm height width factory cut, factory polished over base of cement mortar 1:6 (1 cement : 6 coarse sand) laid over & jointed with grey cement slurry mixed with pigment to match the shade of the slab including rubbing complete For area of each slab from 2001 to 5000 Sq.Cm	Kota	550
58	Providing and fixing Green / Black Granite stone slab mirror polished and machine edge cut in walls, pillars, steps, Shelves, Sills Counters, Floors etc. laid on base of cement mortar 1:3 (1 cement : 3 coarse sand) jointing with white cement mortar 1:2 (1white cement : 2 marble dust) with pigment to match the shade of the marble slab including grinding, rubbing and polishing complete and making grooves in stairs and filling it by aluminium strips and edge moulding of each steps.	Granite	2300
91	Fine dressed stone flooring over 20 mm (average) thick base of cement mortar 1:4 (1cement : 4 coarse sand) with joints finished flush. Red Sand stone(Jodhpur stone) size not less than 1350 Cm2 - b) 50mm	Jodhpur Stone	550

BoQ Item No.	Landscape Item Description	Finishing Material / Product	Basic Rate of Finishing Material as mentioned in column c
a	b	c	d
2	Supply and fixing of grey bijolia stone (18mm TH.), on Toe Wall coping (dressed and rubbed) in all respect .	Bijolia Stone	INR 950 per sq m

11	Providing and fixing of black / brown granite(18mm TH.) on brick Wall (external face), including coping ,clamps and grooves complete in all respect .	Black and brown Granite	INR 1500 per sqm
13	csw 14.1 (DA GREY)_ATTR VIS(30" dia and of 27"height)	FRP pot	INR 11250 per piece
14	csw 25.1 (DA GREY)_CL PER(18"x18"and of 18"height)	FRP pot	INR 3500 per piece
15	CSW 5.1 (DA GREY)_ROU COMPE(22" dia and of 15"height)	FRP pot	INR 5500 per piece
16	CSW 23.1 (BLACK)_CAV SLI(30"x25" and of 14"height)	FRP pot	INR 8500 per piece
65	Supply of sculpture of human of 7.5' height statue with art work finish. Fabrication work in 2 inch square pipr.3mm thickness in all parts of statue (tail,body,head) for solid strength.polyurethane foam filling in statue Die plastic and fiber coat finish at outer surface with 3 coats.fire resistant coating atfull statue.base stand in ms 1.5 feet square plate in 3mm thickness. the sculpture will be supplied as per indicative picture given in the tender document and direction of work .	Sculpture	INR 4,00,000 per piece
66	Supply of Sculpture Of a SWAN of 4.5 ' Height Statue with art work finish in artistic Silver colour. Polyurethane foam filling in statue. Fabrication work in 2 inch square pipe. 3 mm thickness in all parts of statue (tail, body , head) for solid strength. Plastic and fiber coat finish at outer surface with 3 coats. Fire resistant coating at full statue. Base stand in ms. 1.5 feet square plate in 3mm thickness. The sculpture will be supplied as per indicative pictures given in the tender document.	Sculpture	INR 6,00,000 per piece
69	Supply and fixing of 18 mm th. Honed finish Black Granite with cutting and edge polish.	grey/ black /red Granite	INR 1600 per sqm
116	Providing and laying of 4-5 Tonns of weight of stone boulders (random shaped)as per approval .	Rough Stone marble/granite boulder	INR 20,000
118	Providing and fixing of black / brown granite(16mm TH.) on brick Wall (external face), including coping ,clamps and grooves complete in all respect .	black brown granite	INR 1600 per sqm