SECTION V
T E R M S O F R E F E R E N C E
(ToR)

"Manufacture, Supply, Installation/Erection, Construction and Finishing of 500 bedded fully self-contained permanent Quarantine Centre at Amochhu, Phuentsholing."

(August 2022)

Royal Government of Bhutan

I. Background

Foreign workers fill the gap in the huge demand for manpower in the hydropower and construction sectors, exacerbated by the shortage of skilled national workforce. The COVID-19 pandemic has significantly reduced the supply of foreign workers in the country, thereby resulting in delays in the completion of hydropower and construction projects. Therefore, there is an urgent imperative to set up fully self-contained quarantine centers in suitable locations in the country to facilitate the import of foreign workers in line with COVID-19 protocols. The rationales for the project are as follows:

- High demand for foreign workers, particularly for the hydropower and construction sector.
- Uncertainty surrounding the COVID-19 pandemic.
- Lack of adequate and safe quarantine facilities at ports of entry.
- To mitigate risks of transmission and spread of COVID-19 (most hotels used as quarantine facilities are located in towns and residential areas).
- To enable efficient management and import of foreign workers.
- To provide end-to-end services for foreign workers at the quarantine centers.

The establishment of fully self-contained quarantine centers in fairly secluded areas in Samtse, Phuentsholing, Sarpang and Samdrup Jongkhar has been undertaken to facilitate the import of foreign workers, particularly for the hydropower and construction sectors, considering the present COVID-19 pandemic situation. The establishment of these centers will alleviate pressure on the limited quarantine facilities in border towns. Additionally, it will mitigate the risks of transmission and spread of COVID19 as most hotels used as quarantine facilities are located in the middle of the town and residential areas.

Once completed, the centers must be fully self-contained and provide end-to-end services such as COVID-19 testing, general health screening, immigration, finance and security as per established protocols for the entry of foreign workers. Further, amenities such as internet, television, ceiling fans and a convenience store will be provided to ensure a comfortable stay for foreign workers at the centers. The centers will operate on a Public Private Partnership (PPP) model integrating the competencies of both the public and private sectors.

The centers shall be designed to be used as COVID-19 hospitals during the pandemic, if required. Post pandemic, the centers must retain the flexibility to be used as a foreign workers' dormitory and skills testing center under the statutory body/State Owned Enterprise/corporate body entrusted with the mandate to source, regulate, monitor and manage foreign workers. The design of centers should also be sufficiently robust and capable of being converted into low-cost housing to address cross border residency needs or used by the Gyalsung Project.

II. Objective

The structures for fully self-contained permanent quarantine centers to be constructed in four project sites will be Pre-Engineered Buildings (PEB) manufactured, supplied, installed and finished by an international PEB principal manufacturer collaborating with a national (Bhutanese) large construction company as a joint venture / association / association. These structures including manufacturing, supply, installation/erection, finishing are to be completed in eight (8) months from signing of the contract agreement. The objective of this assignment is to construct:

500 bedded fully self-contained quarantine Centre on 10.58 acres land at Amochu, Phuentsholing.

III. Eligibility of Bidders

The national large construction company registered in W3 category with Construction Development Board (CDB) of Bhutan in association with an International Principal Manufacturer of PEB Structures and Components is eligible to participate in the bidding process.

The lead partner for the association should be the national large contractor and should be declared legally by the association. Moreover, international PEB Principal Manufacturer should produce legal evidence of its establishment in its country of origin. Further, the association should have the following experience:

1. Average Annual financial turnover of the national large contractor in last three years should be more than Nu. 200 million. The national large construction company must submit supporting evidence.
2. The International partner with experience of having successfully completed similar works during the last five years as on previous day of last date of submission of bids for Government Departments, Government Undertakings, reputed private sectors etc., should be any of the following:
    i. Three similar completed works costing not less than 50 million or
    ii. Two similar completed work costing not less than 100 million or
    iii. One Similar completed work costing not less than 250 million.
3. Both parties of the association should not be currently blacklisted by any Government Agencies/ SOEs/ Bank / Institution, internationally and in Bhutan.

IV. Client/Executing Agency

The **Project Secretariat, DES, MoWHS for the Construction of 2500 bedded Fully Self-Contained Quarantined Centers** is the Client/Executing Agency for this particular work.

V. Commencement Date and Time for Completion

This Bidder shall commence work on the date specified in the contract and the works shall be completed within **eight (8)** months from the date of the commencement of the work.

VI. Scope of work

The association is required to **"Manufacture, Supply, Install/Erect, and Construct and Finish all buildings for 500 bedded fully self-contained permanent quarantine Centre at Amochhu, Phuentsholing."**

In brief the scope of Pre-Engineered Building work shall include design of PEB structural members, manufacture, supply & erection of structural steel system, metal roof system, bracing, all accessories etc., as specified/ required for successful and satisfactory completion of work. In this context, the following are the scope of works to be carried out by the association:

1. Structural design of all PEB structural frames, roof and RC floors conforming to architectural, electrical and plumbing & sanitation drawings issued by client.
2. Manufacturing of all PEB structural and building components for the building blocks including shuttering, laying of reinforcement bars, concreting the RC floor on designed steel beams with M25 concrete as per international standards conforming to architectural, electrical, plumbing and sanitation drawings.
3. Supply of all PEB structural and building materials including for roof, walls, RC floor, electrical & IT, telecommunication, CCTV fixtures, plumbing & sanitary fixtures, doors and windows components, traditional cornice features, ceiling and flooring, all complete, as reflected in architectural, plumbing & sanitation, electrical, communication & IT drawings, shipped to site in CKD (completely knock down) condition.
4. Erection/installation of all PEB structural & building components including concreting of RC floors, walls, roofing, stairs, doors and windows, ceiling, flooring. Anchoring of all structural system to existing structures. The anchoring system shall be designed to suit the foundation systems built for the structures at site and should be executed as soon as the contract is awarded.

5. Installation, finishing, testing and commissioning of all electrical, IT, Telecommunication, CCTV fixtures, electrical and plumbing fixtures, all complete, as per standard practice conforming to architectural, electrical, plumbing & sanitation drawings, finishing schedule and to the preferred list of brands for these items.

6. Finishing of all PEB structural and building components, doors and windows including their hardware, walls as per the finishing schedule attached.

VII. Technical specifications

Before quoting the rates, the association must acquaint themselves with the project site locations and its accessibility, duration of the contract, designs and drawings of building blocks, specifications to achieve desired finishing, working condition of sites and locality including stacking of materials, installations of tools and plants (T&P) etc.

The association shall consider the specifications, design, finishing schedule and drawings to quote the fixed lump sum price and therefore the scope of works shall constitute the specifications listed herein for execution of the works.

No claim what so ever on such account shall be entertained by the Client in any circumstances for failure to comply with specifications provided and the association shall not be entitled to any extension of time or additional payment whatsoever for such non-compliance. The contract price shall be deemed to cover any rectification works necessary in order for the works to be completed and compliant with the specifications.

1. Structural design specifications, loads, analysis, design and drawings

1.1. General

Apart from the Technical Data Sheet, it is the responsibility of the association to obtain all relevant design information from the relevant officials of the client for preparing the design and other utility services to be supported by the structure. Design of all primary and secondary members such as columns, rafters, roof sheeting, and gable end columns are to be designed as per the attached Design Data Sheet, after which they shall be submitted to the client for approval.

The association shall prepare GA Drawings in addition to the fabrication drawings, erection drawings required for completion of the work. The Design considerations given hereunder establish the minimum basic requirements for the design. However, the structure shall be designed for the satisfactory performance of the functions for which the same is to be constructed and shall comply with all applicable Bhutanese laws.

1.1.1. Whenever any reference to an Indian Standard ("**IS**") Code is made, the same shall be taken as the latest revision (with all the amendments issued there to-) on the notified date of submission of tender.

1.1.2. Apart from the IS Codes mentioned in particular for wind, live and earthquake loads in the various clauses of this specifications (AISC, MBMA, AISI & AWS Specifications) related to the specific job under consideration and /or referred to in the above-mentioned codes may be followed wherever applicable, if the specifications for the same are not available in the relevant IS Codes.

1.1.3. In case of any variation/contradiction between the provisions of Codes and the specifications given hereunder, the provisions given in these specifications shall be followed.

1.1.4. The design of anchoring of whole structural system of each building block should be safe enough and as per the construction provisions made at site which should be executed as soon as the contract is awarded. The cost of these anchoring systems should be at the contractor's cost and no separate claim shall be made to client.

1.1.5. The design, drawings should be vetted by the competent/ registered structural engineers. The charges/fees for the same shall be paid by the association.

1.2. Loading

The loading on the structure shall be as per the following loading data;

1.2.1. Lateral Loads: Earthquake loads as per IS 1893: 2016 for Seismic Zone V.

1.2.2. Wind Loads as per IS: 875 (Part 3) – 1987 for basic wind speed of 44 m/s and terrain category – 1.

1.2.3. Live Loads: 4.0 KN/m2 on all floor & 1.5 KN/m2 on terrace.

1.2.4. Roof Live Load: 0.75 KN/m2

1.2.5. The structure for Block-VI (Quarantine type -I) shall have RC floors on first floors and the design of structural members (beams, columns and footings) should account for these loads.

1.3. Applicable codes

The association shall refer the latest applicable codes for the Design.

1.3.1. IS 816 (1969): - Code of Practice for use of Metal Arc Welding for General Construction.

1.3.2. IS 102: - Ready Mixed paint, brushing, re lead non-setting, priming.

1.3.3. IS 104: - Ready mixed paint, brushing, Zinc Chrome, Priming.

1.3.4. IS 806: - Code of Practice for use of Steel Tubes in General Building Constructions.

1.3.5. IS 808: - Dimensions of Hot Rolled Steel Beam, Channel and Angle Sections.

1.3.6. IS 811: - Cold Formed Light Gauge Structural Steel Sections.

1.3.7. IS 813: -Scheme of Symbols for Welding.

1.3.8. IS 818: - Code of Practice for Safety and Health requirements in Electric and Gas welding and cutting operations.

1.3.9.IS 822: - Code of Procedure for Inspection of Welds.

1.3.10. IS 875: - Code of Practice for Structural Safety of Building, Loading Standards.

1.3.11. IS 1161: - Steel Tubes for Structural Purposes.

1.3.12. IS 1363: - Hexagon Head Bolts, Screws and Nuts (Grades C).

1.3.13. IS 1364: - Hexagon Head Bolts, Screws and Nuts (Grades A & B).

1.3.14. IS 1365: - Slotted Counter –Sunk head screws.

1.3.15. IS 1367: - Technical Supply Condition for threaded fasteners.

1.3.16. IS 1852: - Rolling and Cutting tolerances for Hot Rolled Products.

1.3.17. IS 1977: - Low Tensile Structural Steel.

1.3.18. IS 2016: - Plain Washers.

1.3.19. IS 2062: - Steel for General Structural Purposes.

1.3.20. IS 3757: - High Strength Structural Bolts.

1.3.21. IS 4000: - Code of Practice for High Strength Bolts in Steel Structures.

1.3.22. IS 4923: - Hollow Steel Sections for Structural Use.

1.3.23. IS 5624: - Foundation Bolts.

1.3.24. IS 6623: - High Strength Structural Nuts.

1.3.25. IS 6639: - Hexagonal Bolts for Steel Structures.

NOTE: Where codes and standards listed in the above clause do not cover the requirements of Design, only in those cases the association may refer to other international standards for designs, however such references should be made only with the approval from the client in writing. All codes and standards shall be those in force on the date when the works are completed. To the extent that there are conflicting requirements between different applicable standards, the more stringent requirement shall apply.

1.4. Drawings;

1.4.1. The architectural, plumbing & sanitation, electrical drawings shall be used as basis to develop the structural shop drawings in order to incorporate the traditional Bhutanese facades/cornices, whilst at same time not compromising the structural integrity. Design and drawings shall then be developed into final ‘Shop Drawings'.

1.4.2. The architectural, plumbing & sanitation, electrical and finishing schedule furnished to the association shall form a part of these specifications. The association shall consult these in detail for all the information contained therein, which pertains to and is required for their work.

1.4.3. Revisions to drawings, even after release for preparation of shop drawings, are likely to be made to reflect additional data, or, additional details defining updated requirements. Revisions to drawings and any new drawings made to include additional work for the association shall be considered a part of this specification and contract. Extra claims by the association on this account shall not be entertained.

1.4.4. Construction should be strictly carried out as per the architectural, plumbing & sanitation drawings and electrical drawings provided by client. The deviation of construction from the drawings during construction should be corrected at association own expenses if required.

1.4.5. In case of variations in 'Drawings' and 'Specification', the decision of the client shall be final and binding.

1.4.6. Drawings shall be of one standard size and shall be clear and legible. Drawings shall be based on Tender drawings supplied to the association but they shall verify actual clearances and dimension from site on works executed by other agencies and from client.

1.4.7. While the shop drawings are to be prepared by the association and approved by the client prior to construction, such approval shall not relieve or in any way limit the responsibility of the association under the contract or otherwise at law for defective construction or design. In particular, the association is not relieved of his responsibilities for:

1.4.7.1. Dimensional Accuracy.
1.4.7.2. Correctness of engineering and design connections.
1.4.7.3. Fit of parts.
1.4.7.4. Details.
1.4.7.5. Errors and omissions.
1.4.7.6. Materials and Workmanship.
1.4.7.7. Methodology of Fabrication and Erection.
1.4.7.8. Safety of Performance.

1.5. Submittals;

On commencement of the Project, the association shall submit the following to the client:

1.5.1. Detailed baseline programme stating the various activities along and the time for completion of each activities including the procurement plan.

1.5.2. Structural GA drawings and Reactions of Structural Elements for approval on the design which should be compatible with the functional architectural and other design requirements.

1.5.3. Complete Fabrication Drawings, material lists, cutting lists, bolt lists, welding schedules and QC Schedules.

1.5.4. Results of any tests, as and when conducted and as required by the client.

1.5.5. Procurement plan for sourcing of all materials confirming the specifications and drawings.

1.6. Manufacturing;

On the approval of these shop drawings, the PEB manufacturer (International partner) shall:

1.6.1. Manufacture all PEB structural, building walls, roofing systems and materials, their connection bolts, roofing materials as per the standard practice and relevant codes available at their own factory and as per the approved shop drawings.

1.6.2. The association shall manufacture all architectural features corresponding to the sizes reflected in architectural drawings issued by the client finished with required texture, shade in factory.

1.6.3. All door and window components including their hardware as per the size.

1.6.4. All electrical, IT, telecommunication, CCTV components as reflected in electrical drawings.

1.6.5. Sand blasting followed by applying painting as per standard practice and codes.

1.7. Supply;

The all scope of works shall be factory supplied directly to the project site and shall include;

1.7.1. All PEB structural and building items including structural frames, roofing systems and materials, their connection bolts, roofing materials as per the standard practice and relevant codes available at their own factory and as per the approved shop drawings.

1.7.2. All architectural features for the project.

1.7.3. All door and window components including their hardware as per the size.

1.7.4. All electrical, IT, Telecommunication, CCTV, components as reflected in electrical drawings.

1.7.5. All plumbing and sanitary fixtures as per the sizes reflected in plumbing & sanitation drawings.

1.7.6. The supply should be to the site address as mentioned in the tender documents. All the necessary documentation shall be properly done during supply of PEB Systems. The association must inform for Employer's inspection before dispatch of the material in advance.

1.7.7. Packing list during the supply of the material should include –list of materials, Excise invoice, inspection report, transit insurance, and Transporter details –LR copy, permit form as applicable and all to be paid by the association.

1.8. Erection and setting of steel structure;

1.8.1. The erection of steel work shall be in accordance with Bureau of Indian Standard Specifications IS - 800 and IS - 816.

1.8.2. The association shall be responsible for the suitability, safety and capabilities of all plant and equipment used for erection.

1.8.3. Prior to starting erection of fabricated structure, defects if any shall be rectified. The association shall give to the client not less than 24 hours' notice of their intention to set out or give levels for any part of works, in order that arrangements may be made for checking. The association shall provide all necessary arrangements and assistance, which the client may require for checking the setting out.

1.8.4. The association shall erect the structural steel members in position, to dimension, and levels, as in relevant drawings and shall take care to see that component parts are not interchanged. Girders, stanchions etc., must rest fairly on their beds and will not be taken as erected until completely plumbed, aligned leveled, bolted or welded and strengthened, in every respect. The camber, if any, is to be maintained as shown in relevant drawings.

1.8.5. Particular care should be taken to ensure free expansion and contraction wherever provided in the relevant design / drawings or so directed on site.

1.8.6. While erecting, the holes in different component parts of structure should be made concentric with the use of drifts before any service bolts are fitted. No drifting shall be allowed except for bringing together several parts forming a member but the drifts must not be driven with such force as to disturb or damage the metal above the holes. Hammering of bolts to make holes concentric shall in no case be allowed. No nuts should be allowed to become loose and no unfilled bolt-holes are to be left in any part of the structure unless otherwise specified in the relevant drawings. Welding should be adopted wherever specified in the drawings. Wooden rams or mallets shall be used in forcing members to position, in order to protect metal from injury or shocks, chipped edges shall be finished off smooth and all concave surface rounded off.

1.8.7. All erection tools and plants viz. derricks, cranes etc. will have to be provided by the association as required in the erection work. All erection devices must be removed after the work is over, in such a way that no damage is done to the erected structures. Any damages, in this respect must be rectified by the association at his own cost.

1.8.8. The maximum tolerance for line and level of the steel work shall be + 3.0 mm on any part of the structure. The structure shall not be out of plumb more than 3.5 mm on each 10-meter section of height and not more than 7.0 mm per 30-meter section. These tolerances shall apply to all parts of the structure unless mentioned in the drawings issued for erection purposes.

2. Materials

2.1. Structural Steel

2.1.1. The association shall design all structural members (beams, columns, stairs, truss, purlins, slabs, walls) including anchor bolts, fasteners, joints in conjunction with architectural, plumbing & sanitation, electrical drawings made available by the client.

2.1.2. The association shall furnish the Manufacturer's test report (Mill Report) of the materials they want to use. The association is not allowed to use the materials available in stock.

2.1.3. All Steel materials supplied by the association shall be in a sound condition, of recent manufacture, free from defects, loose mill scale, slag intrusions, laminations, pitting, flaky, rust etc., of full weight and thickness specified.

2.1.4. All primary and secondary steel members from high tensile steel grade in cold form as per ASTM A572 Grade-50, 345MPa.

2.1.5. Anchor bolts for foundation - ASTM A 36M / IS 2062.

2.1.6. Bracing and sag rods to conform to IS 2062, Gr. A, 250Mpa / ASTM A36, 250Mpa. Minimum dia. for sag rods shall be 16 mm.

2.1.7. Primary connection bolts- High strength bolts, ASTM A325-ANSI 18.2.3.7/18.2.3.6 M.

2.1.8. Secondary connection bolts – Machine bolts ASTM, A307 / IS: 1367 CLASS 4.6 (part 1 to 3).

2.1.9. Self-drilling self-tapping screws – AS3566.1-2202 corrosion resistance class 3 or equivalent.

2.1.10. Wind ties, if required, shall be minimum flat of size 40 mm x 6 mm.

2.1.11. Structural steel where ever not mentioned shall conform to Grade 'A' of IS: 2062.

2.1.12. All members shall be finished shot blasted SAE 2.5.

2.1.13. All members shall have one shop coat of Red Oxide Zinc Chromate Primer.

2.1.14. All members shall have two Coats of Synthetic Enamel Paint of approved brand having thickness of 90-100-micron DFT at site.

2.2. Concrete

2.2.1. The grade of concrete for all RC floors and works shall be M25.

2.2.2. The structural concrete shall be batched at site by establishing appropriate batching plant/s at site.

2.2.3. For every batch of concrete poured, necessary test cubes to be prepared, tested prior to mass batching and pouring of concrete at site.

2.2.4. RCC Slab is to be casted on metal decking sheets fixed on PEB structural frame with accurately designed connections.

2.2.5. The Minimum thickness of the galvanized metal decking sheets of yield strength 500MPA, AZ 150 and minimum thickness 0.8mm

2.2.6. All necessary cost for tests, preparation of formworks, staging, scaffolding, curing to be included in plinth area rate with the building works.

2.3. Wall elements

2.3.1. External walls for Block-3(Laundry block), Block-4(Kitchen & Dining), Block-6(Quarantine type-I), Block-7(Quarantine type-2), Block-8(Quarantine type-3), Block-9(Isolation), Block-10A(Waste block-Infectious) and Block-10B(Waste block-general) shall be done with insulated sandwich panels of total thickness 110mm having 90mm thick PUF of density 40kg/ m3 sandwiched between 10mm cement fiber boards. The exterior cement fiber board shall be 10mm water proof and internal board shall be 6mm cement fiber board.

2.3.2. External walls for Block-1(Service blocks), Block-2(Office blocks), Block-5(Convenience store & Infirmary), Block-11A(2BHK-3units), Block-11B(2BHK-2units), Block-12(1BHK-3units), Block-13A(6 bedded-3 units), Block-13B(6 bedded-2 units) shall have 10 mm thick compressed heavy duty fiber cement boards over which 7.5mm Fiber cement siding board / planks as the outer sheet. Wall Insulation of 50 mm thick rock wool insulation of density 48kg/m3 shall be used as filler between the outer and inner skin.

2.3.3. External walls for Block-3(Laundry block), Block-10A(Waste block-Infectious) and Block-10B(Waste block-general) shall have 100 x 100-8 gauge GI double knotted mesh fixed to the structural steel columns, beams and bracings.

2.3.4. Internal wall for Block-3(Laundry block), Block-4(Kitchen & Dining), Block-6(Quarantine type-I), Block-7(Quarantine type-2), Block-8(Quarantine type-3), Block-9(Isolation), Block-10A(Waste block-Infectious) and Block-10B(Waste block-general) wherever required shall be 75mm PUF with density of 40kg/m3 sandwiched between 6mm cement fiber boards finished appropriately as per architectural drawings and finishing schedule.

2.3.5. Internal wall for Block-1(Service blocks), Block-2(Office blocks), Block-5(Convenience store & Infirmary), Block-11A(2BHK-3units), Block-11B(2BHK-2units), Block-12(1BHK-3units), Block-13A(6 bedded-3 units), Block-13B(6 bedded-2 units) wherever required shall be 6 mm thick compressed heavy duty fiber cement boards over which 12.5 mm Gypsum Board will be fixed on both sides with 50mm thick rock wool insulation with density of 48kg/m3 or more finished appropriately as per architectural drawings and finishing schedule.

2.3.6. Every wall panel shall have tongue and grooves for interlocking and also Camlock.

2.3.7. The panels will be connected with the floor and the structure with the help of GI Channels and GI angles and GI fasteners.

2.3.8. Walls should be finished with joints properly treated to avoid development of cracks.

2.3.9. The exterior walls should align and be finished as per the architectural drawings accommodative enough for traditional Bhutanese features wherever required.

2.3.10. The external wall shall be finished with necessary tapes, joint sealers with putty, water proof paints and traditional Bhutanese paint where ever required.

2.3.11. Internal walls shall be finished with putty and paints with tiles where ever required in wash rooms, wet areas, pantry and kitchen.

2.4. Roofing

2.4.1. 0.5mm PPGL with minimum width of 1080mm, extra ribbed having minimum yield strength of 550Mpa, alloy coating thickness of AZ 70 on the structural roofing system adequately designed for the load expected on the structure.

2.4.2. 13mm XLPE Insulation sheets shall be sandwiched between the roofing sheets.

2.4.3. The inner sheet shall be minimum of 0.5mm GI linear sheet.

2.4.4. The roofing composites shall be properly secured to the purlins with roofing screws, nuts with roof angle conforming to the architectural drawings.

2.4.5. 0.5mm PPGL ridges shall adequately overlapped, secured to the structural members with roofing screws, nuts.

2.4.6. Standard fasteners shall be self-tapping Zinc plated metal screws with EPDM bonded ZINC plated washers. All screws shall be color coated to match roof and wall sheeting.

2.5. Doors and Windows

2.5.1. The main door frames shall be Wood Polymer Composites (WPC) with size of 110 x 63.5 mm single rebate inclusive of trims/flashing finished in wood color.

2.5.2. The internal door frames shall be WPC with size of 75 x 50 mm single rebate inclusive of trims/flashing finished in wood color.

2.5.3. All doors shutters shall be WPC 32mm thick finished in factory with wood color of client's choice hinged with minimum of three stainless steel hinges on the door frames (refer architectural drawings)

2.5.4. Each door shall have two numbers stainless steel 8" tower bolt, one number stainless steel cylindrical twin door lock, mechanical door closer, door guard and stopper.

2.5.5. The window frames shall of FRP with minimum thickness of 3mm, minimum tensile strength and yield stress of 100Mpa, elongation percentage of not more than 0.82%, width and sizes as per architectural drawings. The frames shall be finished with wood pigment coated in factory.

2.5.6. The window shutters shall be anodized sliding aluminum sections with minimum size of 60 x 40mm, 1.5mm thick powder coated, 5mm clear glass, window nets, bearing and locks.

2.6. Cornices and traditional Dingris

2.6.1. The traditional Bhutanese cornices for Rabseys, window frames and dingris shall be of FRP with minimum thickness of 3mm, minimum tensile strength of 110Mpa, yield stress of 100Mpa, elongation percentage of not more than 0.819%, width, sizes and position shall as per architectural drawings and accordingly adequate and appropriate provisions shall be kept for its connections to the structures.

2.6.2. The cornices shall be finished with Bhutanese paint (RAB). The sample to be prepared and approved by client before it is being replicated to all cornices.

2.7. Ceiling

2.7.1. The interior ceiling of 595 x 595 x 8 mm pre-laminated gypsum tiles fixed and finished on a suspended Grid of powder coated GI Frame.

2.7.2. The interior ceiling for toilets, washrooms, pantry, kitchen shall be 8mm PVC fixed to the ceiling grid with screws and finished as per client's requirement.

2.7.3. The exterior ceiling for the soffit of roof overhang shall be 8mm cement fiber board fixed to the ceiling grid with screws and finished with putty and paints.

2.8. Floor and wall tiles

2.8.1. Flooring for all areas will be 18mm polished granite or double charged(8-10mm) 600 x 600mm vitrified tiles as indicated in architectural drawings and finishing schedule.

2.8.2. 600 x 600mm mat finish, porcelain vitrified tiles(8-10mm) for washrooms, pantry, kitchen and other wet areas.

2.8.3. 300 x 600mm ceramic wall tiles (3-6mm) up to the door height of toilets, wash room and pantry walls.

2.8.4. Counters in kitchens, pantry shall be provided with 18mm polished granite.

2.8.5. Kitchen and pantry walls will be finished with 300x 600 ceramic wall tiles (3-6mm) with height of 900mm above finished counter top.

2.9. Electrical

2.9.1. All electrical wiring works shall be recessed using HDPE conduit pipes.

2.9.2. All Octane LED panel square 18W, 650K lights shall be recessed.

2.9.3. All Octane LED panel 12W RD, 300K shall be recessed panel light.

2.9.4. E-lite LED pride plus 5W, 6500K, 31.4 cm single rod mirror light shall be surface.

2.9.5. LED pride plus batten tube light set with 1 x 20 W, 6500K, 1200mm single rod shall be surface.

2.9.6. All wall bracket 15W LED lamp shall be surface.

2.9.7. Exhaust fan, 240 VAC, 1400rpm 3 numbers, condenser and fan body, 300mm sweep shall be surface.

2.9.8. Ceiling fan 240-volt, AC 1400 rom sweep 3 numbers, canopy 2 numbers, condenser and fan body, 1400mm sweep shall be surface.

2.9.9. Call bell 250-volt AC, musical bell assembly shall be surface.

2.9.10. All switches, sockets and wiring accessories shall be recessed.

2.9.11. All switch gears and protection devices shall be recessed.

2.9.12. All power cables will be surface.

2.9.13. All television, telephone and IT accessories shall be recessed.

2.9.14. The poles and accessories shall be of height 3m for outdoor lighting.

2.9.15. The energy meters shall be indoors in respective buildings.

2.9.16. LED street light luminaries complete with die-cast aluminum casing with powder coated finish for corrosion resistance, heat sink body, heat resistant silicon sealing ring for ingress protection, tempered glass lens, high power factor (>0.95) driver, flicker-free operation with low ballast loss, IP- 65/66, suitable to be installed on pole diameter 40/50 mm, efficiency (lm/W>100) including lamp of 100/125W complete set as required.

2.9.17. Refer finishing and preferred brand list for electrical works.

2.9.18. Refer electrical drawings for layout, design, numbers, requirements etc.

2.10. Plumbing, waste, sanitary wares and fixtures

2.10.1. Refer plumbing layout for the requirements of sanitary wares, types, location, sizes, connections etc.

2.10.2. All internal plumbing pipes shall be Chlorinated Polyvinyl Chloride (CPVC) of approved brands having thermal stability for hot & cold-water supply.

2.10.3. All fittings for joints shall be SDR11, conforming to IS 15778 ASTN D 2486 with thickness of pipe more than 2mm.

2.10.4. Accessories for pipes shall have powder coated metal clamps, brass MTA & FTA fittings. All joints and fittings shall be carried it using solvent cement.

2.10.5. The Water closets and wash basins should be of standard sizes with appropriate traps fixed for ever fixtures.

2.10.6. The floor traps for wet area should be stainless steel quality with minimum sizes of 100mm x 100mm or equivalent.

2.10.7. Every wet area should have mirrors fixed to wall with SS frame long enough to cover the length of the wall where there is wash basins.

2.10.8. All plumbing lines, connections should be concealed, check for leakages.

2.10.9. Refer preferred brand list for plumbing and sanitary fixtures.

2.11. Hand Rails

2.11.1. All hand rails for staircase, balconies shall be in stainless steel grade 304, 16G 1.5mm.

2.11.2. The design, height and its requirement shall conform to the architectural drawings.

2.11.3. These are to be secured to main and secondary structural members.

2.12. Staircases:

2.12.1. All the primary components of staircases shall be appropriately designed conforming to the main structural elements of the building and painted as per the requirements of the client.

2.12.2. Treads and rise of staircase shall be designed and connected appropriately to the primary components of the staircase, finished with granite over M25 concrete laid over the structural members.

2.12.3. All the requirements shall also conform to the architectural requirements.

2.13. Paint and Finishing

The cleaning and painting specifications for the structural steel work shall be as follows;

2.13.1. Sandblasting / shot blasting to Sa 2.5. Two shop coats of Zinc Chromate Primer of total thickness of 50 Micron.

2.13.2. Two Coats of Paints of approved color code as the final finish in which one coat is to be applied at shop and the last coat is to be applied after erection or alternately both the coats to be applied at site before erection.

2.13.3. These painting shall not be applied manually and should be spray on.

The finishing of walls and architectural features shall be as follows;

2.13.4. The finishing for WPC door frames and trims shall be of wood color finished in factory. (sample to be approved by client).

2.13.5. The finishing on FRP window frames shall be wood color finished in factory. (sample to be approved by client)

2.13.6. The painting on FRP cornices shall be Bhutanese RAB painting. (sample to be approved by client)

2.13.7. The walls and ceiling wherever required shall be finished with tapes, two coats of putty and primer with final coat of water proof paint. (shade of paint sample to be approved by client).

2.14. Gutter & down spot

2.14.1. 0.5mm PPGL gutters and downspouts to be provided where ever indicated in architectural drawings.

2.14.2. The joints shall be connected by rivets.

2.15. Flashing, trim and closure

2.15.1. Flashing and trim shall be furnished at the rake, corners, eaves and framed openings and wherever necessary to provide weather tightness and finished appearance. Color shall be matching with the color of wall. Materials shall be 26-gauge thick conforming to the physical specifications of sheeting.

2.15.2. Solid or closed cell closures matching the profile of the panel shall be installed along the eaves, rakes and other location as specified in the drawing.

2.16. Sealer

2.16.1. This is to be applied at all the side laps and end laps of roof panels and around.

2.16.2. Sealer shall be pressure sensitive elastomeric Butyl tapes.

2.16.3. The sealer shall be non-plastic, non-shrinking, and non –toxic and shall be superior adhesive metals, plastics and painted at temperatures from 51 to 104 Degree Centigrade.

NOTE:

Equivalent material and finishes of any other specialized make may be used, in case it is established that the brands specified above are not available in the market but only after approval of the alternate brand by the Client.

VIII. Storage of materials.

1. The stacking, storage and handling of different materials, components and equipment shall conform to the General Considerations for Stacking, Storage and Handling of Construction Materials and Components at Site as per IS 4082: 1996 and 7969:1975 and timely inspected.
2. A proper planned layout for the storage with access for maneuverability shall be submitted and checklists as per IS 4082: 1996 shall be always maintained at site.
3. Storage yards to store/stack the materials should be established at association's cost (including but not limited to any land or space required for the construction of such yards).

IX. Material test.

To guarantee the quality standards of the different types of construction material, following tests shall be conducted at site and the reports shall be maintained but not limiting to it:

1. Coarse/ Fine Aggregate: All applicable tests shall conform to the IS 2386: 1963 and it shall be conducted as scheduled in the code.
2. Concrete: All applicable tests shall conform to the IS: 1199: 2018 and IS 516 for every batch.

The association shall bear the cost of all material tests and reports, which shall be deemed to be covered by the contract price.

The association shall produce the certified Manufacturers latest test report for all other materials that are going to be used for the construction

X. Measurements of plinth area.

1. The measurement of plinth area shall be made from end to end of the finished walls and shall exclude roof overhangs, open platform, staircase and verandah/balcony.
2. The quoted rate shall be inclusive of roof overhangs, open platform, staircase and verandah/balcony as per the drawings.
3. The built-up area for Block VI (Quarantine Type-I) shall be measured end to end of the finished wall, include the area for first floor (minus verandah/balcony) and shall exclude staircase leading up to first floor. The association should include its cost for supply, construct and finish the staircase with the building to be paid per square meters.

XI. Key technical personnel, certification of Principal Manufacturer and equipment

All the experts who have a crucial role in implementing the contract are referred to as key experts and profiles of these key experts required for this assignment are given below. Overall, the association shall provide a suitably qualified team to carry out the detailed studies. The bids shall be disqualified if bidder fails to submit required number of key experts and qualification of these key experts don't meet the requirement as per this ToR.

1. Key technical personnel:

The association shall engage the following key personnel apart from other support staff to carry out the services.

i. Project Manager: - one number.
ii. Structural/Project Engineer: - one number.
iii. Site Engineers: - two numbers.
iv. Electrical Engineer: - one number
v. Fresh Graduate Civil Engineer – One number.

2. Qualification and Experience Requirements:

The key personnel shall meet the following minimum qualification requirements. These qualification requirements are requisite to qualify the bids for evaluation and shall not carry any weightages;

i. Project Manager:

- Bachelor Degree from a recognized University with minimum of five years of professional experience in construction/project management.
- Strong familiarity with project management software tools, methodologies, and best practices.
- Should be familiar with specifications of materials for construction of Pre-Engineered building structures.
- Provide project updates on a consistent basis to various stakeholders about strategy, adjustments, project reviews and submission of performance reports periodically to client.
- Manage contracts with vendors and suppliers by assigning tasks and communicating expected deliverables, identify and mitigate the obstacles to ensure the targets are met.
- Overseeing quality control and health and safety matters on site.
- Interpersonal and leadership skills; and ability to work well alone and in a team.
- Must be fluent in spoken & written English.

ii. Structural Engineer:

- Master's Degree in Civil Engineering with specialization in structures from a recognized University with minimum five (5) years of professional experience in similar structural designs and construction.
- He/she will be also designated as Project Engineer for the project.
- Should be familiar with structural analysis and design software like SAP2000, MIDAS Civil, MIDAS Gen, STAAD, etc.
- Should have adequate knowledge and experience in design and construction of Pre-Engineered building structures.
- Should be familiar with specifications for Pre-Engineered Buildings and its related components.
- Should be able to guide the client and other stakeholder on structural aspects and its construction.
- Resolving any unexpected technical difficulties and other problems that may arise.
- Must be fluent in spoken & written English.

iii. Site Engineers:

- Bachelor's Degree in Civil Engineering from a recognized University with minimum two (2) years of professional experience. OR
- Diploma in Civil Engineering from a reputed institution with minimum of five (5) years of professional experience.
- Should be experienced in construction of Pre-Engineered Buildings and its related components.
- Should be familiar with CAD software like AutoCAD and other project management software to plan, track the project deadlines.
- Should be able to carry out quality control in accordance with IS/procedures method statements, quality plans and inspection and test plans.
- Day-to-day management of the site, including supervising and monitoring the site labour force and the work of any subcontractors.
- Checking plans, drawings and quantities for accuracy of calculations, setting out, leveling and surveying the site.

- Resolving technical issues with employer's representatives, suppliers, subcontractors and statutory authorities.
- Quality control and health and safety matters on site.
- Planning the work and efficiently organizing the plant and site facilities in order to meet agreed deadlines.
- Must be fluent in spoken & written English.

iv. Electrical Engineer:

- Bachelor Degree in Electrical Engineering from a recognized University with minimum of two (2) years of professional experience in electrical, HVAC/heating & cooling and firefighting mechanism. OR
- Diploma in Electrical Engineering from a reputed institution with a minimum of five (5) years of professional experience in electrical, HVAC/heating & cooling and firefighting mechanism.
- Should be familiar with CAD software like AutoCAD and other project management software to plan, track the project deadlines.
- Must be proficient in electrical wiring design & drawings, electrical equipment and power distribution equipment specifications, as well as preparing electrical load calculations for single and three phase loads.
- Must have relevant engineering experience in electrical, fiber optic, and public address systems, as well as security installations and CCTV.
- Drawing up project plans, making models, prototypes and circuit diagrams for high and low voltage electrical equipment.
- Must be fluent in spoken & written English.

v. Fresh Graduate Civil Engineer

- Bachelor's Degree in Civil Engineering from a recognized University.
- Should be trained in CMS, OHS and familiar with CAD software like AutoCAD and other project management software to plan, track the project deadlines.
- Should be able to carry out quality control in accordance with IS/procedures method statements, quality plans and inspection and test plans.
- Checking plans, drawings and quantities for accuracy of calculations.
- Must be fluent in spoken & written English.

The task and responsibilities specified above are generic in nature and the experts will have to undertake all the activities required for them to complete the project as defined in the detailed scope of work. Preference shall be given to experts having experiences in similar works. Supporting document for key personnel's/training certificate(s) from the reputed training institutions is required. Similarly, the qualifications/experiences shall be supported by academic qualification and experience certificates (in English).

3. Mandatory documents required

The association shall provide the following details of the proposed key personnel and equipment's for the evaluation purpose as per the Bidding Document and Term of Reference (ToR).

i. For Proposed Key technical personnel

a. Copy of Academic Certificate and Signed CVs of all technical manpower committed.
b. Copies of Citizenship ID Cards or work permit/ Passport/ Election/Voter ID cards (for foreign workers) of all manpower committed.
c. Copies of contract agreements with all personnel if they have been hired on contract by the association.
d. Copies of Provident Fund Account Documents for all regular personnel or payrolls or Copies of monthly remittance schedule of Health Contribution and Tax Deducted at Source for all regular personnel committed for this project.
e. Copy of Certificate for skilling of engineers (Construction) in addition to the above applicable documents.

ii. Certification of Principal Manufacturer of PEB

a. Copies of certification as Principal Manufacturer of PEB structural and building components by relevant government Institutions and agencies.

iii. For Equipment

a. Copy of the registration certificate of each equipment committed.
b. Copy of Insurance policy for each equipment where applicable.
c. In case of hiring, copy of the lease agreement (specific to the project) in addition to a) & b) above.
d. In case of equipment that do not require registration with RSTA copy of cash memos stamped by RRCO if newly imported or copy of sale deeds or verification letter issued by a Government Engineer.

iv. For similar work experience

a. Copies of similar work completion certificates for the association carried out within the last five (5) years.

v. For annual turn over

a. Audited financial statement for last three years.
b. Tax return submitted to Income Tax Department.

Non submission of above supporting documents or evidence for key personnel, equipment, similar work experience and annual turnover certificate by association shall affect the scoring of points in evaluation purpose. Translations in English must be submitted along with the copy of original if the certificates are not in English.

Note:

The proposal will be deemed non-responsive and lead to disqualification of bids if the consortium fail to authenticate and submit following documents;

1. Registration and certification of the international partner as principal manufacturer of PEB structures and component from the relevant government agencies in its country.
2. Tax clearance certificates or other relevant documents to validate that the principal manufacturer's average annual turnover for last three years is more than Nu. 350 million.
3. Experience of international partner in executing similar turn key projects of worth more than current proposal.
4. Valid registration certificates from Construction Development Board of Bhutan that the lead partner is national large construction company registered in W3 category.
5. Tax clearance or other relevant documents to validate that the lead partner has an average annual turnover of more than Nu. 200 million for last three years.

XII. Evaluation and comparison of bids

1. The evaluation of this contract shall have two stages.
2. Stage one for evaluation of association to assess the technical capacity with relevance to the contract for their experience, turnover and on the key technical personnel.
3. Stage two for evaluation of national large contractor (lead partner) which shall be both technical and financial carried out in e-tool.
4. The tender will have two bids in separate envelope for technical (Envelope A) and works (Envelope B).
5. The bid of technical and works is to evaluate the association objectively.
6. Envelope A will have technical proposal only.
7. Envelope B will have both the technical and financial proposal.
8. The financial bid shall be inclusive for all scope of works reflected in this Terms of Reference and shall be quoted in built up area in square meters for PEB and unit rate for ancillary civil works as reflected in BoQ.
9. The association can share the human resource; however, the engagement of local key technical personnel and others are advisable.
10. The technical proposals would be evaluated out of 100 points. Criteria, sub-criteria and the points system for the evaluation of Technical Proposals are as given in ToR and SBD.

11. The association must score 75 points out of 100 points in stage one in order to qualify association's bid for further evaluation in stage two.
12. The Financial Bids of only those associations obtaining a minimum score of 75% stage one shall be opened in the presence of association's representative who chose to attend & evaluated further.
13. The financial bid of the association failing to obtain the minimum score (75) will be returned un-opened in the presence of bidder.
14. The technical score of the association from the stage one will not be carried forward for stage two of evaluation.
15. The Envelope B will be evaluated through revised point base system using e-tool.
16. The Financial proposal shall be evaluated for any arithmetical errors and for the purpose of comparison, all the cost shall be converted to a single currency i.e. Ngultrum.
17. The bids shall be further evaluated as per revised evaluation guideline in e-tool for stage II to determine the Best Evaluated Bid (BEB).
18. The **Best Evaluated Bid (BEB)** will be given the letter of intent and if accepted, the work will be awarded to it. The **Best Evaluated Bid** means the responsive bid which offers the best value for money, evaluated on the basis of various objective criteria set out in the bidding documents. BEB does not necessarily mean the lowest quoted price (price shall be only one criterion for evaluation).

Criteria, sub-criteria and the points system for the evaluation of Full Technical Proposals are:			
Sl. No.		**Evaluation Criteria/Sub-Criteria**	**Max. Score**
I		**Specific experience and turnover of the PEB Principal Manufacturer and national large contractor relevant to the assignment.**	**40.00**
	A	Experience as Principal manufacturer in executing turn key projects similar to the proposed project.	10.00
	1	Above five (>5) numbers of similar turn key projects completed within last five years.	10.00
	2	With three to five (3 to 5) numbers of similar turn key projects completed within last five years.	5.00
	3	Less than three (<3) numbers of similar turn key projects completed within last five years.	2.00
	4	No experience in similar turn key projects completed within last five years.	0.00
	B	Average annual turnover of the principal manufacturer by executing similar turn key projects for last three years.	10.00
	1	More than Nu. 350 million as average annual turnover for the principal manufacturer by executing similar turn key projects for last three years.	10.00
	2	With Nu. 200 to 350 million as average annual turnover for the principal manufacturer by executing similar turn key projects for last three years.	5.00
	3	Less than Nu. 200 million as average annual turnover for the principal manufacturer by executing similar turn key projects for last three years.	0.00

C		Experience of registered national large contractor in executing works under W3 Category	10.00
	1	Above three (>3) numbers of W3 category projects completed in last five years.	10.00
	2	With one to three (1 to 3) numbers of W3 category projects completed in last five years.	5.00
	3	Less than one (<1) number of W3 category projects completed in last five years.	0.00
D		Average annual turnover of the registered national large contractor for last three years.	10.00
	1	More than Nu. 200 million as average annual turnover for the national large contractor for last three years.	10.00
	2	With Nu. 100 to 200 million as average annual turnover for the principal manufacturer for last three years.	5.00
	3	Less than Nu. 100 million as average annual turnover for the principal manufacturer for last three years.	0.00
		Total for I	**40.00**
II		**Adequacy of the proposal and alignment of work plan to complete the project as per the client's requirement.**	**5.00**
A	1	Designs, specifications proposed as per client's requirement	3.00
	2	Designs, specifications not aligned as per client's requirement	0.00
B	1	Work plan aligned to client's requirement, meticulously specified to manufacture, supply, install and finishing all scope of works included in ToR.	2.00
	2	Work plan not aligned as per client's requirement.	0.00
		Total for II	**5.00**
III		**Key technical personnel qualification, experience and competence for the proposed project.**	**45.00**
A		Project Manager (1 number)	13.00
	1	Bachelor Degree with more than five (>5) years of professional experience in construction/project management (100% of 13)	13.0
	2	Bachelor Degree with three to five (3 to 5) years of professional experience in construction/project management (38% of 13)	5.0
	3	Bachelor Degree with two to three (2 to 3) years of professional experience in construction/project management (15% of 13)	2.00
	4	Bachelor Degree with less than two (<2) years of professional experience in construction/project management (0% of 13)	0.00
B		Structural /Project Engineer	12.00
	1	Master's Degree in civil engineering (structures) with more than five (>5) years of professional experience in structural design of similar projects (100% of 12)	12.00
	2	Master's Degree in civil engineering (structures) with three to five (3 to 5) years of professional experience in structural design of similar projects (41 % of 12)	5 .00

	3	Master's Degree in civil engineering (structures) with two to three (2 to 3) years of professional experience in structural design of similar projects (16% of 12)	2.00
	4	Master's Degree in civil engineering (structures) with less than two (<2) years of professional experience in structural design of similar projects (0% of 12)	0.00
	C	Site Engineers (2 numbers); (5 points each)	10.00
1	a	Bachelor's Degree in Civil Engineering from a recognized University with more than two (>2) years of professional experience in similar construction projects (100% of 5). **OR**	5.00
	b	Diploma in Civil Engineering from a reputed institution with more than five (>5) years of professional experience in similar construction projects (100% of 5)	3.50
2	a	Bachelor's Degree in Civil Engineering from a recognized University with less than two (<2) years of professional experience. (0% of 5). **OR**	0.00
	b	Diploma in Civil Engineering from a reputed institution with less than five (<5) years of professional experience. (0% of 5)	0.00
	D	Electrical Engineers (1 number);	5.00
1	a	Bachelor Degree in Electrical Engineering from a recognized University with more than two (>2) years of professional experience in similar projects. (100% of 5). **OR**	5.00
	b	Diploma in Electrical Engineering from a reputed institution with more than five (>5) years of professional experience in similar projects. (100% of 5)	5.00
2	a	Bachelor Degree in Electrical Engineering from a recognized University with less than two (<2) years of professional experience. (0% of 5). **OR**	0.00
	b	Diploma in Electrical Engineering from a reputed institution with less than five (<5) years of professional experience. (0% of 5)	0.00
	E	Fresh Graduate Civil Engineer (1 number);	5.00
1	a	Fresh civil engineer graduate trained and certified in CMS, OHS, e-GP & CDB refresher courses	5.00
	b	Fresh civil engineer graduate not trained and certified in CMS, OHS, e-GP & CDB refresher courses	0.00
		Total for III	**45.00**
IV		**Engagement of national key technical personnel and TTI graduates for the project.**	**10.00**
	A	Engagement of national key technical personnel.	5.00
	1	All proposed key technical personnel are nationals (100% of 5)	5.00
	2	With (50-100%) proposed key technical personnel are nationals (50% of 5)	2.00
	3	With (25-50%) proposed key technical personnel are nationals (25% of 5)	1.00
	4	With less than 25% proposed key technical personnel are nationals (0% of 5)	0.00
	B	Engagement of TTI graduates for the project.	5.00
	1	Engagement of more than 10 numbers of TTI graduates (excluding key technical personnel) for the specified projects (100% of 5)	5.00

	2	Engagement of 6 to 10 numbers of TTI graduates (excluding key technical personnel) for the specified projects (50% of 5)	2.00
	3	Engagement of 3 to 5 numbers of TTI graduates (excluding key technical personnel) for the specified projects (20% of 5)	1.00
	4	Engagement of less than 2 numbers of TTI graduates (excluding key technical personnel) for the specified projects (0% of 5)	0.00
		Total for IV	**10.00**
		Grand Total (I+II+III+IV)	**100.00**

XIII. Delivery schedule

The successful bids shall strictly follow the delivery schedule as designed to complete the project on time. The association shall submit meticulously crafted work plan aligned with the delivery schedule broken down into activities and sub activities exclusive enough to incorporate all scope of works in this ToR. These activities then be divided to from the milestones to be completed in specific duration. The association shall strive to achieve each milestone, and failure to achieve two consecutive milestones shall be treated as a fundamental breach of contract entitling the client to terminate the contract and claim damages against the association.

The time line for deliverables shall be strictly as indicated in the table below:

Timeline for deliverables			
Sl. No	**Deliverables**	**Expected date of completion**	**Remarks**
1	Submission of structural GA shop drawings for all building blocks for project sites.	14 days	From date of award of the contract.
2	Manufacturing of all PEB components for all building blocks for the project sites.	60 days	From date of award of the contract.
3	Supply of all PEB components, roofing, doors and windows, FRP cornices, hardware, plumbing & sanitary items, all other civil items, electrical, telecommunications, CCTV and all finishing items included in the scope of works in ToR to respective project sites.	75 days	From date of award of the contract
4	Erection/Installation of all PEB structural and wall components including RCC decking and concreting, completion of walls, roofing for all project sites.	150 days	From date of award of the contract
5	Erection/Installations of Doors & window frames, cornices, ceiling, finishing of walls.	190 days	From date of award of the contract

6	Completion of electrical and plumbing lines as per the design, drawings and specifications for all building blocks for the project.	215 days	From date of award of the contract
7	Completion and finishing of ceiling, flooring, doors & windows including installation of door shutters, aluminum sliding shutters for windows.	215 days	From date of award of the contract
8	Completion and fixing of plumbing & sanitary fixtures, electrical, telecommunication/internet, TV, CCTV, ACs for all blocks for the project.	230 days	From date of award of the contract
9	Testing, commissioning of electrical, CCTV, telecommunications, TV, CCTV, ACs, plumbing & sanitary fixtures, doors & windows for its operation for all building blocks for the project sites.	240 days	From date of award of the contract
10	Handing over of the building blocks for all project sites completed in every aspect for its operations.	240 days	From date of award of the contract

1. The Association shall strictly adhere to meet the targets of activities reflected in delivery schedule. It is responsibility of the association to plan and predict the eventualities under current circumstances and deliver the activities as reflected.

2. The Association may be granted time extensions if there enough evidences.

3. Association will have to sign the milestones with client. Duration of each milestone shall be determined in the milestone contract. Failure to deliver two successive milestones shall be treated as fundamental breach of contract and shall lead to termination of contract.

XIV. Financial proposal and Payment schedule

1. The Financial proposal shall include all the expenses required to carry out the services and all scope of works as per the Terms of Reference & other relevant clauses in the Contract Agreement.
2. The association shall submit a detailed break-up of all the expenses justifying the quoted amount in Standard Bidding Document in Envelope (B) using appropriate forms.
3. The association shall be paid in stage wise in terms of percentage for the works completed for each site.
4. The payment schedule shall be strictly implemented sequentially during the execution and as per the progress for civil works.
5. The payment shall be made in Ngultrum (Nu).

Payment Schedule			
Sl. No	**Description of activity**	**% from total amount**	**Remarks**
1	Submission of GA drawings and completion of manufacturing of PEB components for buildings blocks of the project. of structural GA shop drawings for all building blocks for project sites.	**10**	The invoices should be supported by GA drawings, test results of PEB components, clearances etc.
2	Supply of all PEB components, roofing, doors and windows, FRP cornices, hardware, plumbing & sanitary items, all other civil items, electrical, telecommunications, CCTV and all finishing items included in the scope of works in ToR to respective project sites.	**30**	The invoices should be supported by good receipt notes by site engineers, custom clearance, shipment details.
3	Erection/Installation of all PEB structural and wall components including RCC decking and concreting, roofing for all project sites.	**15**	**The invoices of bills should be duly verified by the Engineer in charge at site supported by test results if applicable.**
4	Erection/Installations of Doors & window frames, cornices, ceiling, finishing of walls.	**5**	
5	Completion of electrical and plumbing lines as per the design, drawings and specifications for all building blocks for the project.	**5**	
6	Completion and finishing of ceiling, flooring, doors & windows including installation of door shutters, aluminum sliding shutters for windows.	**5**	
7	Completion and fixing of plumbing & sanitary fixtures, electrical, telecommunication/internet, TV, CCTV, ACs for all blocks for the project.	**10**	
8	Testing, commissioning of electrical, CCTV, telecommunications, TV, CCTV, ACs, plumbing & sanitary fixtures, doors & windows for its operation for all building blocks for the project sites.	**10**	
9	Handing over of the building blocks for all project sites completed in every aspect for its operations.	**10**	

XV. Retention money

1. The retention money shall be deducted from progressive running bills at 10% of the gross value of work done and claimed in each running account bill.

2. The 50% of the retention can be released upon completion of one-year Defects Liability Period and remaining to be released only after completion of two years of Defects Liability Period.
3. If the association does not carry out the rectification work during the Defects Liability Period, the clients shall have the right to get such defective work rectified after giving due notice in writing to the association and recover the cost of repairs from the amount so retained.

XVI. Performance Bank Guarantee

The successful bidder is required to submit an unconditional performance bank guarantee issued by a financial institution in Bhutan of 10% of the total contract price, which shall remain valid until the completion of works and all defects have been rectified to the satisfaction of the client. The submission of such a performance bank guarantee shall be a condition to the association receiving any payment under the contract, in default of which the client shall be entitled to withhold and retain monies due to the Contractor until an amount equivalent to 10% of the contract price has been withheld.

XVII. Insurance of the work

1. The association should ensure that supply of materials, construction of works, machineries, tools covered in the scope of works should be insured from Insurance Companies in Bhutan. Cost for such activity should borne by the association.
2. The association shall not be entitled to additional payment or costs for loss of materials during transportation, stored or during construction.
3. Bids shall include provision for insurance on the completed works until the end of the Defects Liability Period and the contract price shall be deemed to include the cost of obtaining all required insurance.

XVIII. Validity of the financial offer;

1. The association's financial offer for this contract shall be valid for entire duration of the contract from the date of signing the contract agreement.
2. The Client shall be entitled to at its sole discretion terminate the contract upon giving 30 days' notice to the association, and the association shall not be entitled to any compensation or to claim loss and damage arising out of such decision by the Client to terminate the contract.

XIX. Responsibility for the accuracy of the work

For the deficiencies, inaccuracies and other defects / defaults in the design, manufacturing, supply, erection/installation and finishing of proposed pre-engineered buildings, the association shall indemnify the Client against loss and damage sustained as a result of such defects / defaults, including but not limited to the following:

1. For major lapses or over sights in the analysis and/or design of the structures such that it results in the part or total failure of the structure or that the structure is rendered unserviceable during its intended service life, where the failures are attributable to the design, manufacturing, supply, erection/installations and finishing, the bidder shall be fully liable for the repayment of all the costs and making good any other eventualities resulting from the failure or un-serviceability of the structure(s).

2. The association shall be jointly and severally liable for loss and damage caused to Client caused by the association's negligence, failure to discharge its duties and responsibilities, and/or failure to comply with the Contract.

XX. Quality Control and Assurance Plan

The association shall submit a Quality Control and Assurance Plan as part of its scope of work under the contract, which shall specify the work methodology, quality control tests and intervals for such tests in accordance with the work specifications for each item of the works. The association shall strictly follow the QCQA Plan in the execution of the Works. All necessary tests in this regard must be carried out, in particular for concrete and structural steel, at association's own cost and the contract price shall be deemed to cover the provision of all such tests.

XXI. Site office and miscellaneous facilities

1. The association will have to make provision of site offices for the project at its own cost at each site.
2. The winning bidder shall construct temporary structure to accommodate 3BHK for the client at site to be as an office cum accommodation furnished enough to be used as an office and accommodation for the officials of the client. The cost of such should be explicitly quoted in the BoQ and should be enough to cover daily routine cleaning and maintenance for the period of contract with portable water, ambient temperature, power supply etc.
3. The site office shall comprise of, but not limited to, office, meeting hall, pantry and toilet.
4. The association will have to carry out periodic cleaning and maintenance of the site offices at its own cost to have clean and hygienic office environment.