SCHEDULES

CONSTRUCTION OF BUILDINGS/ MILITARY ASSETS IN DEFENCE CAMPUS AT SHILLONG IN LIEU OF DISMANTLED MILITARY ASSETS DUE TO UP-GRADATION/ WIDENING OF NH-40 SECTION BETWEEN SHILLONG-DAWKI ROAD PROJECT UNDER NHIDCL IN THE STATE OF MEGHALAYA

BUILDING INFRASTRUCTURE - BUILDING THE NATION

National Highways & Infrastructure Development Corporation Ltd.

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SCHEDULE-A: Project Site

Annexure I

1 Background

Ministry of Road Transport & Highways under its scheme for redevelopment of Military Infrastructure for Married/OTM accommodation including ancillary services in Shillong, east Khasi hills district, State of Meghalaya, has mandated NHIDCL as Central Executing Agency for development of Infrastructure at Shillong, East Khasi hills district, State of Meghalaya. Further, Military Infrastructure for Married/OTM accommodation including ancillary services at Shillong, East Khasi hills district, State of Meghalaya has been decided to be undertaken on EPC basis. The proposed structure is being constructed in lieu of demolished structures due to widening of Shillong Dawki Road.

2 The Site

2.1 Shillong is the capital city of Meghalaya.

2.2 NHIDCL is developing building/ Military assets in Army area in lieu of the structures which has been demolished/ to be demolished due to up gradation/widening of NH - 40 section between Shillong – Dawki road. The proposed is to be constructed in Defence/Military areas of Shillong City The schematic site plan is attached at Plan A-K having exact location, adjacent features and boundaries of the land. NHIDCL is fully entitled to develop the said land. The plot enjoys excellent linkages with other parts of Shillong City and adjoining important places.

2.3 The proposed site for the Military Infrastructure is at Shillong.

2.4 The dates of handing over the Site to the Contractor are specified in Annex-II of this Schedule-A.

3 SITE DEVELOPMENT

The site is located at various places within the Military area Land is on irregular sites The existing structure/hard standing is to be demolished if any on the site.

3.1 LOCATION

The proposed site is located near NH-40 section between Shillong - Dawki roads under NHIDCL in Shillong. Different building blocks are situated at various locations and sites.

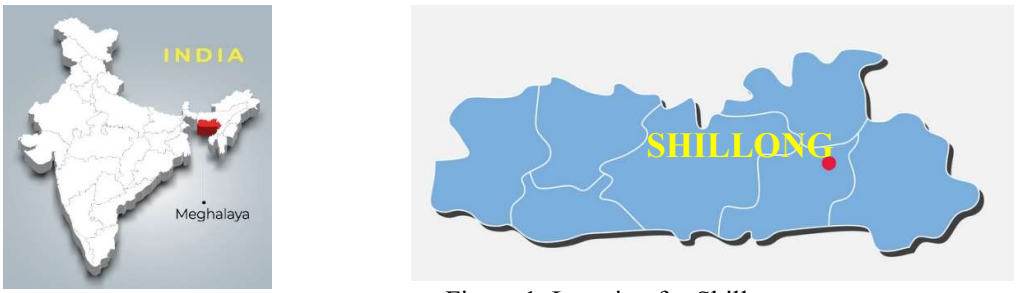

Figure 1. Location for Shillong

Figure 2. Location showing different sites of proposed major building blocks

PROPOSED BUILDINGS				
S .No.	Location	Buildings	Site location	
	A	B	Latitude	Longitude
1	DM lines	8x Married Accn	25.572622	91.875339
2	Officers mess 101 Area	Single Offr Accn	25.569601	91.862906
a	Do	2 x Parking Areas		
3	MH Upper block	Toilet block		
a	Do	Sentry post		
b	Do	Sentry post		
4	MH Lower block	OR lines	25.574759	91.872376
a	Do	Toilet block		
5	144TA & HQ 101 Area Main gate	GD room 101 Area main gate		
a	Do	GD room TA coy gate		
b	Do	Toilet Block TA		
6	Annexe (Old EME Wksp)	CSD building.	25.56995	91.864915
a	Do	Garage		
b	Do	Parking Shed		
c	Do	Parking Shed		
d	Do	Toilet block		
e	Do	Gd room		
7	RTC	Club House	25.569074	91.878084
a	Do	Staff room		
8	Old Rhino CSD	Gd room		
a	Do	Sentry post		
9	ECSAG & GE Shillong	Guest Rooms	25.570499	91.87027
a	Do	Office GE Shillong	25.572253	91.869197
10	GTC	APS School building	25.559675	91.92805

3.2 CLIMATOLOGY

3.2.1 Temperature

The maximum temperature recorded in Shillong is 24.0°C and the minimum recorded is 4.4°C.

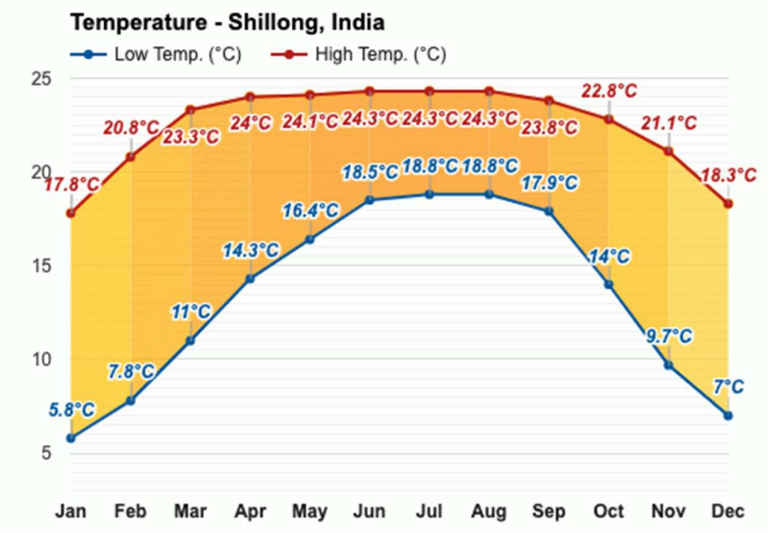

Figure 3. Temperature graph for Shillong

3.2.2 Humidity

Under Köppen's climate classification the city features a subtropical highland climate (Cwb). Its summers are cool and very rainy, while its winters are cool and dry.

The months with the highest relative humidity are July and August (95%). The month with the lowest relative humidity is March (65%). Average humidity in July: 95%

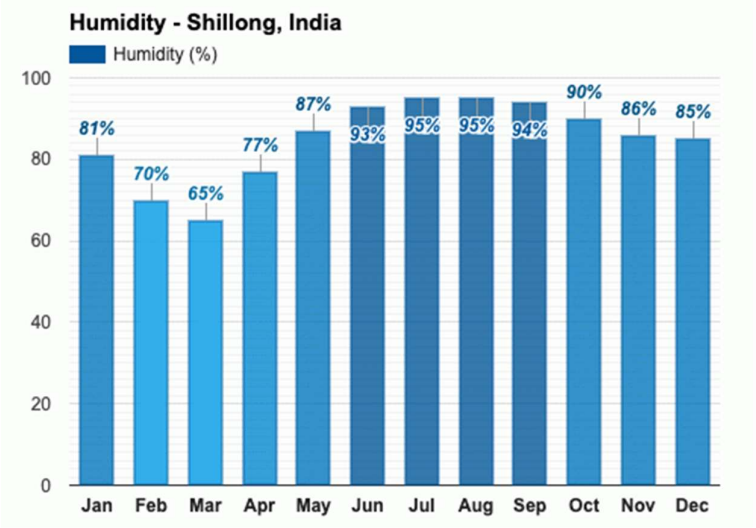

Figure 4. Humidity graph for Shillong

3.2.3 Precipitation/ Rainfall

Shillong is subject to varies of the monsoon. The monsoons arrive in June and it rains almost until the end of August. October–November and March–April are the best months to visit Shillong.

The wettest month (with the highest rainfall) is July (615mm). The driest month (with the least rainfall) is January (21mm). Average rainfall in July: 615mm

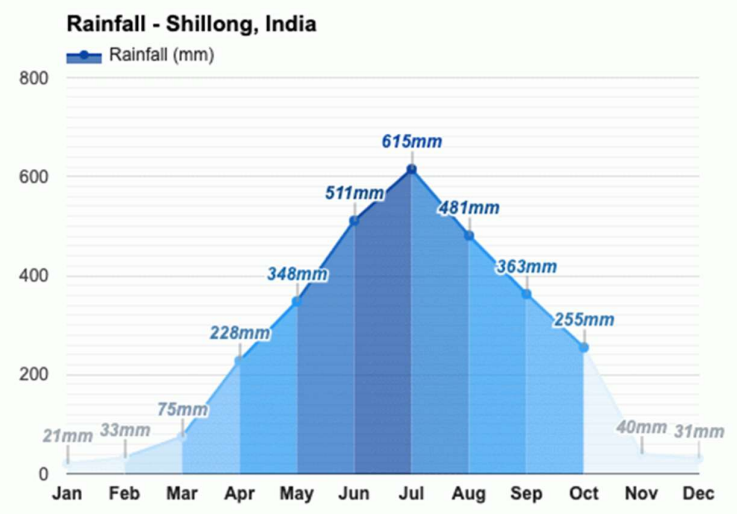

Figure 5. Rainfall graph for Shillong

3.2.4 Wind

The characteristics of wind in this areas as depicted in the tabulation below has a speed of about 5.5 km/h period during monsoon where it reaches the peak and is slightly lower around the rest of the year. The windiest month (with the highest average wind speed) is July (5.5km/h). The calmest months (with the lowest average wind speed) are November and December (2.6km/h).

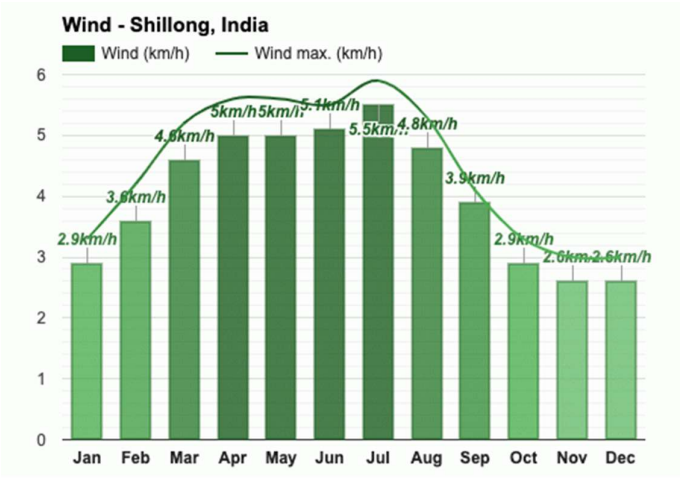

Figure 6. Wind graph for Shillong

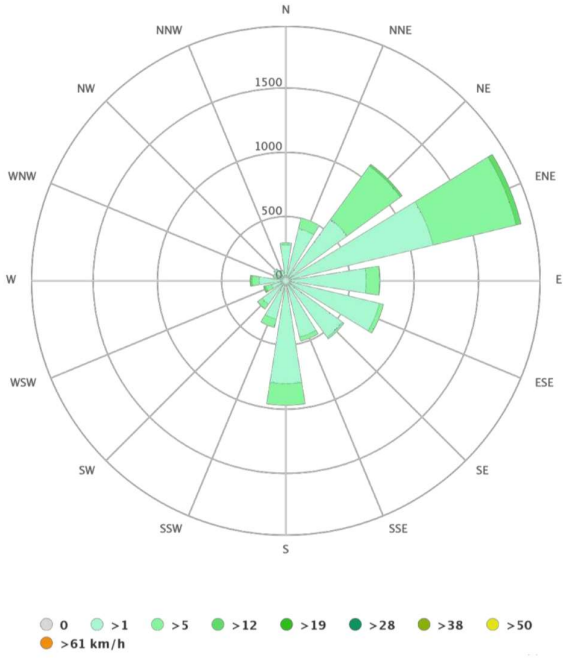

Figure 7. Wind rose diagram for Shillong

3.2.5 Solar orientation

The sun - path diagram for Shillong as below shows fairly consistent day light hours and orientation.

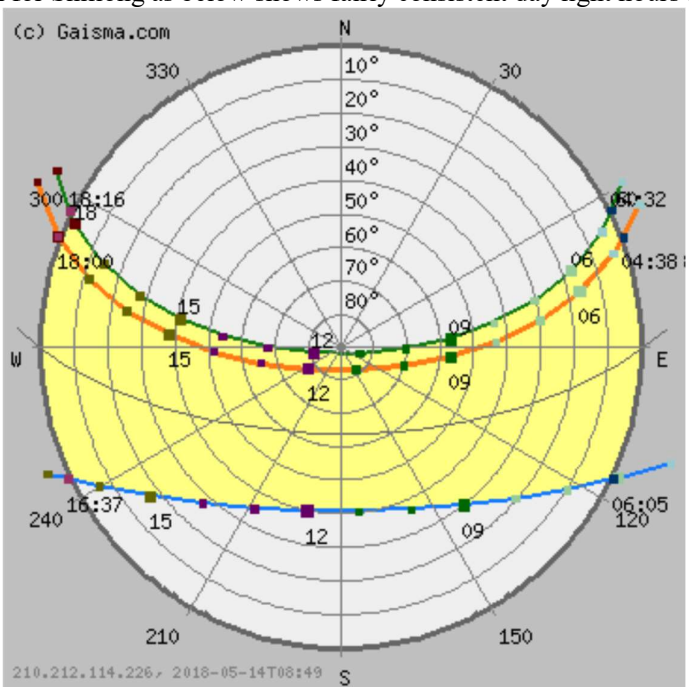

Figure 8. Sun path diagram for Shillong

4 PROPOSED BUILDINGS

4.1 LOCATION - DM LINES

BUILDING –

- **8X MARRIED ACCOMMODATION**

Location plan

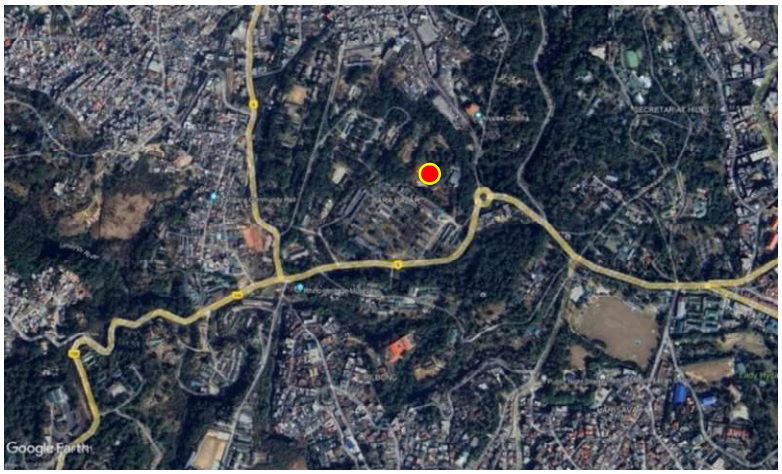

Figure 9. Site location of DM Lines

Survey plan

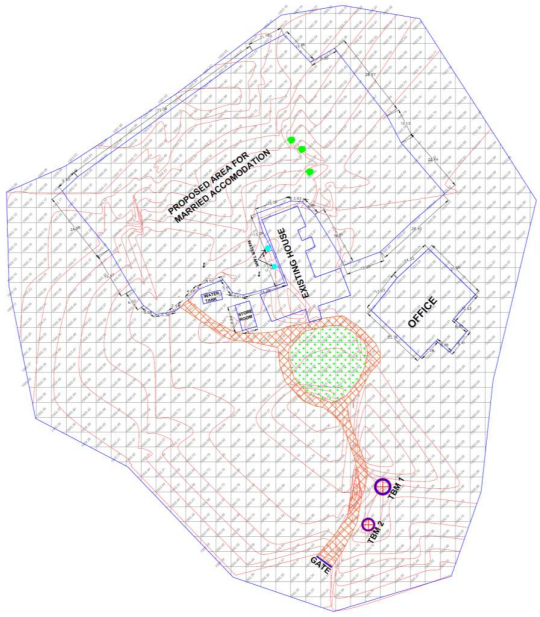

Figure 10. Site survey for proposed DM Lines

Site photos

Figure 11. Existing site photos of DM Lines

4.2 LOCATION - OFFICERS MESS 101 AREA

BUILDINGS –

- **SINGLE OFFICER'S ACCOMMODATION**
- **2X PARKING**

Location plan

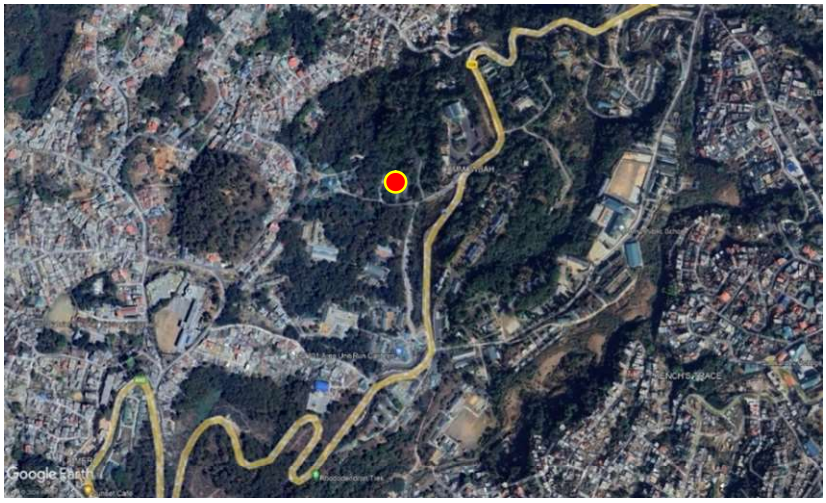

Figure 12. Site location of Officer mess 101 area

Survey plan

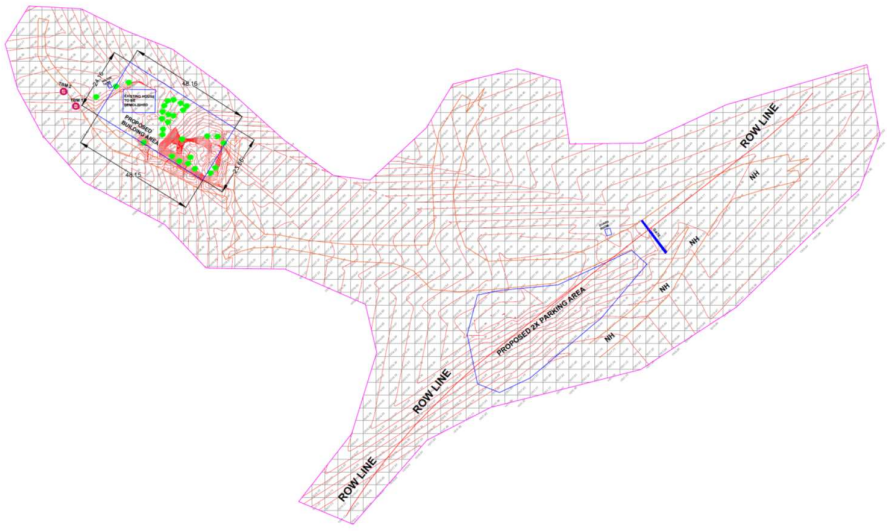

Figure 13. Site survey for proposed Officer mess 101 area

Site photos

Figure 14. Existing site photos Officer mess 101 area

4.3 LOCATION - MH UPPER BLOCK

BUILDINGS –

- **TOILET BLOCK**
- **SENTRY POST**
- **SENTRY POST**

Location plan

Figure 15. Site location of MH Upper block

Survey plan

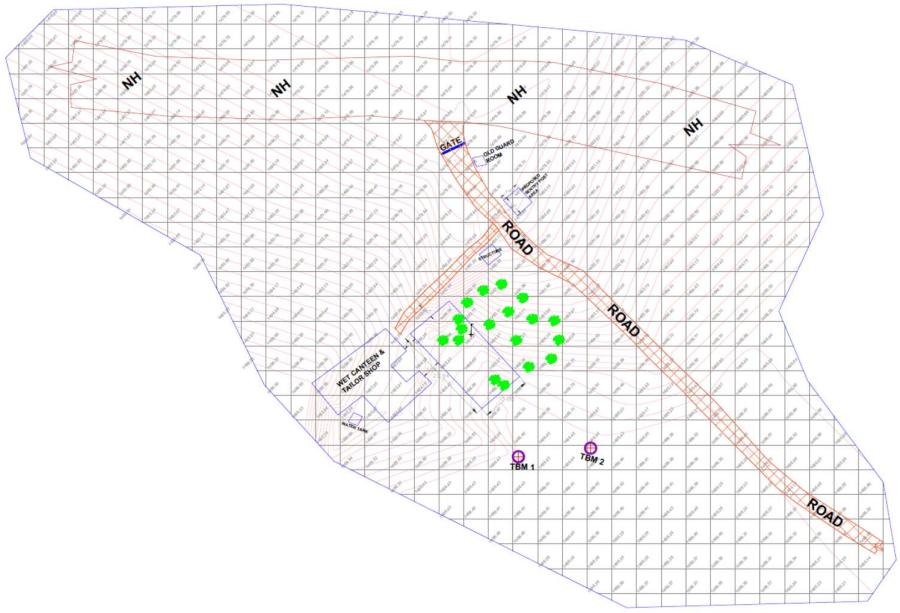

Figure 16. Site survey for proposed MH Upper block

Site photos

Figure 17. Existing site photos of MH Upper block

4.4 LOCATION - MH LOWER BLOCK

BUILDINGS –

- OR LINES
- TOILET BLOCK

Location plan

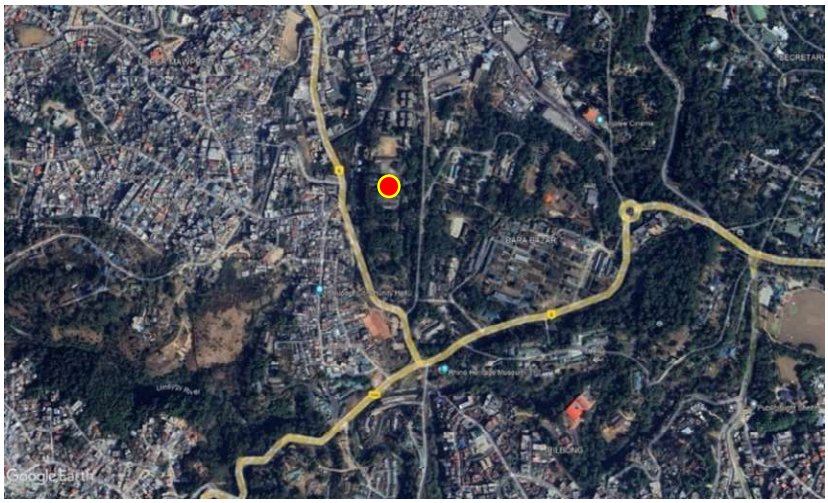

Figure 18. Site location of MH Lowe block

Survey plan

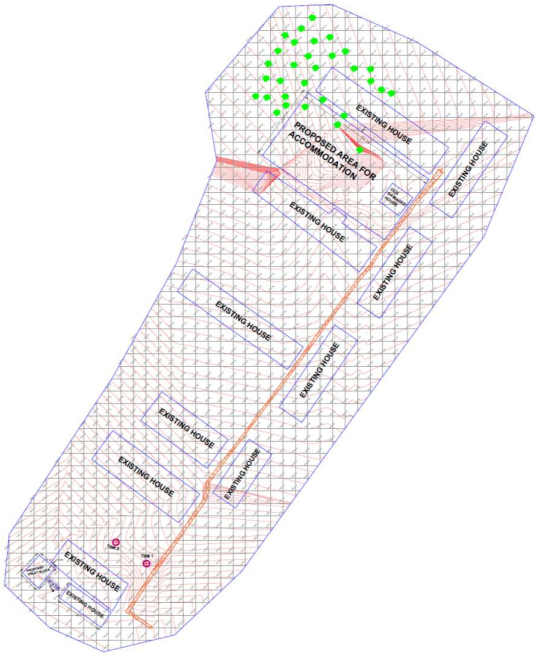

Figure 19. Site survey for proposed MH Lower block

Site photos

Figure 20. Existing site photos of MH Lower block

4.5 LOCATION – 144TA & HQ 101 AREA MAIN GATE

BUILDINGS –

- **GD ROOM 101 AREA MAIN GATE**
- **GD ROOM TA COY GATE**
- **TOILET BLOCK TA**

Location plan

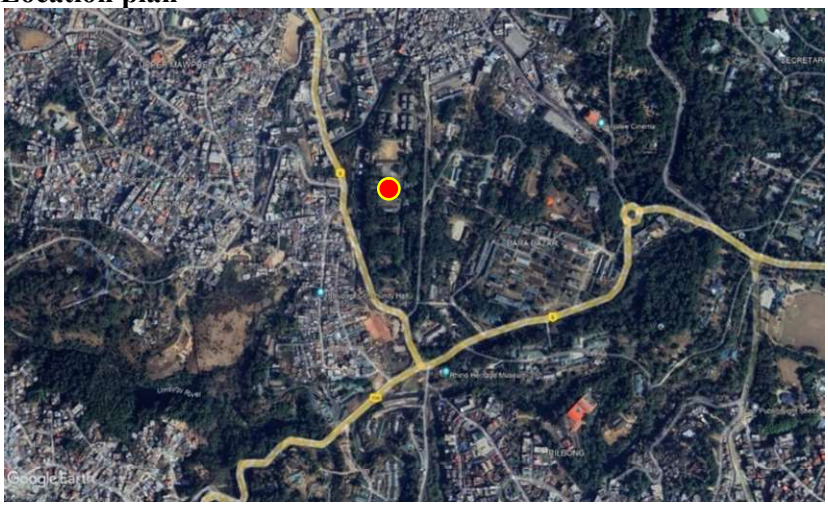

Figure 21. Site location of 144TA & HQ 101 Area main gate

Survey plan

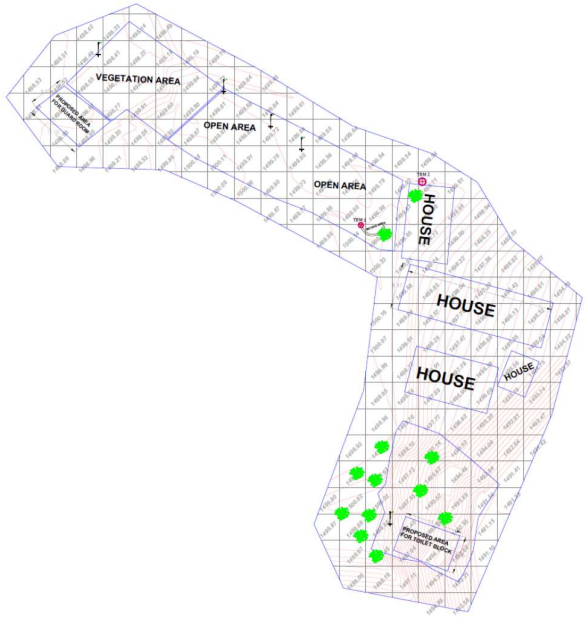

Figure 22. Site survey for proposed 144TA & HQ 101 area main gate

Site photos

Figure 23. Existing site photos of 144TA & HQ 101 area main gate

4.6 LOCATION - OLD EME WKSP

BUILDINGS –

- **CSD BUILDING**
- **GARAGE**
- **PARKING SHED**
- **PARKING SHED**
- **TOILET BLOCK**
- **GD ROOM**

Location

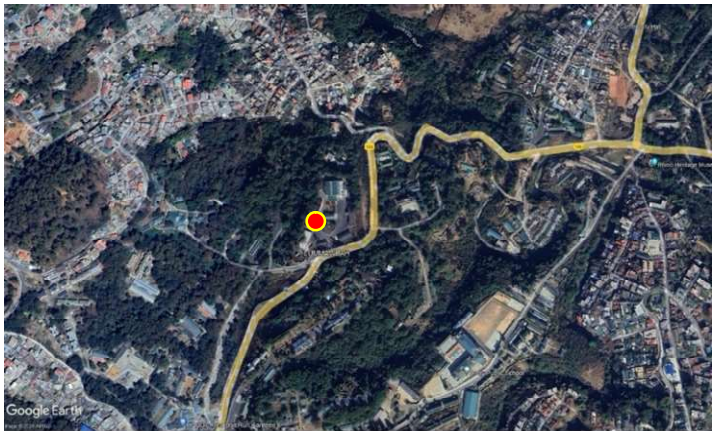

Figure 24. Site location of Old EME Wksp

Site survey

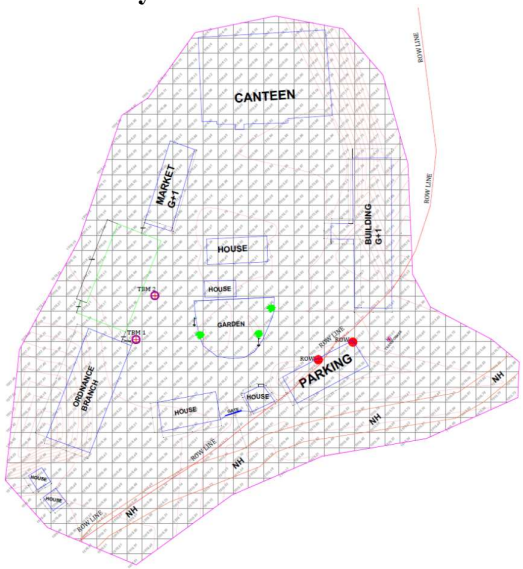

Figure 25. Site survey for proposed Old EME Wksp

Site photos

Figure 26. Existing site photos of Old EME Wksp

Figure 27. Existing site photos of Old EME Wksp

4.7 LOCATION - RTC

BUILDINGS –

- **CLUB HOUSE**
- **STAFF ROOM**

Location

Figure 28. Site location of RTC

Survey plan

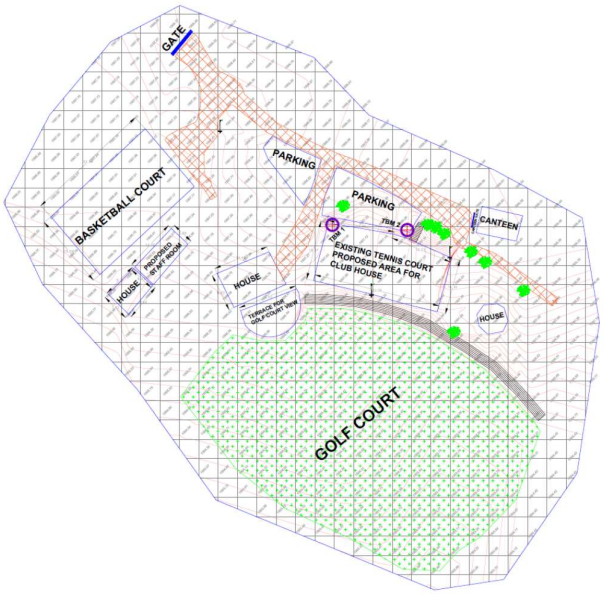

Figure 29. Site survey for proposed RTC

Site photos

Figure 30. Existing site photos of RTC

Figure 31. Existing site photos of RTC

4.8 LOCATION - OLD RHINO CSD

BUILDINGS –

- **GD ROOM**
- **SENTRY ROOM**

Location

Figure 32. Site location of OLD Rhino CSD

Survey plan

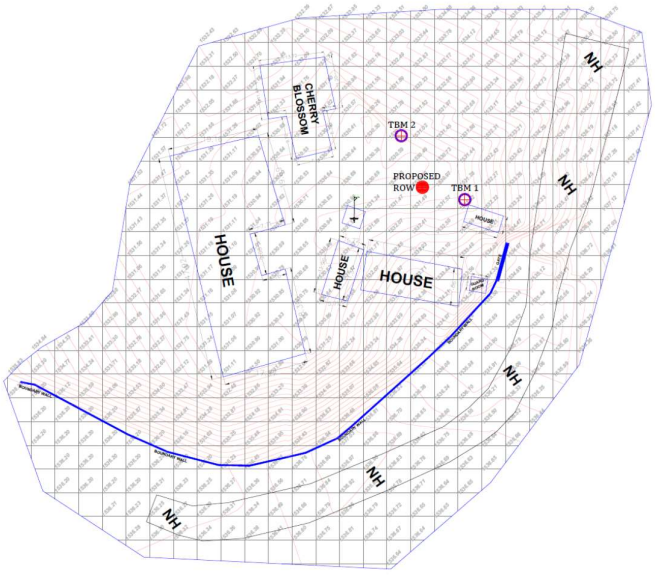

Figure 33. Site survey for proposed Old Rhino CSD

Site photos

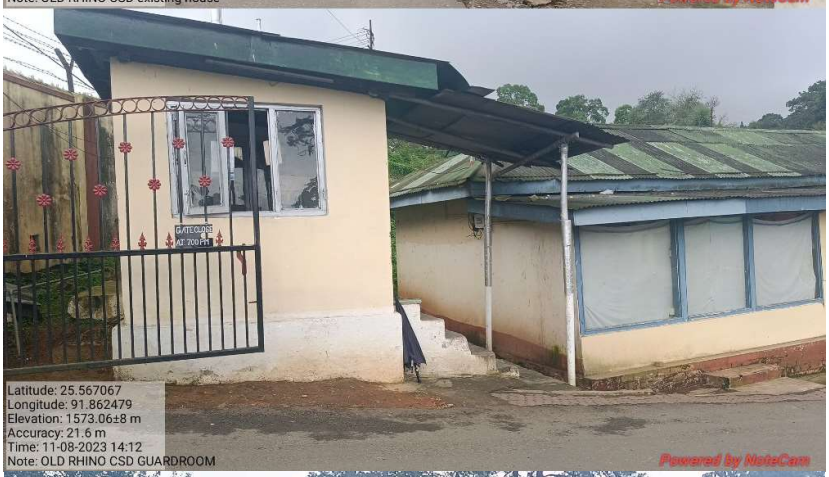

Figure 34. Existing site photos of Old Rhino CSD

4.9 LOCATION - ECSAG & GE SHILLONG

BUILDINGS –

- **GUEST ROOMS**
- **OFFICE GE**

Location

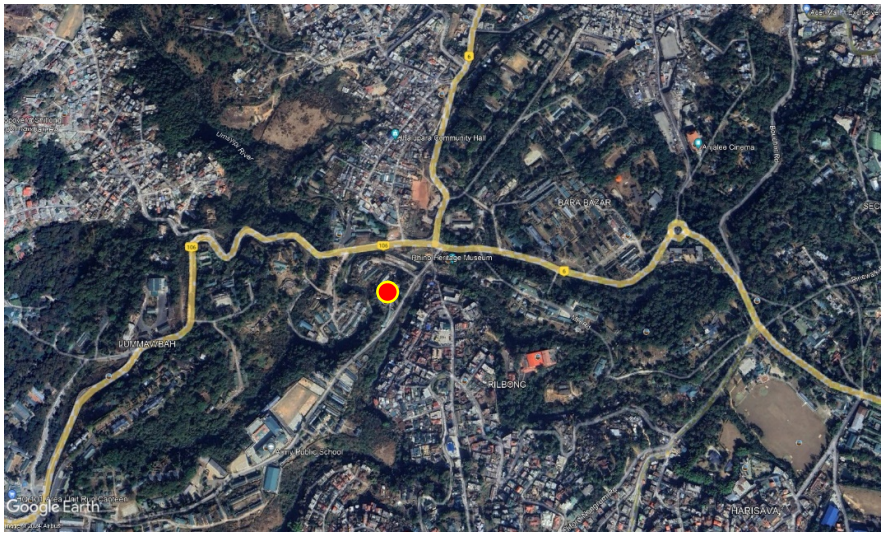

Figure 35. Site location of Guest rooms

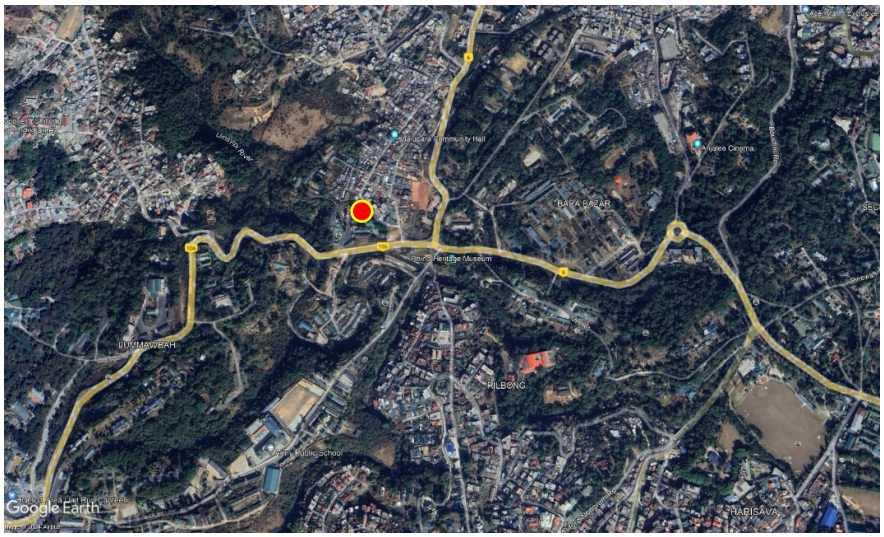

Figure 36. Site location of office GE

Survey plan

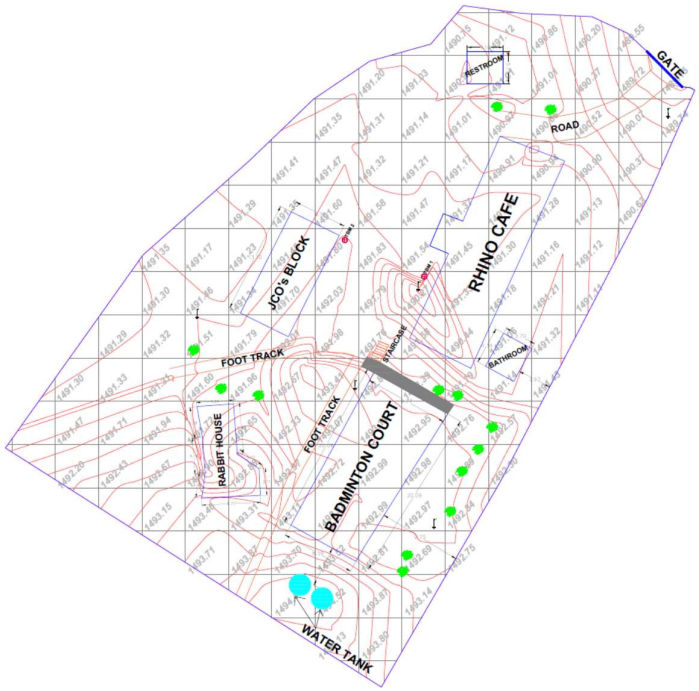

Figure 37. Site survey for proposed Guest rooms

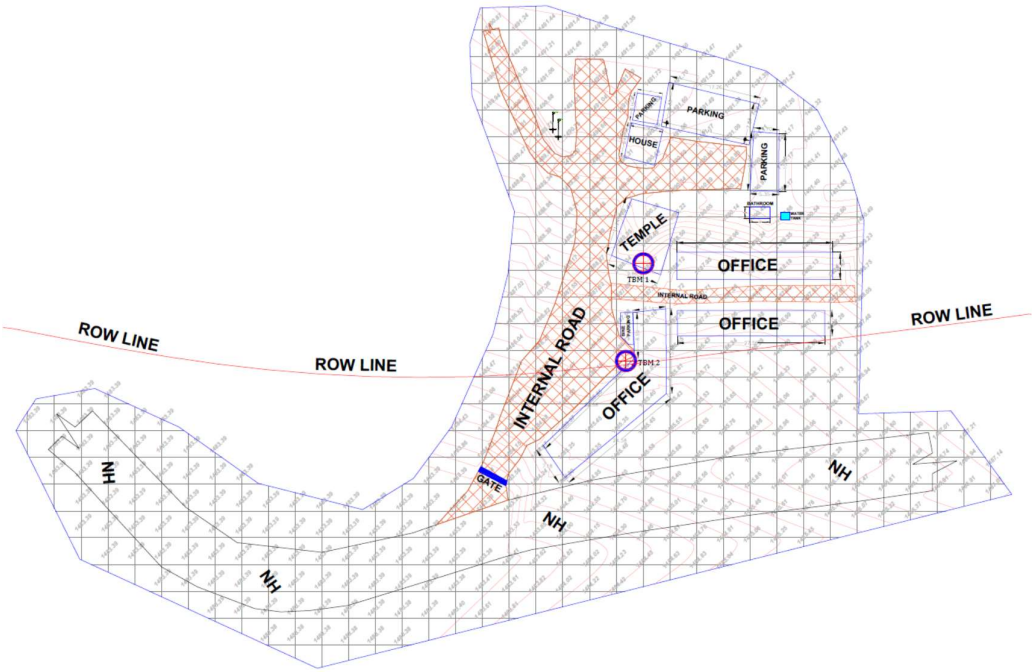

Figure 38. Site survey for proposed Office GE

Site photos

Figure 39. Existing site photos of Guest rooms

Figure 40. Existing site photos Office GE

4.10 – GTC

BUILDINGS –

- **APS SCHOOL BUILDING**

Location

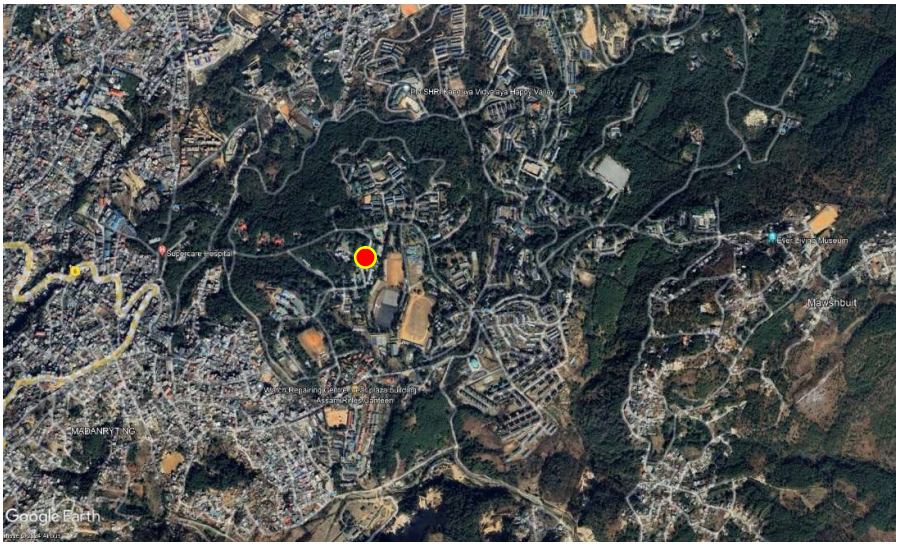

Figure 41. Site location of GTC

Survey plan

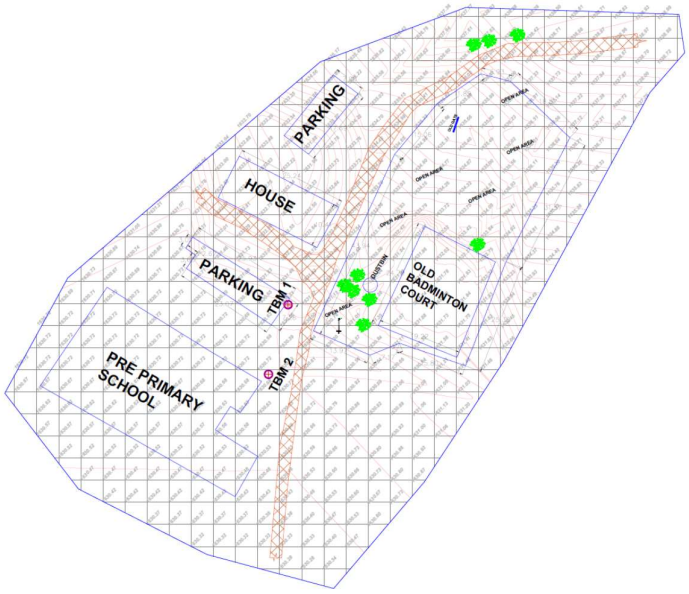

Figure 42. Site survey for proposed GTC

Site photos

Figure 43. Existing site photos of GTC

ANNEXURE -II

3. The date of handing over the Site to the Contractor

The 90% of the area shall be handed over to the Contractor on the Appointed Date and remaining 10 % within one month.

ANNEXURE-III

1. SOIL TESTING REPORT

Soil testing report is attached as Annexure-III. The Soil Report enclosed herewith is for reference only, Contractor shall be responsible for determining the soil parameters by their own arrangements and the design should be able to cater to extreme stress condition.

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SCHEDULE-B: Scope of Work for the Project

1 General

1.1 The objective here under is to develop Equal value Military facilities/buildings in defense campus Shillong with assistance from MoRTH in lieu of the military assets which were demolished due to Shillong Dawki Road Project.

1.2 An allied objective is to bring private operators into the mainstream by allowing them entry into the Military Infrastructure.

1.3 The Contractor should redevelop a State-of-the-Art Military Infrastructure with better facilities for military personals and commercial facilities thereby creating a landmark facility with iconic exteriors/ facade. The proposed infrastructure shall be planned and designed as an iconic/ landmark building with contemporary innovative design on the lines of post modernism and design elements such as colonial style using fins, pergolas, glass facia etc. The exterior/ facade of the building could be in combination of glass/ metal/ tile/ fusion of materials and the provision of blocking arrangement shall be preferably used.

1.4 Specifications and standards shall be followed as given in schedule 'D'

2 Broad Scope of Work

2.1 The development of Military Infrastructure includes construction of the following components per illustrative drawings at Schedule-I at DM Lines, Officers Mess 101 Area, MH Upper Block,M H Lower Block,101 Area main gate, TA Coy Gate,144 TA, Annexe (Old EME Wksp), RTC, Old Rhino CSD,ECSAG & GE Shillong, at Defence Campus in East Khasi Hills District, Meghalaya:

(i) Two Storey 02 Storey) family accommodation Block (08 houses) (Two Blocks of 4 houses each) for Army Officers of Major Rank at DM Lines, East Khasi Hills District, Meghalaya.

(ii) Four Storey (04 Storey) Single Officers Accommodation Block Basment+Ground+2) (18 Single Offrs Accn and car parking at Basement) for Army Officers at Officers Mess 101 Area, East Khasi Hills District, Meghalaya.

(iii) Three Storey (Lower Ground Floor + Ground Floor + First Floor) O R Line at M H Lower Block, East Khasi Hills District, Meghalaya.

(iv) Three Storey CSD Building at Old EME Workshop, East Khasi Hills District, Meghalaya.

(v) Two Storey (02 Storey) Club House at RTC, East Khasi Hills District, Meghalaya.

(vi) Block of Guest Rooms Three Storey G+2 (8 Guest Rooms at Each Floor) total 24 Nos at ECSAG East Khasi Hills District, Meghalaya.

(vii) Block of Office GE Shillong, Three Storey G+2 at GE Shillong Campus, Shillong East Khasi Hills District, Meghalaya.

(viii) Block of APS School building, Two Storey G+1 at GTC , Shillong East Khasi Hills District, Meghalaya.

(ix) Car Parking shed for 5 cars at Officers Mess 101 Area-2 Nos , Shillong East Khasi Hills District, Meghalaya.

(x) **Ancillary Buildings at MH Upper & Lower Block** , Shillong East Khasi Hills District, Meghalaya.

a) Single Storey (01 Story) Toilet Block at MH Upper Block

b) Single Storey (01 Story) Sentry Post at MH Upper Block

c) Single Storey (01 Story) Sentry Post at MH Upper Block

d) Single Storey (01 Story) Toilet Block at MH Lower Block

(xi) **Ancillary Buildings at** 101 Area main gate, TA Coy Gate & 144 TA , Shillong East Khasi Hills District, Meghalaya.

a) Single Story (01 Story) Guard room 101 Area main gate

b) Single Storey (01 Story) Guard room TA Coy Gate

c) Single Story (01 Story) Toilet Block at 144 TA

(xii) **Ancillary Buildings at** Annexe (Old EME Wksp), Shillong East Khasi Hills District, Meghalaya.

a) Garrage for 3 cars at Annexe (Old EME Wksp).

b) Car Parking shed for 10 cars at Annexe (Old EME Wksp)

c) Car Parking shed for 10 cars at Annexe (Old EME Wksp)

d) Single Story (01 Story) Toilet Block at Annexe (Old EME Wksp).

e) Single Story (01 Story) Guard Room at Annexe (Old EME Wksp.

(xiii) **Single Story (01 Story) Staff Room at RTC** , Shillong East Khasi Hills District, Meghalaya.

(xiv) **Ancillary Buildings at** Old Rhino CSD, Shillong East Khasi Hills District, Meghalaya.

a) Single Story (01 Story) Guard room at Old Rhino CSD.

b) Single Story (01 Story) Sentry Post at Old Rhino CSD.

2.2 The Contractor shall ensure that the Military Infrastructure will be constructed as per layout and detailed drawings enclosed in the bid documents and as per approved by NHIDCL in conformity to the BIS and other extant applicable Standards and Technical Specifications setforth in EPC Agreement and the Applicable Law

2.3 The Project shall be designed and constructed in conformity with the Specifications and Standards specified in Schedule-D.

2.4 The Construction works for the Military Infrastructure to be undertaken by the Contractor shall include all the construction works as per the EPC Agreement and catering to future requirements which shall include the following:

(i) The scope of works inter alia includes the detailed design, detailed engineering, preparation of all related good for construction drawings concerned and construction of the Military Infrastructure and other ancillary facilities required as per plan provided in Schedule-I including all internal services such as internal water supply, internal electric works, plumbing and sanitary works etc. complete..

(ii) Drainage and Storm water facilities like covered sewerage system and proper plumbing system in either of the buildings.

(iii) Design and construction of supporting infrastructure facilities related to Solid Waste Management, Rain Water Harvesting, Water Supply and Sanitation, Communication System.

(iv) Design and construct any ancillary facility and/or structure required for proper functioning of the Military residential infrastructure.

(v) The Contractor shall maintain the Project, including all repairs, Maintenance, rectification, restoration works, in accordance with the provisions of the Agreement, Applicable Laws and Applicable Permits, in conformity with the requirements set forth in Schedule-K.

(vi) Green measures such as solar heater, energy efficient electrical and mechanical equipment, water saving toilet fixtures, rainwater harvesting, sewerage treatment plant/ effluent treatment plant, horticulture etc. are also to be provided.

(vii) Parking management & passenger information system is to be installed in each of the building.

(viii) Contractor shall barricade entire area and ensure noise control essentially being a military area.

(ix) The Contractor shall be responsible for demolishing the existing structures wherever required as per site condition during development to military assets.

2.5 DISTRIBUTION OF AREA IS AS TABULATED BELOW.

Sl No.	FACILITIES	DESIGNATED PLINTH AREA IN (SQM)
1.	Two Storey (02 Storey) family accommodation Block (08 houses) (Two Blocks of 4 houses each) for Army Officers of Major Rank at DM Lines, East Khasi Hills District, Meghalaya.	1599.18 Sqm
2.	Four Storey (04 Storey) Single Officers Accommodation Block Basment+Ground+2) (18 Single Offrs Accn and car parking at Basement) for Army Officers at Officers Mess 101 Area, East Khasi Hills District, Meghalaya.	1433.78 Sqm
3.	Three Storey (Lower Ground Floor + Ground Floor + First Floor) O R Line at M H Lower Block, East Khasi Hills District, Meghalaya.	815.50 Sqm
4.	Three Storey CSD Building at Annexe (Old EME Wksp), East Khasi Hills District, Meghalaya.	1518.40 Sqm
5.	Two Storey (02 Storey) Club House at RTC, East Khasi Hills District, Meghalaya.	1024.95 Sqm
6	Block of Guest Rooms Three Storey G+2 (8 Guest Rooms at Each Floor) total 24 Nos at ECSAG & GE, Shillong East Khasi Hills District, Meghalaya.	1058.40 Sqm
7.	Block of Office GE Shillong, Three Storey G+2 at ECSAG & GE Shillong, Shillong East Khasi Hills District, Meghalaya.	1332.07 Sqm
8.	Block of APS School building, Two Storey G+1 at GTC , Shillong East Khasi Hills District, Meghalaya.	604.05 Sqm
9.	Car Parking shed for 5 cars at Officers Mess 101 Area-2 Nos , Shillong East Khasi Hills District, Meghalaya.	125.00 Sqm
10.	Ancillary Buildings at MH Upper & Lower Block , Shillong East Khasi Hills District, Meghalaya.	
a)	Single Storey (01 Story) Toilet Block at MH Upper Block	26.00 Sqm
b)	Single Storey (01 Story) Sentry Post at MH Upper Block	12.00 Sqm
c)	Single Storey (01 Story) Sentry Post at MH Upper Block	12.00 Sqm
d)	Single Storey (01 Story) Toilet Block at MH Lower Block	80.00 Sqm
11	**Ancillary Buildings at** 101 Area main gate, TA Coy Gate & 144 TA , Shillong East Khasi Hills District, Meghalaya.	
a)	Single Storey (01 Story) Guard room 101 Area main gate	69.06 Sqm
b)	Single Storey (01 Story) Guard room TA Coy Gate	56.00Sqm
c)	Single Storey (01 Story) Toilet Block at 144 TA	80.00 Sqm

12.	**Ancillary Buildings at** Annexe (Old EME Wksp), Shillong East Khasi Hills District, Meghalaya.	
a)	**Garrage for 3 cars at Annexe (Old EME Wksp).**	70.00 Sqm
b)	Car Parking shed for 10 cars at Annexe (Old EME Wksp)	133.00 Sqm
c)	**Car Parking shed for 10 cars at Annexe (Old EME Wksp)**	133.00 Sqm
d)	Single Story (01 Story) Toilet Block at Annexe (Old EME Wksp.	50.00 Sqm
e)	Single Story (01 Story) Guard Room at Annexe (Old EME Wksp.	32.04 Sqm
13.	Single Story (01 Story) Staff Room at RTC , Shillong East Khasi Hills District, Meghalaya.	57.00 Sqm
14.	**Ancillary Buildings at** Old Rhino CSD, Shillong East Khasi Hills District, Meghalaya.	
a)	Single Story (01 Story) Guard room at Old Rhino CSD.	20.5 Sqm
b)	Single Story (01 Story) Sentry Post at Old Rhino CSD.	12.00 Sqm
	TOTAL	10354.29 Sqm

Contractor while designing the Military Infrastructure should follow the above area provisions only. In the interest of work 5% deviation in consultation with authority is permissible and the cost shall be deemed to be included in Schedule 'H'.

3 Investigation, Planning, Designing for Entire Scope of Work

The Civil/Structural Design & Drawings (whether RCC or Structural Steel or composite) expressly (but not limited to) includes the following: -

(a)Studying the Architectural Concept/preliminary Design, Structural Design Philosophy, submitting proposed structural design framework of each building/floor/area and obtaining approval of Employer. Due care to be taken for integrating the structural drawings with the Architectural Drawings & with all MEP Services & Elevation features etc.

(b)Design on appropriate software like STAAD-Pro/ETABS and drawing on a software like Auto CAD including fabrication drawings, shop drawings, bar bending schedule etc. of each and every component of buildings/spaces within Scope of work on suitable scale (6 no. of sets of each drawing), including but not limited to:

(i) Diaphragm wall with soil anchors for bulk excavation if required.
(ii) Sheet piling if required to safeguard existing trees
(iii) Foundation Drawings/Details & Schedule, whether raft or strip footing and/or combination of footings/Pile footing (if required).
(iv) Column Drawings/Schedule with capital and flat slabs.
(v) Suspended floors, roofs, landings, balconies and access platform.
(vi) Shelves (Cast in situ/pre-cast);
(vii) Lintels, beams, plinth beams, girders, bressummers and cantilevers;
(viii) Columns, Pillars, Piers, Abutments, Posts and Struts;
(ix) Stairs (including landings)
(x) Curved floor plates in plan
(xi) Shafts;
(xii) Vertical and horizontal fins individually or forming box louvers band, facias

and eavesboards.

(xiii) All steel structures in landscape/building such as projection, pergolas, trellis, porch etc.

(xiv) Centering & shuttering using steel/wooden form work/with all due fitments as necessary.

(xv) All steel structure including 2 hr fire protection using fire paint.

(xvi) Mechanical, Electrical & Piping works

(xvii) Any other work required to complete the scope of work

Materials and construction systems has been selected to be consistent with the requirements of a „lifeof the building" as defined in Table 1 of IS 875: "Code of practice for design loads of building and construction". This category relates to "Important buildings and structures" and recommends a specified design life of 50 years of all structures.

Planning and design of all services shall comply the requirements stipulated in NBC- 2016, latest BIS codes, super ECBC norms as per ECBC-2017. In case of any conflict among ECBC, and scope of work, superior provision is to be adopted. Decision of accepting officer regarding superior provisions shall be final and binding. Brief of architectural norms, structural design parameters, and MEP services as under:-

- **Concept planning**: Based on scope of work and preliminary drawings, contractor shall develop, elevations and sections for the buildings and detailed site layout plan (master plan showing road, path, culvert, drains, arboriculture, landscaping and other services) including all services and schedule of finishes, complying the requirements stipulated in NBC-2016, latest BIS codes, super ECBC norms & as per ECBC-2017.

  The Analysis and design of structure shall be carried out as per latest codes published by BIS. Some of these are IS : 456, IS : 875, IS : 1893, IS : 13920, IS : 3370, IS : 800 and NBC. The seismic zone to be considered is zone V as per IS : 1893 & Basic wind speed as 39 m/sec (IS : 875 part-3). The details regarding seismic zone and basic wind speed have been provided for guidance only and design shall include as per actual condition prevailing the construction site The design of the civil structure will comply with the requirements of the following:

  - National Building Code
  - Local Building Regulations
  - Bureau of Indian standard codes
  - International codes as applicable
  - Any other regulation as per requirements

- The proposed buildings are to be constructed having rectangular configuration with Special moment resisting RCC framed arrangement and to be analyzed and designed for earthquake by static analysis as well as dynamic analysis as stated in IS : 1893- 2016, Importance factor is to be taken as 1.5 for the officers DUs. Importance factor for the other buildings shall be taken as per IS code. Structures are to be analyzed as space frames and design to be carried out using latest version of standard software like STAAD Pro/ ETABS.

- **RCC Structure** :

  (i) Design of RCC elements shall be carried out using Limit State Method as per IS 456.

  (ii) As per Table 3 of IS 456: 2000, the environmental exposure condition can be classified as "moderate."

  (iii) The fire resistance of the structure is to be taken as minimum of 2 hours.

  (iv) RCC (Design Mix): M30 grade (minimum) of concrete shall be adopted.

  (v) Reinforcement: FE 500D (TMT).

  (vi) No lapping of bars is allowed for diameter of bars greater than 16 mm, mechanical couplers as per IS : 16172 shall be used.

  (vii) Main reinf of beam shall not be bent up and hence shear reinf shall be in the form of vertical stirrups only.

- **Steel Structure/ Structural steel** :
  (i) All structural steel shall be designed as per IS : 800, using Limit State Method.
  (ii) All structural steel shall conform to IS : 2062.
  (iii) The Square Hollow Sections (SHS)/ Rectangular Hollow Sections (RHS) shall be used of grade YST 310 as per IS: 4923. Structural steel shall be of 350 MPa conforming to grade E350A/BO/BR as per IS : 2062. The minimum thickness of plate shall be 6 mm.
  (iv) All anchor bolts shall be of grade 10.9 conforming to IS : 1367 and of minimum size 12 mm. The cover to anchor bolts shall be 40 mm or 1.5 times the diameterof bolt, whichever is more.
  (v) Suitable provisions shall be made to design and construct special provisions of insert plates, anchor fasteners, Cutout, etc

- **Liquid Retaining/storage RCC structures** : All liquid retaining/ storage RCC structures shall be leak proof and shall be designed as per IS: 456 and IS : 3370. In all liquid retaining structures, PVC water bars shall be provided at each construction joint. All grouts shall be non-shrink grout. In addition, concrete for such structures shall be waterproof concrete. For water tanks and underground sumps, crack width shall be limited to 0.2 mm as per Clause 35.3.2 of IS 456:2000. Minimum concrete grade shall be M30 for water tanks. Reinforcement for water retaining structure shall be Fe 500 D CRS/HCR Bars.
- No reduction in Live Load {as stated at Para 3.2 of IS ; 875 (Part –II)} is to be considered for design of structure.
- Expansion & contraction due to change in temperature of the materials of a structure shall be considered in design. Provision shall be made either to relieve the stress by provision of expansion/contraction joints in accordance with IS : 3414 or design the structure to carry additional stresses due to temperature effects as appropriate to the problem.
- Building Walls/Frame panels shall be constructed with sub class „B" bricks, kiln burnt, locally available, best quality conforming to the samples kept in CWE/GE"s office. Bricks shall have minimum compressive strength of **100** Kg/Sqcm.
- Other design parameters will be as per relevant BIS codes.
- The retaining wall, if required and all other sub structure members, if any will be designed based on the soil parameters specified in the soil report.
- The specified design life of the structure is to be taken as 50 years for all buildings.

Third Party vetting of Design and Drawing and its report.

(a) The vetting of following documents shall be got done from any IIT/NIT.
  (i) Input data/structure file.
  (ii) Design Basis Report and list of codes and BIS publication referred for the design.
  (iii) Design calculations.
  (iv) Structural drawings
(b) The above vetted documents should be signed by authorized signatory on behalf of the Institute and not by professor/individual of the Institute in personal capacity.
(c) The third party vetting the designs/drawings shall also be liable for ensuring that the designs and drawings produced are in compliance with laid down standards, regulations and sound engineering practices.
(d) A certificate that all design parameters and other design details have been thoroughly checked and are in compliance to standards, codes, regulations in respect of safety and soundness shall be obtained from the vetting agency.
(e) The vetting agency shall also be liable and answerable for any design deficiencies detected during design life of the building and may be called upon to address such issues, if any.

DESIGN PARAMETERS OF CIVIL WORKS

- **Topographical survey**: Carrying out Digital Topographic land survey with Total Electronic Station of high precision, making position of each physical feature on the ground true to their position like building, sewer lines/storm water drains, manholes and sump wells, water bodies, large size rocks, GI & CI lines, fully grown trees having girth more than 30 cm, overhead HT/LT electric lines, transformers, substation, OHT, Tube wells, electric & Telephone cables and poles, roads, paths, existing permanent/ temporary structures, fencing boundary walls/lines gates, drain etc i.e. height of inaccessible structure like HT lines, OHT etc., preparing the contour plan of suitable contour intervals depending upon the topography of the terrain & preparing drawing in A-1 size, recording reduced levels of points of abrupt changes at suitable intervals, fixing temporary Bench Marks (TBM) and marking them on ground with paint as required, calculation of area and other details of surveyed pockets with submission of three Nos coloured drawing along with one soft copy on compact disk (CD) to the 1: 1000 or suitable scale & plotting on Auto CA. Based on this survey, various levels for buildings, road/ path/ culverts, storm water drains, sewage network, security wall, landscaping and other relevant services will be decided by the contractor.

- **Engineering Data for foundation**: Soil investigation report of proposed work is enclosed as per
- Schedule I "for reference and guidance only. However, the Contractor shall be responsible for determining the soil parameters by their own arrangements and the design should be able to cater to extreme stress condition. The contractor will decide about the type of foundation, depth etc. based on his independent detailed soil investigation of the site for various buildings, utility and ancillary buildings. Detailed geo-technical investigation report will be submitted in triplicate to Authority's Engineer.
- **Site clearance and Development**: Based on the topographical survey, complete site development and clearance including bushes and natural vegetations including shrubs (trees) of less than 30 cm girth of the proposed site to the required levels (MGLs) will be the responsibility of the contractor. The disposal of surplus soil, if any, will be disposed off by the contractor out of defence land under his own arrangements. Additional soil, if required to achieve the desired levels, will be arranged by the contractor out of defence land under his own arrangement.

DESIGN PARAMETER OF E/M WORKS:

Internal Electric supply and earthing system: Designing, supply, installation, commissioning and testing of internal electrification with controls, 5A/15 Amps sockets etc in accordance with ECBC- 2017, as per building envelope / plan being planned under relevant item of this tender duly prepared by MEP consultant approved by MES and vetted by NIT/IIT, to achieve requirements stipulated for Super ECBC Buildings as per ECBC-2017 and NBC.

Internal wiring will be done by 1100 Volt grade FRLS insulated flexible copper wires, confirming to IS: 694, in Medium duty PVC conduit concealed neatly. Medium Duty PVC conduit will be used for wiring/ extra

low voltage wiring e.g. Telephone cable, data cable, and security co-axial cable, etc wherever concealed in concrete. In all other areas, MS conduit will be used in case of surface conduit like risers, plant rooms, car park and above false ceiling. Generally, the whole wiring installation shallbe done in accordance to IS: 732. The lighting circuit/point wiring shall be carried out with 1.5 sq. mm only, while power wiring shall becarried out either with 2.5 / 4.0 Sq. mm, according to load requirement. Colour code shall be maintained for the entire wiring installation i.e. Red, Yellow and Blue for the phases and black for neutral and green for earthing.

General-purpose outlets shall be rated at 240V, 2P+E 5A/15A BS type will be provided through out. Weatherproof industrial socket outlets shall be used in all service areas and wet locations. All sockets shall be shuttered type. Sockets are also to be provided in the Common areas for cleaning and in the utility room like sub-stations, pump room etc.

Premium range Modular plate switches/sockets / step type fan regulators etc along with associated accessories shall be provided. Ceiling fans(BLDC type with remote) shall be provided in all the rooms. Fans shall be 5 star rated and complying IS : 374. Adequate capacity exhaust fans will be provided in Toilets/ kitchens etc. as per authorization.

Complete wiring scheme along with sub-main wiring & location of various DBs shall be planned to minimize circuit lengths. The factory-made sub distribution boards for distribution of light, power, small machines load etc. shall be recessed in wall with MCCBs/ MCBs/RCCBs as incoming/outgoing and shall be connected with related MDB through FRLS insulated flexible copper wires of suitable size with earth wire in concealed/surface conduit. For common areas, separate control at suitable locationsis desired for easy operation.
The tentative items involved in internal electric supply and earthing system as per departmental planning is enclosed for guidance of contractor.

LIGHTING: Designing, supply, Installation, commissioning and testing of internal lighting incorporating day lighting in accordance with ECBC-2017, as per building envelope / plan being planned under relevant item of this tender duly prepared by MEP consultant approved by MES and vetted by NIT/IIT, to achieve requirements stipulated for Super ECBC Buildings as per ECBC-2017 and NBC.
External Water Supply: Design, supply, installation and commissioning and testing for external water supply system i.e. GI Pipe lines, Pumps, Control panels, cables, Cable trays with valves and storage tanks U/G LT cables to meet the water requirement & fire fighting requirement.

External Electric supply and Standby Power:

(a) Design, Supply, installation, commissioning and testing for external electric supply system i.e. HT switchgears, Transformers (N+1), Standby power DG sets with U/G HT /LT cables/ Bus truncking , Cable trays to meet the electric requirement duly prepared by MEP Consultant approved by MES and vetted by NIT/IIT, to achieve requirements stipulated for super ECBC as per ECBC-2017 and NBC- 2016. Also all technical & safety parameters as mentioned in Central Electricity Authority regulations 2010 should be complied with. Scope of work for EPC contractorwith respect to HT shall commence from 11 KV HT Panel onwards situated at 33/11 KVsubstation. 11KV power shall be tapped through 11 KV HT cables from outgoing feeders of 11 KV HT Panel for feeding 11 KV HT power supply to the proposed two No. 11/0.433 KV substations.

(b) Prepaid Digital Energy Meters shall be provided fro all 32 Md offrs accn as per the calculations to be done by the contractor. The prepaid meters, BIS 15884 marked in mter board. Prepayment touch key pad of latest technology/version shall be provided for all 32 Md Officers Accn as per load calculations to be done by the contractor. The prepaid energy meters will be integrated with the existing server. The make of the prepaid energy meter shall be the make of the existing server.

(c) The tentative items involved in External Electric supply and Standby Power as per departmental planning is enclosed for guidance of contractor

Fire detection & Fire fighting system:

(a) Design, Supply, Erection, Testing and Commissioning of firefighting system consisting of fire hydrant system complete in all respect duly checked and vetted by MEP Consultant (approved by MES) and approved by CFEES. The scheme shall be prepared as per CFEES letter No. 0225/IFA/CFEES/2020 dt 18 Mar 2020 and shall be got approved from Fire Advisor of CFEES in consultation with department. The work and all plant, equipments and materials forming part of this contract shall comply in all respect with relevant statutory regulations, by-laws and other regulations currently in force.

(b) The contractor shall finalise the design & drawings and shall prepare Single Line Diagram (SLD) for firefighting lines on latest AutoCAD software (genuine licensed version software) and submit 03(three) copies on A1 siz white paper for approval by CFEES. It shall be the responsibility of contractor to get the final plan approved from CFEES (after incorporating all corrections needed) before commencing the execution of work.

(c) For access to fire tenders, a clear motorable approach of at least 6 meter shall be kept for movement of fire tenders all around the building. The width of the main entrance to the complex shall not be less than 5.5 meters.

Lifts:

(a) Design, Supply, Erection, Testing and Commissioning of two goods lifts and two passenger lifts for 8 passengers for the block of CSD, Guest house and single Accn duly checked and vetted by MEP Consultant approved by MES, complying with the requirements stipulated in, relevant BIS Codes and NBC.

(b) The elevators shall conform generally to the following IS standards including their latest amendments or their approved equivalent US/BS/ISO :-

IS 14665: 2000 Electric Traction Lifts Part1 : Outline

Dimensions

Part 2 : Code of practice for Installation, Operation Maintenance Part 3 : Sec 1 Safety Rules; Passenger and Goods Lifts
Part 4 : Sec 1-9 Components Part 5 : Inspection Manual
IS 2365: 1977 Steel wire suspension rope for lifts and hoists IS 8216:1976 Guide for Inspection of Lift Wire Ropes
IS 4289 Specification for Flexible Cables for Lifts and Other Flexible Connections
Part 1: 1984 Elastomer Insulation Cables
Part 2: 2000 PVC insulated Circular Cable
National Building Code 2016 Vol 2 Part 8 Sec 5A and 5B

(c) All lifts shall have necessary provisions & door opening as required for physically challenged person.

(d) Power supply to each elevator shall be connected with dual source. One elevator from each bank of elevators shall be key operated to be used as fireman‟s lift as per code.

(e) Lift case opening panel shall be equipped with Braille buttons. Automatic rescue device and emergency lighting shall be provided in each elevator supported by independent rechargeable batteries.

3.1 FOLLOWING CLEARANCES TO BE OBTAINED

SN	Clearances Required	Status	Remarks
1	Land Acquisition	Required land has already been acquired and site of construction to be intimated later.	- The requisite clearances wherever applicable shall be obtained by Contractor from the concern Authority/Intity.
2	Building Construction Permission	Required	
3	Heritage Clearance	Required	
4	Water & Sewerage Connection	Required	
5	Shifting of Services and utilities	Required	
6	Traffic Management during Operation	Required	

7	Application for PAN, sales tax and other tax registrations etc.	Required	
8	Electricity connection	Required	
9	Clearance for employing labor-Primary Employer	Required	
10	Clearance for blasting and use of Explosives	Required	
11	Employment of migrant labour	Required	
12	Storage of sludge/silt	Required	
13	Environmental Clearance	Required	
14	License for commercial activities	Required	
15	Realignment and channelization of Nallas	Required	
16	Installation of Lifts	Required	
17	Fire safety equipment	Required	
18	Firefighting system clearances	Required	
19	Drains and Sewers	Required	
20	Diesel Generator	Required	
21	Labour Camps	Required	
22	Working in Night Shifts	Required	
23	Re-routing of vehicular traffic	Required	

3.2 Digital walk through video of complete Military Infrastructure perspective view of minimum two minutes shall be provided to the NHIDCL before start of physical work.

4 Construction of Gates/ Boundary Wall

4.1 Gate/Boundary walls to be constructed near the adjacent buildings if required for security reason .

5 Detailed Scope of Work

5.1 TWO STOREY (02 STOREY) FAMILY ACCOMMODATION BLOCK (08 HOUSES) (TWO BLOCKS OF 4 HOUSES EACH) FOR ARMY OFFICERS OF MAJOR RANK AT DM LINES, EAST KHASI HILLS DISTRICT, MEGHALAYA

This accommodation of two Blocks has an area of 799.59x2= 1599.18 sqm.

(i) The major component of the Each block has been tabulated below in accordance to which the work would be executed at site:

Ground Floor Details

SN	Component	QTY	Unit
A	**Residential House – 2 houses on ground floor on either side (Break up Area of One house is as under for reference)**		
1	Master Bed room Washroom Dressing	22.51 5.09 3.80	Sqm
2	Bedroom 1 Washroom	17.63 4.57	Sqm
3	Bedroom 2 Washroom	18.72 5.04	Sqm
4	Drawing room	19.43	Sqm
5	Kitchen and store	20.43	Sqm
6	Dining Lounge	23.16	Sqm
7	Entry Platform	11.79	Sqm
8	Lobby	2.55	Sqm
B	**Servant Quarters – 2 quarters on either side of staircases**		
1	Servant Room	16.79	Sqm
2	Washing room (Bath +WHB)	3.50	Sqm
3	W C	2.36	Sqm
C	**Parking – Total 4 nos of parking with 2 on each side of the staircase**	15.26	Sqm

D	Staircases		
1	L shaped staircase with Rectangular Landing/Platform(Servant Stair)	7.25	Sqm
2	U shaped staircase with one landing Main Stair Case	18.99	Sqm

*This is just a detailed representation of plan. Contractor shall take the other details in accordance with the drawing of Ground Floor Plan at Schedule I.

First Floor Details

SN	Component	QTY	Unit
A	**Residential House – 2 houses on first floor on either side (Break up Area of One house is as under for reference)**		
1	Master Bed room Washroom Dressing	22.51 5.09 3.80	Sqm
2	Bedroom 1 Washroom	17.63 4.57	Sqm
3	Bedroom 2 Washroom	18.72 5.04	Sqm
4	Drawing room	19.43	Sqm
5	Kitchen	20.43	Sqm
6	Dining Lounge	23.16	Sqm
7	Verandah	12.14	Sqm
8	Lobby	2.55	Sqm
B	**Servant Quarters – 2 quarters on either side of staircases**		
1	Servant Room	16.79	Sqm
2	Washing room (Bath +WHB)	3.5	Sqm
3	W C	2.36	Sqm
C	**Terrace – Total 2 nos of Terrace on each side of the staircase**	8.62x2	Sqm
D	**Staircases – the same connecting the ground floor**		Sqm
1	L shaped staircase with Rectangular Landing/Platform(Servant Stair)	7.25	Sqm
2	U shaped staircase with one landing (Main Stair Case)	18.99	Sqm

*This is just a detailed representation of plan. Contractor shall take the other details in accordance with the drawing of First Floor Plan at Schedule I.

Roof Top Details

SN	Component	QTY	Unit
A	**RCC Terrace and Galvalume sheet roofing**	Overall area	
B	**Coverage over Verandah - 2 on either side of U shaped staircases**	As per 1st floor	
C	**PVC Water storage tank – 2 tanks(For Main Qtr and 2 Tanks for Servent Qtr) on either side of the L- shaped staircase(Servant Stair)**	As per specification	

*This is just a detailed representation of plan. Contractor shall take the other details in accordance with the drawing of Terrace Plan at Schedule I.

(ii) Plumbing Components

The Contractor has to install the following tabulated plumbing components:

SN	Component	QTY
A	**Water closer (European Type) with bolts, nuts, hanging arrangement etc**	As per approved design
B	**Oval/Circular wash basin with water assembly and other necessary components**	
C	**Single liver basin mixer**	
D	**Stainless Steel A ISI 304 (18/8) kitchen sink**	
E	**Glass mirror**	

*Apart from this, all the requisite washroom should be fitted with equipment's as per the standards of Military infrastructure.

(iii) Drainage System

- All necessary fittings/fixers required for effective drainage shall be provided.
- Proper manhole should be constructed by the Contractor in accordance with the standard design.
- Water storage Tank should be set up by the Contractor as detailed above.
- Setting up of Domestic water relift pump by the Contractor.
- Proper connection of PVC, bends and other connection should be put up in accordance with the approved standard design.

(iv) Electric Part

- Proper installation of fans and exhaust should be done by the Contractor in accordance with the standard design.
- FRLS PVC Wiring of all the electrical component as per the approved design.
- Proper connection of lighting and other electrical components shall be done by the Contractor in accordance with the approved standard design.

5.2 2). FOUR STOREY (04 STOREY) SINGLE OFFICERS ACCOMMODATION BLOCK BASMENT+GROUND+2) (18 SINGLE OFFRS ACCN AND CAR PARKING AT BASEMENT) FOR ARMY OFFICERS AT OFFICERS MESS 101 AREA, EAST KHASI HILLS DISTRICT, MEGHALAYA.

This accommodation Block has an area of 1433.78 sqm.

(i) The major component of the block has been tabulated below in accordance to which the work would be executed at site:

Basement Floor Details

SN	Component	QTY	Unit
A	**Basment**		
1	Car Parking	12	Nos
2	Corridor	16.92	Sqm
3	Lift Lobby	14.66	Sqm
4	Lift well and store	10.33	Sqm
5	Stair Case	23.73	Sqm

*This is just a detailed representation of plan. Contractor shall take the other details in accordance with the drawing of Basement Floor Plan at Schedule I.

Ground Floor Details

(ii) The Ground floor consists of 6 Single Officer Accommodation. The major component of the Eash unit has been tabulated below in accordance to which the work would be executed at site:

SN	Component	QTY	Unit
A	**Single Officer Accommodation – 6 houses on ground floor (Break up Area of One house is as under for reference)**		
1	Bedroom Toilet Dressing	15.75 5.82 3.43	Sqm
2	Living Area	14.83	Sqm
3	Balcony/Verandha	5.91	Sqm
4	Kitchen	10.71	Sqm
5	Lift	5.48	Sqm
6	Lift Lobby	17.73	Sqm
7	Stair Case	18.11	Sqm
8	Stair Case	9.82	Sqm
9	Corridor/Stair Lobby/Platform	9.60	Sqm
10	Corridor	11.01	Sqm
11	Ramp and Ent Platform	As per plan	

*This is just a detailed representation of plan. Contractor shall take the other details in accordance with the drawing of Ground Floor Plan at Schedule I.

(iii) **First Floor Details**

SN	Component	QTY	Unit
A	**Single Officer Accommodation – 6 houses on First floor (Break up Area of One house is as under for reference)**		
1	Bedroom Toilet Dressing	15.75 5.82 3.43	Sqm
2	Living Area	14.83	Sqm
3	Balcony/Verandha	5.91	Sqm
4	Kitchen	10.71	Sqm
5	Lift	5.48	Sqm
6	Lift Lobby	17.73	Sqm
7	Stair Case	18.11	Sqm
8	Stair Case	9.82	Sqm
9	Corridor/Stair Lobby/Platform	9.60	Sqm
10	Corridor	11.01	Sqm

*This is just a detailed representation of plan. Contractor shall take the other details in accordance with the drawing of First Floor Plan at Schedule I.

(iv) **Second Floor Details**

SN	Component	QTY	Unit
A	**Single Officer Accommodation – 6 houses on Second floor (Break up Area of One house is as under for reference)**		
1	Bedroom Toilet Dressing	15.75 5.82 3.43	Sqm
2	Living Area	14.83	Sqm
3	Balcony/Verandha	5.91	Sqm
4	Kitchen	10.71	Sqm
5	Lift	5.48	Sqm
6	Lift Lobby	17.73	Sqm
7	Stair Case	18.11	Sqm
8	Stair Case	9.82	Sqm
9	Corridor/Stair Lobby/Platform	9.60	Sqm
10	Corridor	11.01	Sqm

*This is just a detailed representation of plan. Contractor shall take the other details in accordance with the drawing of Second Plan at Schedule I.

(v) **Roof Top Details**

SN	Component	QTY	Unit
A	**RCC Terrace with pre-coated galvanised iron profile sheets**	Overall area	
B	**PVC Water storage tank – 1 tanks for each single Officer Accn on toilet terrace**	As per Require ments	
C	**Galvalume sheet roofing with MS Truss**	As per Specificatio ns	

*This is just a detailed representation of plan. Contractor shall take the other details in accordance with the drawing of Terrace Plan at Schedule I

(vi) Plumbing Details

The Contractor has to install the following tabulated plumbing components:

SN	Component	QTY	Unit
A	**Water closer (European Type) with bolts, nuts, hanging arrangement etc**	As per approved design	
B	**Oval/Circular wash basin with water assembly and other necessary components**		
C	**Single liver basin mixer**		
D	**Stainless Steel A ISI 304 (18/8) kitchen sink**		
E	**Glass mirror**		

*Apart from this, all the requisite washroom should be fitted with equipments as per the standards of Military infrastructure.

(vii) Drainage System

- All necessary fittings/fixers required for effective drainage shall be provided.
- Proper manhole should be constructed by the Contractor in accordance with the standard design.
- Water storage Tank should be set up by the Contractor as detailed above.
- Setting up of Domestic water relift pump by the Contractor.
- Proper connection of PVC, bends and other connection should be put up in accordance with the approved standard design.

(viii) Electric Part

- Proper installation of fans and exhaust should be done by the Contractor in accordance with the standard design.
- FRLS PVC Wiring of all the electrical component as per the approved design. Proper connection of lighting and other electrical components shall be done by the Contractor in accordance with the approved standard design

5.3 Three Storey (Lower Ground Floor+Ground Floor+First Floor) O R Line at M H Lower Block East Khasi Hills District, Meghalaya.

This accommodation Block has an area of 815.5 sqm.

(i) The major component of the block has been tabulated below in accordance to which the work would be executed at site:

Lower Ground Floor Details

SN	Component	QTY	Unit
	O R Line Rooms,Stair, Ver and Toilet		
1	Room	28.48	Sqm
2	Room	53.31	Sqm
3	Room	27.32	Sqm
4	Stair	22.3	Sqm
5	Verandah	46.35	Sqm
6	Toilet	36.7	Sqm

*This is just a detailed representation of plan. Contractor shall take the other details in accordance with the drawing of Ground Floor Plan at Schedule I.

Ground Floor Details

SN	Component	QTY	Unit
	O R Line Rooms, Stair, Verandah, Entertainment Room and Toilet		
1	Open Verandah	28.48	Sqm
2	Room	53.31	Sqm
3	Room	27.32	Sqm
4	Stair	22.3	Sqm
5	Verandah	46.35	Sqm
6	Toilet	36.7	Sqm
7	Room	53.31	Sqm
8	Room	26.66	Sqm
9	Room	26.66	Sqm
10	Verandah	42.15	Sqm
11	Entertainment Room	26.83	Sqm

*This is just a detailed representation of plan. Contractor shall take the other details in accordance with the drawing of Ground Floor Plan at Schedule I.

First Floor Details

SN	Component	QTY	Unit
A	**Residential House – 2 houses on first floor on either side**		
1	Room	53.31	Sqm
2	Room	26.66	Sqm
3	Open Verandah	26.66	Sqm
4	Verandah	52.54	Sqm
5	Entertainment Room	26.83	Sqm
6	Stair	22.97	Sqm

*This is just a detailed representation of plan. Contractor shall take the other details in accordance with the drawing of First Floor Plan at Schedule I.

Roof Top Details

SN	Component	QTY	Unit
A	**RCC Terrace at First floor above Toilet and 80mm thick insulated Puff panels on roof**	Overall area	
B	**PVC Water storage tank**	As per Requirement	

*This is just a detailed representation of plan. Contractor shall take the other details in accordance with the drawing of Terrace Plan at Schedule I

(ii) Plumbing Components

The Contractor has to install the following tabulated plumbing components:

SN	Component	QTY	Unit
A	**Water closer (European Type) with bolts, nuts, hanging arrangement etc**	As per approved design	
B	**Oval/Circular wash basin with water assembly and other necessary components**		
C	**Single liver basin mixer**		
D	**Stainless Steel A ISI 304 (18/8) kitchen sink**		
E	**Glass mirror**		

*Apart from this, all the requisite washroom should be fitted with equipments as per the standards of Military infrastructure.

(iii) Drainage System

- All necessary fittings/fixers required for effective drainage shall be provided.
- Proper manhole should be constructed by the Contractor in accordance with the standard design.
- Water storage Tank should be set up by the Contractor as detailed above.
- Setting up of Domestic water relift pump by the Contractor.
- Proper connection of PVC, bends and other connection should be put up in accordance with the approved standard design.

(iv) Electric Part

- Proper installation of fans and exhaust should be done by the Contractor in accordance with the standard design.
- FRLS PVC Wiring of all the electrical component as per the approved design.

Proper connection of lighting and other electrical components shall be done by the Contractor in accordance with the approved standard design.

5.4 THREE STOREY CSD BUILDING AT ANNEXE (OLD EME WKSP), EAST KHASI HILLS DISTRICT, MEGHALAYA.

This CSD Block has an area of 1518.40 sqm.
The major component of the block has been tabulated below in accordance to which the work would be executed at site:

Ground Floor Details

SN	Component	QTY	Unit
A	Grocery food items/Hygienic Items with Checking counter	207.56	Sqm
B	Grocery Store	66.58	Sqm
C	Gents Toilet with 02 WC , 04 WHB and 03 Urinals	24.39	Sqm
D	Ladies Toilet with 01 WC, 03 WHB and JC	13.29	Sqm
E	Stair	21.28	Sqm
F	Goods Lift Capacity 1.5 Ton	7.44	Sqm
G	Passenger Lift	8.05	Sqm
H	Ramp with store below	81.2	Sqm
I	Lift Lobby/Passage/Corridor	76.21	Sqm

*This is just a detailed representation of plan. Contractor shall take the other details in accordance with the drawing of Ground Floor Plan at Schedule I.

First Floor Details

SN	Component	QTY	Unit
1	Liquor Store	26.07	Sqm
2	Liquor Shop	92.37	Sqm
3	Watches/Cosmetics	64.48	Sqm
4	URC Office	11.20	Sqm
5	OIC/URC	11.88	Sqm
6	Lobby	14.26	Sqm
7	Gents Toilet with 02 WC , 04 WHB and 04 Urinals	23.58	Sqm
8	Ladies Toilet with 01 WC, 02 WHB	9.56	Sqm
9	Officers Gents Toilet 01 WC , 02 WHB and 03 Urinals	13.26	Sqm
10	Officers Ladies Toilet with 01 WC, 01 WHB	7.50	Sqm
11	Stair	21.28	Sqm
12	Goods Lift Capacity 1.5 Ton	7.44	Sqm
13	Passenger Lift	8.05	Sqm
14	Ramp	81.2	Sqm
15	Lift Lobby/Passage/Corridor	113.87	Sqm

*This is just a detailed representation of plan. Contractor shall take the other details in accordance with the drawing of First Floor Plan at Schedule I.

Second Floor Details

SN	Component	QTY	Unit
1	**Electronic Store**	52.13	Sqm
2	**Electronic Items, Utensils/ Baggage , Shoes, Cloths**	270.00	Sqm
3	**Stair**	21.28	Sqm
4	**Goods Lift Capacity 1.5 Ton**	7.44	Sqm
5	**Passenger Lift**	8.05	Sqm
6	**Ramp**	81.6	Sqm
7	**Lift Lobby/Passage/Corridor**	65.89	Sqm

*This is just a detailed representation of plan. Contractor shall take the other details in accordance with the drawing of Second Floor Plan at Schedule I.

Roof Top Details

SN	Component	QTY	Unit
A	**Open Terrace with parapet on Toilets/Electronic Store 80mm thick insulated puff panels on roof**	Overall area	
B	**Machine room with separate MS ladder and trap door**	As per drawing	
C	**Overhead water tank**	As per specification	

(i) Plumbing Components

The Contractor has to install the following tabulated plumbing components:

SN	Component	QTY	Unit
A	**Water closer (European Type) with bolts, nuts, hanging arrangement etc**	As per the approved design	
B	**Oval/Circular wash basin with water assembly and other necessary components**		
C	**Single liver basin mixer**		
D	**Stainless Steel A ISI 304 (18/8) kitchen sink**		
E	**Glass mirror**		

*Apart from this, all the requisite washroom should be fitted with equipments as per the standards of Military infrastructure.

(ii) Drainage System

- All necessary fittings/fixers required for effective drainage shall be provided.
- Proper manhole should be constructed by the Contractor in accordance with the standard design.
- Water storage Tank should be set up by the Contractor as detailed above.
- Setting up of Domestic water relift pump by the Contractor.

- Proper connection of PVC, bends and other connection should be put up in accordance with the approved standard design.

(iii) Electric Part

- Proper installation of fans and exhaust should be done by the Contractor in accordance with the standard design.
- FRLS PVC Wiring of all the electrical component as per the approved design.

Proper connection of lighting and other electrical components shall be done by the Contractor in accordance with the approved standard design.

5.5 TWO STOREY (02 STOREY) CLUB HOUSE AT RTC, EAST KHASI HILLS DISTRICT, MEGHALAYA.

This accommodation Block has an area of 1024.95 sqm.

(i) The major component of the block has been tabulated below in accordance to which the work would be executed at site:

Ground Floor Details

SN	Component	QTY	Unit
A	**Club House**		
1	Bar Store	16.63	Sqm
2	Corridor	45.00	Sqm
3	Kitchen store	13.87	Sqm
4	Bar/Bar Counter/ Bar BOH	80.98	Sqm
5	Anti Room	109.47	Sqm
6	Lobby /Reception Counter	38.27	Sqm
7	Stair	23.11	Sqm
8	Stair	17.50	Sqm
9	Toilet SHE	15.60	Sqm
10	Toilet HE	18.92	Sqm
11	Pot Wash	13.29	Sqm
12	Plate Wash	15.03	Sqm
13	Kitchen/Cooking Area	45.33	Sqm
B	Canopy at LHS and RHS	84.91	Sqm

*This is just a detailed representation of plan. Contractor shall take the other details in accordance with the drawing of Ground Floor Plan at Schedule I.

First Floor Details

SN	Component	QTY	Unit
A	**Two single living room sets,Common Eating,Seating Area,Toilets,Pantry, Corridors etc.**		
1	Living Room -2 Nos	65.95	Sqm
2	Bed Room-2 Nos	54.27	Sqm
3	Toilet/Dressing	25.40	Sqm
4	Outdoor Seating Area-2 Nos	53.33	Sqm
5	Lobby	8.86	Sqm
7	Stair	23.11	Sqm
8	Stair	17.50	Sqm
9	Toilet SHE	15.60	Sqm
10	Toilet HE	18.92	Sqm
11	Common/Seating Area	100.88	Sqm
12	Pantry	15.47	Sqm
13	Corridor+Double Ht	87.94	Sqm

*This is just a detailed representation of plan. Contractor shall take the other details in accordance with the drawing of First Floor Plan at Schedule I.

Roof Top Details

SN	Component	QTY	Unit
A	**RCC Open Terrace with 80mm thick insulated Puff panels on roof**	Overall area	
B	**PVC Water storage tank**	As per Requirement	

*This is just a detailed representation of plan. Contractor shall take the other details in accordance with the drawing of Terrace Plan at Schedule I

(ii) Plumbing Components

The Contractor has to install the following tabulated plumbing components:

SN	Component	QTY	Unit
A	**Water closer (European Type) with bolts, nuts, hanging arrangement etc**		
B	**Oval/Circular wash basin with water assembly and other necessary components**		
C	**Single liver basin mixer**		
D	**Stainless Steel A ISI 304 (18/8) kitchen sink**		
E	**Glass mirror**		

*Apart from this, all the requisite washroom should be fitted with equipment as per the standards of Military infrastructure.

(ii) Drainage System

a. All necessary fittings/fixers required for effective drainage shall be provided.
b. Proper manhole should be constructed by the Contractor in accordance with the standard design.
c. Water storage Tank should be set up by the Contractor as detailed above.
d. Setting up of Domestic water relift pump by the Contractor.
e. Proper connection of PVC, bends and other connection should be put up in accordance with the approved standard design.

(iii) Electric Part

a. Proper installation of fans and exhaust should be done by the Contractor in accordance with the standard design.
b. FRLS PVC Wiring of all the electrical component as per the approved design.

Proper connection of lighting and other electrical components shall be done by the Contractor in accordance with the approved standard design.

5.6 BLOCK OF GUEST ROOMS 3 STOREY G+2 (8 GUEST ROOMS AT EACH FLOOR) TOTAl 24 NOS AT ECSAG & GE SHILLONG

This accommodation Block has an area of 1058.4 sqm.

(ii) The major component of the block has been tabulated below in accordance to which the work would be executed at site:

Ground Floor Details

SN	Component	QTY	Unit
A	**Guest Room – 8 Rooms at ground floor, each having following accn (Break up Area of One house is as under for reference)**		
1	Room -Area of one Room	23.60	Sqm
2	Toilet-Area of One Toilet	5.06	Sqm
3	Balcony-Area of One Balcony	4.27	Sqm
B	Stair	23.56	Sqm
C	Lift	6.40	Sqm
D	Corridor	48.60	Sqm
E	Ent Lobby	14.59	Sqm

*This is just a detailed representation of plan. Contractor shall take the other details in accordance with the drawing of Ground Floor Plan at Schedule I.

First Floor Details

SN	Component	QTY	Unit
A	**Guest Room – 8 Rooms at First floor, each having following accn (Break up Area of One house is as under for reference)**		
1	Room -Area of one Room	23.60	Sqm
2	Toilet-Area of One Toilet	5.06	Sqm
3	Balcony-Area of One Balcony	4.27	Sqm
B	Stair	23.56	Sqm
C	Lift	6.40	Sqm
D	Corridor	48.60	Sqm
E	Double Ht Area	As per Drg	

*This is just a detailed representation of plan. Contractor shall take the other details in accordance with the drawing of First Floor Plan at Schedule I.

Second Floor Details

SN	Component	QTY	Unit
A	**Guest Room – 8 Rooms at First floor, each having following accn (Break up Area of One house is as under for reference)**		
1	Room -Area of one Room	23.60	Sqm
2	Toilet-Area of One Toilet	5.06	Sqm
3	Balcony-Area of One Balcony	4.27	Sqm
B	Stair	23.56	Sqm
C	Lift	6.40	Sqm
D	Corridor	48.60	Sqm
E	Double Ht Area	As per Drg	

*This is just a detailed representation of plan. Contractor shall take the other details in accordance with the drawing of Second Floor Plan at Schedule I.

Roof Top Details

SN	Component	QTY	Unit
A	**RCC Open Terrace with pre-coated galvanised iron profile sheets on roof**	Overall area	
B	**PVC Water storage tank**	As per Requirement	

*This is just a detailed representation of plan. Contractor shall take the other details in accordance with the drawing of Terrace Plan at Schedule I

(ii) Plumbing Components

The Contractor has to install the following tabulated plumbing components:

SN	Component	QTY	Unit
A	**Water closer (European Type) with bolts, nuts, hanging arrangement etc**	As per approved design and requirements	
B	**Oval/Circular wash basin with water assembly and other necessary components**		
C	**Single liver basin mixer**		
D	**Stainless Steel A ISI 304 (18/8) kitchen sink**		
E	**Glass mirror**		

*Apart from this, all the requisite washroom should be fitted with equipment as per the standards of Military infrastructure.

(iii) Drainage System

a. All necessary fittings/fixers required for effective drainage shall be provided.
b. Proper manhole should be constructed by the Contractor in accordance with the standard design.
c. Water storage Tank should be set up by the Contractor as detailed above.
d. Setting up of Domestic water relift pump by the Contractor.
e. Proper connection of PVC, bends and other connection should be put up in accordance with the approved standard design.

(iv) Electric Part

a. Proper installation of fans and exhaust should be done by the Contractor in accordance with the standard design.
b. FRLS PVC Wiring of all the electrical component as per the approved design.

Proper connection of lighting and other electrical components shall be done by the Contractor in accordance with the approved standard design.

5.7 BLOCK OF OFFICE GE SHILLONG, THREE STOREY G+2 AT ECSAG & GE SHILLONG, SHILLONG EAST KHASI HILLS DISTRICT, MEGHALAYA.

This accommodation Block has an area of 1332.07 sqm.

(i) The major component of the block has been tabulated below in accordance to which the work would be executed at site:

Ground Floor Details

SN	Component	QTY	Unit
A	**Ground floor**		
1	Model/Sample Room	35.18	Sqm
2	Upholster Room	27.18	Sqm
3	Electrician Room	25.7	Sqm
4	Ladies Toilet	17.40	Sqm
5	Officers Toilet	12.24	Sqm
6	FITTE RGEN Mech	27.95	Sqm
7	Stair	30.78	Sqm
8	Ferro Printer	17.49	Sqm
9	Carpenter	29.90	Sqm
10	Tripple Height	22.64	Sqm
11	Visitor Room	26.83	Sqm
12	Old Record	18.09	Sqm
13	Gents Toilet	23.00	Sqm
14	Stair	14.74	Sqm
15	Corridor/Passage/Lobby	123.02	Sqm
16	Canopy	20.92	Sqm

*This is just a detailed representation of plan. Contractor shall take the other details in accordance with the drawing of Ground Floor Plan at Schedule I.

First Floor Details

SN	Component	QTY	Unit
A	**First floor**		
1	Conference Room	35.18	Sqm
2	01 UDC and 01 LCD	27.18	Sqm
3	SK-I and BS	25.7	Sqm
4	Ladies Toilet	17.40	Sqm
5	Officers Toilet	12.24	Sqm
6	FITTE RGEN Mech	27.95	Sqm
7	Stair	30.78	Sqm
8	Technical	17.49	Sqm
9	OS,UDC and LDC	29.90	Sqm
10	AE QS&C	13.08	Sqm
11	JE (QS&C)	13.88	Sqm
12	BSO Room	18.09	Sqm
13	Gents Toilet	23.00	Sqm
14	Stair	14.74	Sqm
15	Corridor/Passage/Lobby	122.93	Sqm
16	Terrace	As shown	Sqm

*This is just a detailed representation of plan. Contractor shall take the other details in accordance with the drawing of First Floor Plan at Schedule I.

Second Floor Details

SN	Component	QTY	Unit
A	**Second floor**		
1	JE B/R Room	20.63	Sqm
2	AGE E/M	10.08	Sqm
3	OS & UDC	9.16	Sqm
4	UDC & LDC	11.46	Sqm
5	AGE B/R	27.18	Sqm
6	UDC & LDC	25.7	Sqm
7	Ladies Toilet	17.40	Sqm
8	Officers Toilet	12.24	Sqm
9	UDC &LDC	27.95	Sqm
10	Stair	30.78	Sqm
11	JE E/M	17.49	Sqm
12	JE B/R	29.90	Sqm
13	AGE B/R	13.08	Sqm
14	UDC/LDC	13.88	Sqm
15	JE B/R-II	18.09	Sqm
16	Gents Toilet	23.00	Sqm
17	Stair	14.74	Sqm
18	Corridor/Passage/Lobby	102.30	Sqm
16	Terrace	As shown	Sqm

*This is just a detailed representation of plan. Contractor shall take the other details in accordance with the drawing of Second Floor Plan at Schedule I.

Roof Top Details

SN	Component	QTY	Unit
A	**RCC Open Terrace on Toilets and 80mm thick insulated Puff panels on roof on roof**	Overall area	
B	**PVC Water storage tank**	As per Requirement	

*This is just a detailed representation of plan. Contractor shall take the other details in accordance with the drawing of Terrace Plan at Schedule I

(ii) Plumbing Components

The Contractor has to install the following tabulated plumbing components:

SN	Component	QTY	Unit
A	**Water closer (European Type) with bolts, nuts, hanging arrangement etc**		
B	**Oval/Circular wash basin with water assembly and other necessary components**	As per Requirement	
C	**Single liver basin mixer**	And approved drgs	
D	**Stainless Steel A ISI 304 (18/8) kitchen sink**		
E	**Glass mirror**		

*Apart from this, all the requisite washroom should be fitted with equipment as per the standards of Military infrastructure.

(iii) Drainage System

a) All necessary fittings/fixers required for effective drainage shall be provided.
b) Proper manhole should be constructed by the Contractor in accordance with the standard design.
c) Water storage Tank should be set up by the Contractor as detailed above.
d) Setting up of Domestic water relift pump by the Contractor.
e) Proper connection of PVC, bends and other connection should be put up in accordance with the approved standard design.

(iv) Electric Part

a. Proper installation of fans and exhaust should be done by the Contractor in accordance with the standard design.
b. FRLS PVC Wiring of all the electrical component as per the approved design.

Proper connection of lighting and other electrical components shall be done by the Contractor in accordance with the approved standard design.

5.8 BLOCK OF APS SCHOOL BUILDING, TWO STOREY G+1 AT GTC , SHILLONG EAST KHASI HILLS DISTRICT, MEGHALAYA.

This accommodation Block has an area of 604.05 sqm.

(ii) The major component of the block has been tabulated below in accordance to which the work would be executed at site:

Ground Floor Details

SN	Component	QTY	Unit
A	**Ground floor**		
1	Stair Case	32.04	Sqm
2	Class Room	58.50	Sqm
3	Class Room	58.50	Sqm
4	Principal Room	35.21	Sqm
5	Male/Female/Attach Toilet and passage	35.10	Sqm
6	Corridor	82.67	Sqm

*This is just a detailed representation of plan. Contractor shall take the other details in accordance with the drawing of Ground Floor Plan at Schedule I.

First Floor Details

SN	Component	QTY	Unit
A	**First floor**		
1	Stair Case	32.04	Sqm
2	Class Room	58.50	Sqm
3	Class Room	58.50	Sqm
4	Principal Room	35.21	Sqm
5	Male/Female/Attach Toilet and passage	35.10	Sqm
6	Corridor	82.68	Sqm

*This is just a detailed representation of plan. Contractor shall take the other details in accordance with the drawing of First Floor Plan at Schedule I.

Roof Top Details

SN	Component	QTY	Unit
A	**RCC Open Terrace on Toilet and 80mm thick insulated Puff panels on roof on roof**	Overall area	
B	**PVC Water storage tank**	As per Requirement	

*This is just a detailed representation of plan. Contractor shall take the other details in accordance with the drawing of Terrace Plan at Schedule I

(ii) Plumbing Components

The Contractor has to install the following tabulated plumbing components:

SN	Component	QTY	Unit
A	**Water closer (European Type) with bolts, nuts, hanging arrangement etc**	As per Requirement And approved drgs	
B	**Oval/Circular wash basin with water assembly and other necessary components**		
C	**Single liver basin mixer**		
D	**Stainless Steel A ISI 304 (18/8) kitchen sink**		
E	**Glass mirror**		

*Apart from this, all the requisite washroom should be fitted with equipment as per the standards of Military infrastructure.

(iii) Drainage System

a) All necessary fittings/fixers required for effective drainage shall be provided.
b) Proper manhole should be constructed by the Contractor in accordance with the standard design.
c) Water storage Tank should be set up by the Contractor as detailed above.
d) Setting up of Domestic water relift pump by the Contractor.
e) Proper connection of PVC, bends and other connection should be put up in accordance with the approved standard design.

(iv) Electric Part

a. Proper installation of fans and exhaust should be done by the Contractor in accordance with the standard design.
b. FRLS PVC Wiring of all the electrical component as per the approved design.

Proper connection of lighting and other electrical components shall be done by the Contractor in accordance with the approved standard design.

5.9 ANCILLARY BUILDINGS AT SHILLONG EAST KHASI HILLS DISTRICT, MEGHALAYA.

(i) The major blocks has been tabulated below in accordance to which the work would be executed at site. This accommodation Block has an area of 967.96 sqm.

Ground Floor Details

SN	Component	QTY	Unit
A	Ancillary Buildings		
9	Car Parking shed for 5 cars at Officers Mess 101 Area-2 Nos , Shillong East Khasi Hills District, Meghalaya.	125	Sqm
10(a)	Single Storey (01 Story) Toilet Block at MH Upper Block	26.00	Sqm
10(b)	Single Storey (01 Story) Sentry Post at MH Upper Block	12.00	Sqm
10 (c)	Single Storey (01 Story) Sentry Post at MH Upper Block	12.00	Sqm
10(d)	Single Storey (01 Story) Toilet Block at MH Lower Block	80.00	Sqm
11(a)	Single Story (01 Story) Guard room 101 Area main gate	69.06	Sqm
11(b)	Single Storey (01 Story) Guard room TA Coy Gate	56.00	Sqm
11(c)	Single Story (01 Story) Toilet Block at 144 TA	80.00	Sqm
12(a)	Garrage for 3 cars at Annexe (Old EME Wksp).	70.00	Sqm
12(b)	Car Parking shed for 10 cars at Annexe (Old EME Wksp)	133.00	Sqm
12(c)	Car Parking shed for 10 cars at Annexe (Old EME Wksp)	133.00	Sqm
12(d)	Single Story (01 Story) Toilet Block at Annexe (Old EME Wksp.	50.00	Sqm
12(e)	Single Story (01 Story) Guard Room at Annexe (Old EME Wksp.	32.04	Sqm
13	Single Story (01 Story) Staff Room at RTC , Shillong East Khasi Hills District, Meghalaya.	57.00	Sqm
14(a)	Single Story (01 Story) Guard room at Old Rhino CSD.	20.50	Sqm
14(b)	Single Story (01 Story) Sentry Post at Old Rhino CSD.	12.00	Sqm
	TOTAL	967.96	Sqm

*This is just a detailed representation of plan. Contractor shall take the other details in accordance with the drawing of Ground Floor Plan at **SCHEDULE -I.**

(ii) Roof Top Details

SN	Component	QTY	Unit
A	**Open Terrace/ pre-coated galvanised iron profile sheets/Polycarbonate sheet on roof**	Overall area	
B	**PVC Water storage tank – 2 tanks**	As per Requirements	

*This is just a detailed representation of plan. Contractor shall take the other details in accordance with the drawing of Terrace Plan at Schedule I

(iii) Plumbing Components

The Contractor has to install the following tabulated plumbing components:

SN	Component	QTY	Unit
A	**Water closer (European Type) with bolts, nuts, hanging arrangement etc**	As per approved design And requirements	
B	**Oval/Circular wash basin with water assembly and other necessary components**		
C	**Single liver basin mixer**		
E	**Glass mirror**		

*Apart from this, all the requisite washroom should be fitted with equipments as per the standards of Military infrastructure.

(iv) Drainage System

- All necessary fittings/fixers required for effective drainage shall be provided.
- Proper manhole should be constructed by the Contractor in accordance with the standard design.
- Water storage Tank should be set up by the Contractor as detailed above.
- Setting up of Domestic water relift pump by the Contractor.
- Proper connection of PVC, bends and other connection should be put up in accordance with the approved standard design.

(v) Electric Part

- Proper installation of fans and exhaust should be done by the Contractor in accordance with the standard design.
- FRLS PVC Wiring of all the electrical component as per the approved design.

Proper connection of lighting and other electrical components shall be done by the Contractor in accordance with the approved standard design.

ANNEXTURE -1

1. BILL OF QUANTITY OF EXTERNAL SERVICES AND ELECTRIC WORKS IN INTERNAL & EXTERNAL AREA

ENCLOSED FROM PAGE NO. 1 to 98

SCHEDULE-C: PROJECT FACILITIES

Though all the required facilities to be provided has been incorporated in the Scope of Work, nonetheless any facilities necessary for proper access i.e entry/exit for construction unit and related campus shall be constructed to ensure the proper functioning of installed structures.

SCHDULE-D SPECIFICATIONS AND STANDARDS

1. SPECIFICATIONS

a. The work includes complete work as per drawing and specifications which are Illustrated below but not limited to

i) Foundation work upto plinth level
ii) Column/Shear Wall/ Slab/beams
iii) Completion of Partition walls
iv) Completion of Flooring
v) Completion of Door, windows including wood work, painting, etc
vi) Internal Finishing and painting.
vii) Surface finishing with synthetic mortar
viii) Painting work
ix) External Finishing.
x) False ceiling work
xi) Internal Electric Installation.
xii) Internal Plumbing Installation.

b. The Contractor, while designing the Military infrastructure Facility shall consider and comply with the following planning & design parameters.

i. The most important design consideration for a Military Infrastructure is the safety requirements, which can be met by segregating the traffic movements across the area and convert the infrastructure facility into an 'close construction concept. Pedestrian circulation inside the Military Infrastructure complex shall be designed in such a manner that no pedestrian can come on to the Military Infrastructure area/s. For efficient working of the Military Infrastructure and to reduce the noise & air pollution the movement of vehicular traffic should be totally unobstructed.

ii. The entire Project complex should be differently disabled friendly. Ramps with proper slope as per NBC codes shall be provided at user entry and exit of Military Infrastructure, connectivity to parking area and passenger concourse area, interconnectivity between the passenger concourse areas and at any such places adjacent to footsteps following upward and downward gradient concourse area. Hand rails fixed to walls along the staircase and ramps shall be provided for ease and convenience of pedestrians.

- **FOUNDATION AND EARTH WORK :** RCC Footing/Raft / Pile foundation as per structural requirement based on Codal Provisions

Surface dressing of the ground shall include removing vegetation and inequalities not exceeding 15 cm deep and disposal of rubbish, lead up to 50 m and lift up to 1.5 m.

Earthwork in excavation in all kinds of soil and ordinary rock shall be done by mechanical means upto any depth below the existing ground level for foundation trenches/over areas of foundations, footings of column/ walls, retaining walls, septic tank etc. including bailing out water where necessary and removal of surplus earth with all lead and lifts as directed.

Earthwork in filling (excluding rock) in trenches, plinth sides of foundation etc.shall be done in layers not exceeding 20 cm thick including breaking of clods, consolidating each layer by ramming and watering with all lead and lifts with available excavated earth and with borrowed earth/stone dust from any distance outside MOD Land.

- **Plinth Height :** Plinth height shall be 45/60 cm from top of surrounding road level as shown in drawings.

- **ATT Treatment:** ATT treatment shall be provided in all buildings as per requirements of BIS codes.

Pre-construction anti-termite chemical treatment shall be carried out to surface which include bottom and sides of excavation in foundations of walls, columns, the back filled earth in immediate contact with the foundation structure, plinth filling, filled earth under floors, junction of walls and floors, soil under plinth protection,

Soil along external perimeter of the buildings and soil surroundings the conduits/pipes of the buildings mentioned in Schedule `A" notes all as specified in clause 3.26.1 to 3.26.11 of MES Schedule Part-I.

Anti termite treatment shall be got done through an approved specialized agency which is a member of Indian Pest Control Association holding valid license as per Clause 13 of Insecticides Act 1968. Persons employed to do the Antitermite treatment shall be qualified as per Rule 10 of the rules framed under the Insecticides Rule 1971. The work shall be carried out through any of the agency as mentioned in list of makes attached hereinafter.

Anti termite treatment shall be carried out with emulsion as mentioned in Appx-`A" of makes attached hereinafter shall be purchased directly from manufacturer or his authorized agent. Purchase vouchers shall be produced to the GE for verification.

Cholorophyrus 20% EC Chemicals brought to site in sealed containers bearing ISI certification marks shall only be permitted to be used. Chemicals shall be stored carefully at site. Seals of containers should be broken only in the presence of Engineer-in-Charge (EIC). Empty containers shall be kept at site till the completion of work under safe custody. If on a particular day the contents of one full container could not be used in the work, the container should be got sealed at the end of the day in the presence of the Engineer-in-Charge and opened when required in the presence of the AE.

The AE should work out on his own, the total requirement of chemical required for the work as per specifications and ensures that the full quantity is brought to site and used in the work. Engineer-in-Charge should ensure that paid vouchers are produced by the agency executing the work for the full quantity of the chemical required and brought to site and a record of such vouchers duly defaced by Engineer-in-Charge with his dated signature should also be kept on record. For this purpose entries should be made in the MB as "NOT TO BE ABSTRACTED" indicating the brand name, quantity brought etc, and signed by Engineer-in-Charge as well as the representative of the Agency executing the work.

➢**Super Structure :** RCC framed Structure

Masonary : Bricks shall be Sub "class B" kiln burnt, locally available, best quality. Bricks shall have minimum compressive strength of **100** Kg/Sqcm. Water absorption of bricks shall not exceed 20% when tested in accordance with IS-3495. Sampling and testing of bricks shall be carried out as per IS-5454 and IS-3495. The size of bricks shall be 230mm x 115 mm x 75mm. The tolerance in the dimensions shall be ± 8 percent. Autoclaved Aerated Concrete Blocks (AAC) of required thickness shall be provided for Masonry Walls (Single Walls) as per BIS code 2185 (part 3) 1984. Compressive strength of AAC blocks shall be not less than 5 N/mm^2 conforming to IS 2185/1984. Polymer modified adhesive mortar/ in cement mortar 1:4 (1 cement: 4 coarse sand shall be used for construction of masonry walls as per the approval of Engineer in Charge and manufacturer's instructions.

Wherever required RCC Bands of required thickness shall be provided by the contractor in the masonry walls as a part of scope of work, RCC bands shall be properly anchored in columns for stability as directed by Engineer in charge. Coursed rubble masonry (first sort} with hard stone in foundation and plinth with Cement mortar 1:6 (1 cement: 6 coarse sand).

- **Water will not be supplied by the MES**. The contractor shall make his own arrangements for water required for work and his workmen at his own cost.
- In respect of the water arranged by the contractor from his own resources and the resources stated in para (b) above, it will be ensured by him that the water is free from injurious quantities of acid, alcohol, silt, oil, injurious salt, organic matters or other impurities all as specified in IS-456 and is clean, potable and suitable for mixing with concrete and mortar, for washing aggregate, soaking of bricks/brick tiles and for curing concrete and plaster.
- In all above cases water shall be treated under contractor 's own arrangements from Govt approved test laboratories and the test report shall be kept in AE's office for record.
- Sub-soil water obtained by boring tube wells, hand pumps etc, if not found suitable and conforming to IS-456 can be used in the formation of road work and water bound macadam for road and the like, if the water is so approved by the Engineer-in-charge.
- In the event of contractor using sub soil water as above, no recovery will be made for the rent of land/royalty for the sub soil water etc.
- The contractor shall at his own cost provide and fix pipes and install pumping set(s) etc. as required for drawing the water from tube wells/hand pumps.
- The contractor shall at his own cost provide and fix pipes and install pumping set (s) etc. as required for drawing the water from tube well. On completion of the work, the contractor shall remove the pump and fittings installed, fill up the hole and make good the site as directedby the Engineer-in-charge at his own expenses and bore will be the property of the department and no extra payment will be made to the Contractor.

Contractor shall make his own arrangements to procure cement as specified here- in-after. The cost of cement, its transportation, storage, testing charges, its accounting and preservation etc. till consumed in work shall be borne by the contractor.

Type of Cement.

Type of cement to be used in this contract shall be Ordinary Portland Cement **(OPC)** Grade 43 conforming to IS- 8112-1989 unless otherwise specifically specified. Different type of cement, if so required, as per contract provisions, shall also be arranged by contractor at no extra cost to Govt. But however, Portland Pozzolana Cement **(PPC)** (as per IS-1489-1991) can be used in lieu of Ordinary Portland Cement without any price adjustment subject to fulfilling certain criteria enumerated in Schedule D.

Requirements for using Portland Pozzolana Cement.

(a) PPC meets the strength criteria of 43 Grade OPC as laid down in IS-8112-1989.

(b) The minimum period before stripping form work given in clause 11.3.1 of IS- 456-2000 is to be suitably modified and as approved for the period. The contractor shall not claim extra on this account.

(c) Mixing of **OPC & PPC** shall not be allowed in a work. However with the strict control of the ground executives, different buildings can have different type of cement.

(d) Following requirements shall be ensured at the time of procurement and certificate to this effect shall be obtained from manufacturer for each batch.

(i) The quantity of Fly Ash is strictly as per IS-1489 (Part-I)-1991.

(ii) Fly ash is underground with clinker not mixed with clinker.

(iii) Dry fly ash is transported in closed containers and stored in silos only. Only pneumatic pumping should be used.

(iv) The fly ash is received from thermal power plants using high temperature combustion above 1000^0 C should be used.

(v) The fly ash contents in PPC shall not exceed **35%** to ensure consistency.

(e) In cold climatic regions where temperature goes below 15^0 C and important structures like overhead reservoirs, underground sumps and buildings with spans 10 m or more, only **OPC** shall be used. However, for other structures during working seasons in cold climatic regions, where **OPC** is not available use of **PPC** may be permitted provided it shall be ensured that while using **PPC**, atmospheric temperature should be more than 15^0 C.

Aggregates

Aggregates for concrete work shall conform to specifications all as specified in clauses 4.4.1 to 4.4.7.3 of MES Schedule Part-I.

Fine aggregate (sand)

Grading for fine aggregate shall be within the limits of grading zone I to III as given in clause 4.4.7.2 of MES Schedule Part-I. However for all concrete and masonry work, fine sand within limits of grading I & II shall be provided and for all other balance work including plastering/screeding etc. where it shall be provided within limits of grading –III.

Coarse aggregate

Unless specified otherwise in these particular specifications, coarse aggregate for all concrete work in all situations shall be graded crushed stone aggregate of approved quality. Contractor may, however, use graded shingle aggregate of approved quality in lean concrete under foundation, sub base of floor without any price adjustment. Two types of aggregate shall not be mixed.

Grading of coarse aggregate

Graded aggregate of nominal sizes given hereunder, shall be used, unless specified otherwise in the specifications hereinafter:-

(a) Reinforced cement concrete.

(i) For elements of depth/thickness more than and incl 100mm : 20mm.

(ii) For elements of depth/thickness less than 100mm : 12.5mm.

Note: However, in no case the nominal size of aggregate shall be greater than one fourth the minimum size of the member and further it should conform to the requirement given in Clause 5.3 of IS-456-2000.

(b) Plain Cement Concrete

(i) Under 30 mm thickness : 12.5 mm

(ii) 30 to 80mm thickness : 20 mm

(iii) Exceeding 80mm thickness : 40 mm

(iv) Lean concrete and concrete sub base of floors. : 40 mm

Mix of concrete

Unless otherwise specified in drgs and elsewhere in these particular specifications, the mix of cement concrete in various situations shall be as under. However the grade of concrete shall not be less than what is given below:-

Sl No	Situation	Type of Concrete
(a)	Lean concrete under foundation of walls, plinth toe beam and in gaps between plinth columns footing.	PCC(1:4:8)(by Volume)
(b)	Lean concrete under column footing.	PCC(1:4:8)(by Volume)
(c)	PCC in plinth protection and channel/drain, PCC cills, PCC block for holder bats and holdfasts or lugs for doors, windows and ventilators and plugging for scaffolding holes.	PCC(1:3:6)(by Volume)
(d)	PCC in bed blocks/plates, Kerbs, benching splash stones and coping and PCC in any other situation not covered above.	1:1½:3 (1 cement : 1½ coarse sand (zone-III) : 3 graded stone aggregate 20 mm nominal size). (by Volume)
(e)	All RCC works for buildings/Structures.	M-30 (Design mix) as per IS 456-of 2000. Ready mixed concrete

Acceptance criteria for concrete

The criteria for acceptance of the concrete shall be as given in clause 16(Section- II) of IS-456/2000(Code of practice for plain and reinforced concrete). The minimum frequency for the work tests shall be as specified therein or samples taken from concrete poured in operations as specified in clause here-in-after which ever more. Frequency of sampling is laid down in para 15 (Section-II) of IS-456/2000.

Tests

The following tests shall be carried out during the execution of work. These tests shall be in addition to those specified in clause 3.9 hereinbefore. Tests shall be carried out in accordance with IS-516 and IS-1199. The contractor shall provide all facilities and equipment for casting and curing of test cubes and conveyance of test cubes and other material for testing purpose to MES Laboratory, the cost for which shall also be borne by the contractor. However, testing charges to be levied from contractor for tests carried out in MES Laboratory as per special condition No 34 here-in-before. All equipments required for site tests as per BIS norms will be procured by the contractor. The cost of the same is deemed to be included in the lumpsum quoted by the contractor.

(i) Workability test

Workability test shall be as per clause 7 of IS-456/2000.

(ii) Sampling and strength of designed concrete mix

(a) General samples from fresh concrete shall be taken as per IS-1199 and cubes shall be made, cured and tested at 28 days in accordance with IS-516.

(b) In order to get a relatively quicker idea of the quality of concrete, optional tests on beams for modulus of rupture at 72 $\pm$ 2h or at 7 days, or compressive strength tests at 7 days may be carried out in addition to 28 days compressive strength test. For this purpose the values should be arrived at based on actual testing. In all cases, the 28 days compressive strength specified in table 2 shall alone be the criteria for acceptance or rejection of the concrete.

(iii) Frequency of Sampling

(a) Sampling Procedure

A random sampling procedure shall be adopted to ensure that each concrete batch shall have a reasonable change of being tested that is, the sampling should be spread over the entire period of concreting and cover all mixing units.

(b) Frequency

The minimum frequency of sampling of concrete of each grade shall be in accordance with the following:-

Quantity of concrete in work, in cum	Numbers of samples
1-5	1
6-15	2
16-30	3
31-50	4
51 and above	4 plus one additional sample for each additional 50cum or part thereof.

Note: - At least one sample shall be taken from each shift. Where concrete is procured at continuous production unit, such as ready mixed concrete plant, frequency of sampling may be agreed upon mutually by suppliers and purchasers

(c) Test Specimen

Three test specimens shall be made for each sample for testing at 28 days. Additional samples may be required for various purposes such as to determine the strength of concrete at 7 days or at the time of striking the form work, or to determine the duration of curing, or to check the testing errors. Additional samples may also be required for testing samples cured by accelerated methods as described in IS-9103. The specimen shall be tested as described in IS-516.

(d) Test Results of sample

(i) The test results of the sample shall be the average of the strength of three specimens. The individual variation should not be more than ± 15 percent of the average, if more, the test results of the sample are invalid.

(ii) For the purpose of subsequent identification of the work test cubes, the concrete of which these pertains shall be cross referred and records of this maintained and signed by the Engineer-in-charge and contractor or his authorized representative.

(iv) **Slump Test**.

(a) The frequency of the test shall be decided by the AE. The slump for the vibrated concrete may be 1 inch to 3 inches maximum. The AE, however, reserves the right to vary the limit, which will be ascertained at the time of deciding the mix design for each grade. Any batch from which a slump test is being made shall not be transferred to the places of lying until the slump in excess of that required shall not be consumed and removed from the site.

(b) Compression Test

A group of nine test cubes (15 cm x 15 cm x 15 cm) shall be taken out at the following stages of work in all building catered in Schedule `A" Part-I. Column footing and raft beams, columns, walls, beams, band, slab etc.

Note: The frequency may be increased as considered necessary by the AE.

(c) Three cubes shall be tested at 7 days and three at 28 days for compressive strength and the remaining three cubes shall be kept as reserved exclusively for subsequent testing if so desired by GE and preserved for one year from completion of work under the contract. The contractor shall not object testing of other cubes for a purpose as a matter of right.

(d) For the purpose of subsequent identification, test cubes shall be cross-referred and record of this maintained and signed by the Engineer-in-Charge and contractor or his authorised representative. Test report will be signed jointly by the Engineer- in-Charge and the contractor.

(e) Acceptance/Rejection of concrete

Any concrete not acceptable after taking into consideration the criteria stated in table 11 of IS: 456, shall be rejected. The contractor shall replace such concrete at his own expenses.

(f) When defective or rejected work cannot be replaced due to any reason whatsoever, (decision of Accepting Officer in this respect shall be final and binding),the cost of removal and replacement of the rejected concrete including the joints shall be recovered from the contractor whether it is subsequently replaced by the Govt or not.

(g) Bulking of sand - Test shall be carried out as per IS: 383.
(h) Impurities of sand - Test shall be carried out as per IS: 383.
(j) Sieve analysis of aggregate - Test shall be carried out as per IS: 383. RCC Beam shall be casted monolithically with slab

Placing and compaction of concrete

(i) Concrete shall be transported without delay and incorporated in works at the position of laying within 20 minutes from the time of discharge from the mixer.

(ii) Mixed concrete shall be deposited in final position and solidly packed around reinforcement carefully poured and consolidated by means of portable vibrators or mechanically operated and of the kind as suitable for particular situation as directed by GE. Care shall be exercised that no voids or honeycomb pockets are formed. The concrete shall not be laid in position for more than 1 metre in height in one consecutive operation.

Water cement ratio

The water cement ratio for the concrete shall be as per IS-456. To achieve this water cement ratio, the moisture content in respect of coarse aggregate and fine aggregate shall be tested and kept on record. The frequency of testing of moisture contents in respect of coarse aggregate and fine aggregate shall be decided by Engineer-in- Charge depending upon site conditions. The amount of water required shall be adjusted depending upon the results of tests for the moisture contents carried out. For determination of moisture content in aggregate, IS-2386 (Part-III) may be referred to.

Curing

The concrete shall be protected from premature drying for at least 8 days after pouring and shall be cured as directed by the Engineer-in-Charge for a period of not less than 14 days.

Concrete other than controlled concrete

Ordinary concrete using graded crushed stone aggregate shall be provided all as specified here-in-before.

Plain cement concrete

(i) Unless otherwise indicated, all plain cement concrete shall be mixed in mechanical mixer with hopper of approved type. The course and fine aggregates for mixing of cement concrete shall be put in the hooper through measuring boxes. Under no circumstances, measuring with other than proper measuring boxes shall be allowed. However, in case of small quantity i.e, the quantity of concrete required being less than one batch of mix the contractor may after obtaining written permission of the Engineer-in-Charge be allowed hand mixing. Where hand mixing is permitted, it shall be carried out on watertight platform and care should be taken to ensure that mixing is continued until the concrete is uniform in colour and consistency. All plain concrete shall be consolidated / compacted by tamping and Roding.

Nominal mix

Nominal mix where indicated shall be provided as per IS-456-2000

READY MIXED CONCRETE [RMC]:All Design mix concrete shall be Ready mixed concrete.

RMC shall conform to the requirements of the following Indian Standards:
[a] IS – 4926 -Ready Mixed Concrete - Code of Practice
[b] IS – 9103 - Concrete Admixtures - Specifications
[c] IS – 8112 - OPC Grade 43 or Portland - Specifications or IS – 455 -Portland Slag Cement - Specifications or IS – 1489 - Portland Puzzolona Cement - Specifications
[d] IS – 456 - Plain and Reinforced concrete - Code of Practice

The contractor shall engage any of approved manufacturers or any other manufacturer approved by Engineer-in- Charge for manufacture and supply of RMC. It is the responsibility of the contractor to make payments to the RMC supplier independently and the department is not responsible for any

disputes between contractor and RMC manufacturer for non-payment or delayed payment or on account of any other reasons.

SELECTION OF RMC MANUFACTURER: Immediately on commencement of the work, the contractor shall intimate the name of manufacturer of RMC whom he proposes to engage.

Even though the firm for manufacturing and supply of RMC to site of work is approved (Being Authority Engineer) , the responsibility to maintain quality and grade of concrete fully rests with the contractor.

MATERIALS:

(a) **CEMENT**: Cement shall conform to specifications as specified here-in- before.

(b) **FINE AGGREGATES**: Fine aggregates shall be as specified here-in-before.

(c) **COARSE AGGREGATE**: The coarse aggregates shall be as specified here-in- before.

(d) **WATER**: Water shall comply with the requirements as per IS – 456 and IS – 3025.

(e) **ADMIXTURES [LIQUID TYPE ONLY]**: Admixture shall be retarding super plasticizing type and shall conform to IS – 9103 and of approved manufacturers.

NOTE: Admixture shall not exceed 1.5% of cement contents by volume in any case.

Mix design shall be got carried out by the contractor from the approved RMC manufacturer incorporating materials complying with the requirements given hereinbefore. The mix design shall be properly bound in booklet form and submitted in triplicate for approval by the Engineer. The RMC incorporated in the work shall be in accordance with the approved mix design. The Engineer-in-Charge / JE [Civil] who are connected with administration and execution and other operations connected with the execution of this work shall have access to inspect /check the quality of materials used for manufacturer of RMC in RMC manufacturer's yard as well as the quality / grade of RMC supplied by the manufacturer. The contractor shall make all arrangements for the aforesaid inspections and checks as required.

Contractor shall obtain a certificate from RMC manufacturer for the RMC supplied for each day to the effect that materials used for manufacturing of RMC complies strictly as per mix design requirements and the materials incorporated are conforming to the specifications given herein before. In addition, the contractor shall collect samples of materials for each days concreting in the presence of Engineer-in-Charge which shall be tested in approved lab as specified herein before to ensure that materials used are as per requirement as specified. Such tests for each material shall be made as per relevant BIS requirements and shall be entered in register of test results. Register shall be signed by the contractor, Engineer-in-Charge & JE.

A register shall be maintained by the contractor duly signed by the Engineer-in-Charge showing the following details of RMC in addition to the information given on delivery ticket for each delivery of concrete [Refer Clause 9.4 and ANNEX – G of IS - 4926]:

(a) Time of mixing of each batch.

(b) No. of batches in each delivery.

(c) Location where used in the work and reference to cube test register.

For the RMC delivered at site and incorporated in work, sample for cube test shall be taken as per requirements of IS – 4926 and as specified hereinafter.

If the condition of RMC delivered at site is not acceptable to the Engineer-in-Charge it shall be taken

back and removed from site by the contractor at his own cost. The decision of the Engineer-in-Charge with regard to non-acceptability of RMC shall be final and binding. No claim of contractor, what so ever, shall be admissible on this account. Some of the conditions under which RMC can be rejected are given below:

(a) Initial setting due to delay in transit.
(b) Segregation of aggregate due to excessive rotation of mixer during transit.

ACCEPTANCE OF CONCRETE:

Acceptance criteria for the RMC shall be as per IS – 456. In case the RMC supplied and incorporated fails to meet the strength requirements as per IS – 456, work done shall be rejected by Engineer-in-charge and contractor shall demolish the rejected work and re-do the same with-out extra payments so as to produce the work complying with the strength requirements as per IS – 456. The contractor will have no claim whatsoever on this account.

1.1.1. DESIGN, MANUFACTURE, TRANSPORTATION, PLACEMENT & TESTING:

(a) The design mix shall be carried out as per the durability condition stipulated in the contract. Concrete mix information shall be supplied by the Contractor to the RMC manufacturer on the format as per Annexure D of IS – 4926, which shall form the basis of mix design.
(b) RMC supplier will ensure that the concrete is transported in truck mixers conforming to IS – 5892 to the point of placing as rapidly as possible by methods that will maintain the required workability and will prevent segregation, loss of any constituents or ingress of foreign matter or water.
(c) RMC shall be used in the work only after design mix has been approved in writing.
(d) Contractor should plan their work in such a way so as to full load of concrete is discharged within 30 minutes of arrival at site and placed immediately. Re-handling should be avoided as far as practicable.
(e) The concrete shall be discharged from the truck mixer within 2 hours of the time of loading at the plant.
(f) Conveying equipments for concrete shall be water tight, well maintained and thoroughly before commencement of concrete mixing. Concrete shall be transported by transit mixers.
(g) Concrete shall not be dropped from a height, thrown or otherwise treated so that segregation, undesirable finish, or defective structural quality results.
(h) No extra water shall be added to the concrete mix after it has left the batching plant. The contractor shall take adequate precautions to protect concrete in transit from the effects of the weather.
(i) Pumping operation whenever commences shall proceed continuously so as to prevent "Cold" joints between placed sections. Concrete less than 6 cubic metres may be deposited manually. Concrete for columns may be deposited manually.
(j) The delivery line of the pump shall be 100 mm dia or greater and pump shall be capable of pumping concrete containing 20 mm nominal size aggregate.
(k) The pump shall have receiving hopper and pumping chamber shall be capable of pumping at least 15 Cum of concrete per hour against horizontal delivery head of at least 90 m and / or a vertical delivery head of 20m.
(l) Pumping lines shall be of approved metallic type laid to avoid bends The joints in pumping lines shall be sealed tight to prevent leakages.
(m) All equipments, pump chamber, hoppers, lines etc. shall be kept clean at all times. Any build-ups in the lines of materials from previous operations shall be cleaned out prior to pumping.
(n) In the event of breakdown in the equipment causing delay not exceeding 20 minutes, the time within which concrete can not replaced, the following procedure shall be adopted: "With the approval of Engineer-in-Charge, the concrete already placed shall have the "Wet Edge" and vibrated into mass. Where atmospheric temperature exceeds 30 degree centigrade, the receiving hopper and lines shall be cleaned out and concrete contained therein discarded and immediately removed from the site. The concrete shall be discarded if initial setting of the concrete has begun in the hopper or discharge lines. All lines shall be cleaned free of concrete prior to resumption of pumping after each breakdown. Concrete in the lines shall be pumped at approximately 8 minutes intervals to ensure the concrete in

the line is live, whenever delivery of concrete in the pump is delayed. This pumping interval shall be reduced to 5 minutes during extra hot weather conditions. Delivery lines where exposed to hot sun, shall be protected by covering with gunny bags, wet hessian or other approved means."
(o) Due to mechanical malfunctioning, if concreting is required to be stopped, necessary precautionary measures shall be taken by the contractor. Cost of any additional work caused due to these stoppages shall be contractor's responsibility.
(p) No concreting shall be commenced until formwork and reinforcement and other preparatory work required are completed, inspected and approved by the Engineer-in-Charge
(q) The contractor shall take adequate precautions and strengthening measures to strengthen the shuttering as required to withstand the pressure that will be created due to pumping of concrete.
(r) Slump of concrete shall be as per IS – 456 and as specified. The workability shall be within the following limits on the specified value as appropriate:
Slump : + 25 mm or + 1/3 of the specified value whichever is less.
Compaction Factor : + 0.03, where the specified value is 0.90 or greater + 0.04, where the specified value is less than 0.90 but more than 0.80 and + 0.05, where the specified value is
0.80 or less
(s) Slump test shall be carried out at site by the contractor in the presence of Engineer-in- Charge / JE. The concrete shall be placed in position within the designed initial setting time. At the end of initial setting time, the unused concrete shall be rejected.
(t) The contractor shall obtain from RMC manufacturer computer printout of the data sheet of every batch of concrete and submit . The same shall be signed by the Contractor, Engineer-in-Charge & JE.
(u) The minimum cement content shall be as per IS: 456 - 2000 [durability criteria].

CONSOLIDATION OF CONCRETE: Consolidation shall be done by mechanical vibrators,

plate type for slab and needle type for other locations.

SAMPLING AND TESTING OF READY MIX CONCRETE:

(a) Allow at least the first 1/3 cum of concrete to be discharged from the truck mixer prior to taking any samples. Take required number of samples from the remainder of the load avoiding sampling the last cubic meter of concrete. Thoroughly re-mix this composite sample either on a mixing tray or in the sampling bucket and proceed with the required testing.
(b) In addition to the tests carried out by the RMC manufacturer at the plant site, sampling and testing of concrete shall be carried out at the site after delivery as per IS – 456 by the department along with the representatives of the contractor at contractor's expense.
(c) Samples from fresh concrete shall be taken as per IS – 1199 and cubes shall be made, cured and tested in accordance with IS – 516 for 7 / 28 days compressive strength. The samples shall be taken as follows:

Place Of sample	Quantity of Concrete	No of Samples	Remarks
At RMC Plant	For every 6 Cu.m or part thereof	1	One sample will comprise of 4 test specimens. 3 specimens for testing and one for preservation.
At Site	For every 6 Cu.m or part thereof	1	[a] One sample will comprise of minimum 7 test specimens, 3 specimens each for 7 days and 28 days testing and 1 specimen for preservation. [b] One sample for slump / compaction factor for workability.

NOTES:

(1) At least one sample shall be taken from each delivery.

(2) The test specimens will be marked showing clearly the C. A. No., date of sample, location and name of building / pile reference where it has been taken from.

Form work

Formwork shall comply with requirement of para 4.11.6.1 to 4.11.6.5 and 7.15.1 to 7.15.12 of MES Schedule (Part I).

All formwork for columns, beams, slabs, chajjas etc. shall be provided of steel with steel props adjustable with lateral stability and no wooden ballies/planks etc. will be allowed for the same as directed by Engr-in-Charge. In case of any deviation involving formwork, the pricing shall be done at the rates of timber formwork for fair finished surface of concrete as specified in clause 7.15.2 of MES SSR (Part-I).

Exposed surface of concrete

Exposed RCC/ PCC surfaces, which are ultimately required to be finished by application of white/colour wash, distemper, cement base paint or oil paint etc. shall be plastered with cement and sand mortar (1:3), 5mm thick and finished even and smooth after removal of form work.

Exposed surfaces of lintels, beams, columns, etc., which are continuous with plastered surfaces of walls, shall be plastered in the same manner as specified for the walls.

Precast concrete articles

Cement concrete lintels with or without integrally cast chajjas upto 1.5 metre clear span, shelves, bed blocks/plates ,cover slabs, fins and the like may either be precast or cast in situ at the contractor‟s option unless otherwise specified elsewhere. If, precast, these shall be set in cement mortar (1:3). In case of deviation involving these items, pricing shall be done on the basis of cast-in-situ work.

RCC Chajjas

RCC Chajjas (whether cast integral with the lintel or precast and embedded in the wall) shall be provided with a coved fillet of radius 50mm in PCC (1:2:4) preferably casted while the concrete is still green

The top surface of chajjas and the coved fillet shall be finished with 10mm thick cement plaster in cement mortar (1:3) with a mixture of approved water proofing compound as per manufacturer‟s instructions just after the initial setting of cement in lintel has taken place.

Drip Course

Drip course to projections of RCC/PCC beyond external faces of the walls where shown on drawings, and where RCC Chajjas are not provided with down ward facia, shall be formed in the concrete while casting, as per details shown on drawings.

Window / Ventilator cill

18 mm thick gang saw cut, mirror polished, premoulded and prepolished, machine cut for window sills, approved shade, colour and texture laid over 20 mm thick base cement mortar 1:4 (1 cement : 4 coarse sand), 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, shall be provided under all windows/vents extending 100mm in walls .

Facia and drops of width upto 150 mm with epoxy resin based adhesive shall be provided including cleaning etc. complete. If the length of the window is more than 1500mm in length cill may be in 2 or more pieces with each piece not less than 1500mm.

Opening of required size & shape for wash basin/ kitchen sink in kitchen platform, vanity counter and similar location in marble/ Granite/ stone work, including necessary holes for pillar taps etc. including moulding, rubbing and polishing of cut edges etc. shall be provided as required complete.

Bearing of RCC Structural Members

Bearing of all RCC roof/floor slabs should rest on two layer of bitumen laminated water proofing building paper type-I, weighing not less than 60 gms/Sqm each layer, laid over 20mm thick bearing plaster in CM 1:4 finished even and smooth treated with one coat of white wash over PCC band/masonry wall.

All beams/bressumers resting on masonry shall be provided with PCC bed blocks of cement concrete mix 1:2:4 type B-1. The size of bed block shall be as indicated on drawings. In case size is not indicated, it shall be 200mm deep, length equal to the width of beam plus twice the depth of block and width equal to the thickness of wall.

The bearing of lintels shall comprise of a full brick with vertical joints in brick work staggered.
Note : Provisions given in this clause are applicable only to load bearing wall and not for frame structures.
Junction of RCC Roof slabs and parapet walls, Moulds/Facia/Pipe etc (As applicable)
PCC padding in the form of a coved fillet of radius 75mm shall be provided in PCC (1:2:4) all alongwith junction of RCC roof slabs and vertical projections as specified above.

Plinth Protection

Plinth protection in all situations as shown on drawings shall be provided with 50mm thick PCC (1:3:6) type C-1 using 20mm graded crushed stone aggregate over 75mm thick consolidated bed of hard core of dry brick ballast blinded with coarse sand over well consolidated earthen surface. Unless otherwise indicated on the drawing, the width of the plinth protection shall be 75cm. PCC shall be laid in alternate bays (not exceeding 2 Sqm) and finished fair on top without using extra cement. 6mm wide joints shall be provided throughout the thickness of plinth protection in concrete bays and in between walling and plinth protection. All joints in bays of concrete as well as between walling and the concrete in plinth protection shall be filled with mastic filling comprising of one part of heated bitumen 85/25 grade and 3 parts of sand (all by weight). The plinth protection shall be laid to slope of 1:12 from outer edge of wall.

PCC Benching
PCC benching/stopper shall be provided as shown on drawings and the radius of the round portion shall be 75mm.

Concrete padding
Where the required height of walls, opening is not obtained with adequate size of PCC blocks/stone/bricks, the same shall be obtained by providing concrete padding of PCC (1:3:6) type C-1.

➢ STONE MASONRY

Stone masonry works where indicated shall be provided as under:-

Materials
Stone: Stone shall be harder stone such as granite, trap or basalt of best quality locally available. Stone shall be hard, sound, durable and free from defects like cavities, sand holes or any other defect that may adversely affect its strength and appearance. It shall be of uniform colour and texture. Stone boulders (in their original rounded shape) shall not be used in the stone masonry work.

Sand: Refer Clause 5.4 of the MES Schedule Part-I.

Type of stone Masonry: Random rubble masonry brought upto courses for situations other than retaining walls shall be provided as specified in clause 6.10.2 of the MES Schedule and in accordance with Fig 8 of the MES Schedule. The stone masonry work shall be built in cement mortar 1:6 unless otherwise specified, elsewhere in these specifications or in Schedule „A". In case contractor does the superior quality masonry as per local practice, then the masonry specified, nothing extra shall be admissible on this account to the contractor.
Dry random rubble masonry uncoursed or RR masonry uncoursed in cement mortar for retaining walls shall be provided as specified in clause 6.10.1 and 6.17 of the MES Schedule Part I.
Bond stones : Refer clause 6.10.1.5 of MES Schedule Part-I. If the through bond stones of adequate size/length are not available, PCC bond stones in lieu shall be provided cast- in-situ or Pre-cast cement concrete of mix 1:3:6 type C-1 of section 15cmx 15 cm without any price adjustment.

➢ COMMON BRUNT CLAY BRICK MASNORY

Common burnt clay building bricks (here-in-after termed as bricks) shall conform to the requirements laid down in IS : 1077 : 1992, Common Burnt Clay Building Bricks -Specification (Fifth Revision). Brick work in cement mortar with first class brick in walls upto plinth level/ superstructure above plinth level up in all shapes and sizes built in Cement mortar 1:6 (1 cement : 6 coarse sand) for full brick walls and in Cement mortar 1:4 (1 cement : 4 coarse sand) for Half brick thick walls.
Bricks shall have minimum compressive strength 75 Kg/CM^2 (Class designation 7.5).

The brick shall have smooth rectangular faces with sharp corner & slight round edges, and shall be well burnt, uniform in colour, free from cracks, flaws, nodules of lime and emit clear ringing sound when struck.

Sampling and tests:- Samples of bricks shall be subjected to the following tests.

(a) Dimensional tolerance.
(b) Water absorption.
(c) Efflorescence.
(d) Compressive strength.

Sampling :- For carrying out the above tests, the samples of shall be done as per IS: 5454 - 1978 at random according to the size of lot a given in Table 1 below. The sample thus taken shall be stored in a dry place until tests are made.

Samples shall be taken as per details given below:-

(e) **Sampling from a stack**:- The brick stack, the stack shall be divided in to a number of real or imaginary sections and the required number of real and imaginary sections and the required number of bricks drawn from each section. Sampling from trucks shall be as per IS: 5454.-1978 Scale of sampling and criteria for conformity for visual and dimensional characteristics:-

No. of bricks in a lot	For characteristics specified for individual bricks		No. of bricks to be selected for dimensional characteristics 20 bricks
	No. of bricks to be selected	Permissible no. of defective in the sample	
1	**2**	**3**	**4**
2001-10000	20	1	40
10000-35000	32	2	+60
35001-50000	50	3	80

(f) **Visual characteristics: -** The number of bricks to be seclected from a lot and shall be in accordance of Col. 1 & 2 of above table for visual characteristics in all cases and dimensional characteristrics if specified for individual bricks. All the bricks selected above in accordance with Col. 1 & 2 of table shall be examined for visual characteristics as specified in Col. 2 above. If the number of defective bricks found in the sample is less than or equal to the corresponding number as specified in Col. 3 of table, the lot shall be considered as satis fying the requirements of visual characteristics, otherwise the lot shall be deemed as not having met the visual requirements.

(g) **Dimensional characteristics**. The number of bricks to be selected for inspecting the dimensions and tolerance shall be in accordance with col. 1 & 4 of Table. These bricks will be divided into groups of 20 bricks thus formed will be tested as per IS: 1077 for all the dimensions and tolerance as given below

Type and size of Bricks shall be as under :-

(i)	Type of bricks	–	Non modular bricks
(ii)	Size of bricks	_	May be checked with thickness of wall as per approved Architectural drawing

(iii) Dimensional Tolerances for group of 20 bricks Length 20XLength of Bricks ± 80 mm Width 20Xwidth of Bricks ± 40 mm Height 20Xheight of Bricks ± 40 mm

(iv) A lot shall be considered having found meeting the requirements of dimensions and tolerance if none of groups of bricks inspected fails to meet the specified requirements.

(v) Scale of sampling and criteria for physical characteristics shall be as per IS: 5454.

The Lot, which has been found satisfactory in respect of visual and dimensional requirements, shall be next tested for physical characteristics like compressive strength, water absorption, and efflorescence.

The physical requirements of the bricks shall be tested as per IS: 12894 -2002.

The bricks shall have physical characteristics as specified here under :-

(h)	Water absorption	-	20% Max
(i)	Compressive strength	-	75 Kg/CM^2 For other places.
(j)	Efflorescence	-	Moderate up to class 12.5 and 15% by mass for higher classes.

A lot shall be considered having satisfied the requirements of physical characteristics if the condition stipulated here in are all satisfied :-

(a) The average compressive strength shall satisfy the requirements specified in Para 8.2.1.

(b) The compressive strength of any individual brick tested in sample shall not fall below the minimum average compressive strength specified for the corresponding class of brick by more than 20 %.

(c) Average water absorption shall be as specified in Para 9.5

(d) The Number of bricks failing to satisfy the requirements of the efflorescence specified in Para 9.6 shall not be more than the permissible in IS:12894.

Handling and storage of bricks shall be as per Cl 5.6.9 of SSR Part-1

The general quality of brick shall be as per IS 12894-2002

In case of deviation, including brick work, the pricing shall be done at applicable rates of MES Schedule for sub class 'B' bricks (old size bricks), adjusted by contractor's percentage, irrespective of whatever is specified in Clause No 5.6.3 of SSR Part I.

Thickness of Joints: Thickness of joints shall be such that four courses and three joints taken consecutively shall measure equal to 4 times of actual thickness of bricks plus 4 cm. However the joints thickness upto 15 mm may be adopted. The provision of Clause 5.26 under section 5 bricks work of SSR 2009 Part I shall be deemed to be amended to the extent as stated above. To make up the height of brick work no cut out bricks shall be allowed and shall be filled in with PCC 1:4:8 (Nominal Mix) using 20 mm graded stone aggregate.

Brick work shall be with brunt bricks of sizes as per width shown in respective drawings. One brick and half brick thick wall shall mean 25 cm and 12.5 cm respectively (Wall thickness may be checked as per approved architectural drawing). During execution of work center line dimension of walls shall be maintained keeping the overall dimensions of the building/structure as per Architectural drawings.

Any hole left in the brick work for the purpose of centering/scaffolding shall be filled up with PCC

M-15 (Nominal Mix) using 20 mm graded stone aggregate mixed with water proofing compound as per manufacturer's instructions for full width of wall.

Mortar for brick work shall be as under: -

Full brick or thicker wall	- Cement mortar (1:6)
Half brick thick wall	- Cement mortar (1:4)

Half brick walls shall be constructed off the PCC sub base in ground floor unless otherwise specifically shown on drawings and off the RCC slab in upper floors. Half brick walls shall be reinforced with 2 Nos 8 mm dia MS bars at every fourth course from the bottom where the height of the wall exceeds 1.20m. MS bars shall be anchored to a length of 75 mm in adjoining wall/column. No cutting shall be made in RCC Columns. Extra reinforcement bars of suitable length shall be left at the places where MS bars are to be anchored during casting of RCC Columns.

- **AUTOCLAVED AERATED CONCRETE BLOCK MASNORY**

Autoclaved Aerated Concrete Blocks (AAC) of required thickness shall be provided for all types of Masonry Walls as per BIS code 2185 (part 3) 1984. The work shall be done in accordance with CPWD specifications Volume – I & II with correction slips up to the last date of submission of tender documents.

Compressive strength of AAC blocks shall be not less than 5 N/mm^2 conforming to IS 2185/1984.

Polymer modified adhesive mortar/ cement mortar 1:4 (1 cement: 4 coarse sand shall be used for construction ofmasonry walls as per the approval of Engineer in Charge and manufacturer's instructions.Wherever required RCC bands of required thickness shall be provided by the contractor in the masonry walls as a part of scope of work, RCC bands shall be properly anchored in columns for stability as directed by Engineer in charge.

- **Timber**

Timber for all joinery and wood work shall conform to specification given in clause 7.3 of the MES Schedule Part- I and shall be within the permissible limits of defects defined in clauses 7.4 and 7.5 of the MES Schedule Part-I.

Timber shall be well seasoned (weather air or kiln dried), at the discretion of the contractor (except factory made door shutters which shall be kiln seasoned only) but without any price adjustments. The moisture content of timber shall not exceed the limit laid down in clause 7.7 of MES Schedule Part-I for Zone-II

Preservation of Timber

Preservative Antitermite treatment shall be carried out to all woodwork and joinery fabricated by the contractor at site. Factory made wood based boards are not to be treated with any chemical.

Chemical used for Antitermite treatment to wood work and joinery shall be copper NAPTHNATE or any other chemical specified in IS-401 & applied in any one of the manner specified in the ibid IS.

Species of timber

The species of timber and prefabricated wood products (ie plywood, wood particle board etc), shall be as specified below:-

(i)	Panelled/glazed/wire gauzed shutter for doors (styles, rails, glazing bars, beading/ moulding fillets).	:	Factory made shutter using With teak wood/sissu wood
(ii)	Edging of cup boards, ward robes/cabinet shutters, pelmet boxes etc.	:	First Class hard wood.
iii)	Panel inserts of door shutters, pelmets, shutters of cup board/ward robes where shown	:	Particle board commercial veneered on both sides of the thickness as shown on drawing.
iv)	Sliding/folding wooden doors/hatch window	:	With teak wood/sissu wood.
(v)	Wood work in door frames and Any other wood work not indicated in drawings or specification not given.	:	With teak wood/sissu wood.

In the event of deviation of panelled joinery with veneered particle board inserts, the pricing shall be done at the rates given in SSR Part-II for factory made panelled shutters.

Panelled shutters shall be provided with beading all round the panel inserts on the front side of door. The size of beading shall be 20mm in width and tapered thickness from 10mm to 5mm**.**

Commercial Veneered Particle Board

Particle boards shall be three layered flat pressed teak wood veneered particle board bonded with phenol formaldehyde synthetic resin adhesive and shall conform to exterior grade of IS-3897 specifications for veneered particle board. Edges of particle board shutters/shelves shall be provided with 6mm thick edging of wood as specified above. It shall any of the make as mentioned in list of makes hereinafter.

All ply wood where indicated on drawings shall be BWR grade conforming to IS- 303. Decorative plywood where indicated in drawings shall conform to IS-4728. These shall be any of the make as mentioned in list of makes.

Prelaminated particle Board

It shall be of exterior grade conforming to relevant IS and of any of the make as mentioned in list of makes attached hereinafter.

Factory Made Shutters

All panelled/glazed/wire gauzed shutters of doors shall be 35 mm thick factory made, manufactured in accordance with IS-1003 made of well selected and seasoned chemically pressure treated teak wood/sissu wood suitable for joinery. Styles, rails and glazing bars shall be as specified in clause 6.3(i) here-in-before. Panel inserts shall be of particle board 12mm thick commercial veneered on both faces, conforming to specifications mentioned in clause
6.4 above. The shutters shall be procured from any of the factory as mentioned in list of makes of makes attached hereinafter.

A tolerance of $\pm$ 3mm on width and height shall be allowed provided the shutter Snugly fits into the frame.

FLUSH DOOR SHUTTERS

Flush shutters wherever indicated to be provided, shall be solid core type with block board core or particle board core ISI marked flush door shutters conforming to IS 2202 (Part I) decorative type, core of block board construction with frame of 1st class hard wood and well matched teak 3 ply veneering with vertical grains or cross bands and face veneers on both faces of shutters.. The doors shall conform to IS-2202 (Part-I) 1983 and as specified in MES Schedule clause 8.21.1 to 8.21.6. Lipping with 2nd class teak wood battens 25 mm minimum depth on all edges of flush door shutters shall be provided.

Factory made 18 mm thick single extruded WPC Jali, CNC (Computer numeric control)

Factory made 18 mm thick single extruded WPC (Wood Polymer Composite) solid plain white colour board Jali Shall be CNC (Computer numeric control) routed of approved design by Engineer in -charge which are machine cut for duct/shaft covering, partitions and facades comprising of virgin polymer of K value 58-60 (Suspension Grade), calcium corbonate and natural fibers (wood powder/ rice husk/wheat husk) and non toxic additives(maximum toxicity index of 12 for 100 gms) having minimum density of 650 kg/ cum and screw withdrawal strength of 1800 N (Face) minimum compressive strength 50 N/mm2, modulus of elasticity 850 N/mm 2 and resistance to spread of flame of Class A category with properties of being termite/borer proof, water/moisture proof and fire retardant and fixing on M.S (mild steel) frame made of 25 x 25 x 1.5 mm square hollow box section including applying a priming coat of approved steel primer, placed at grid made at 1.0 x 1.0 m or as per requirement at site with necessary stainless steel fasteners and SS screws etc., all complete as per direction of Engineer-In- Charge.M.S (mild steel) framework with priming coat and necessary SS fasteners and SS screws shall be complete as per direction of Engineer-In- Charge.

Factory made single extruded WPC (Wood Polymer Composite) board in cup boards and wardrobes

Factory made 18 mm thick single extruded WPC (Wood Polymer Composite) solid board shall be one side white color and other side of board lamented with PVC foil of minimum 14 micron thickness of approved design pasted with hot melt adhesive for cup boards, wardrobes, work stations and bathroom/kitchen cabinet etc. of required sizes comprising of virgin polymer of K value 58-60 (Suspension Grade), calcium carbonate and natural fibers (wood powder/ rice husk/wheat husk) and non toxic additives (maximum toxicity index of 12 for 100 gms) having minimum density of 650 kg/cum and screw withdrawal strength of 1800 N (Face) & 900 N (Edge), minimum compressive strength 50 N/mm2, modulus of elasticity 850 N/mm2 and resistance to spread of flame of Class A category with property of being termite/ borer proof, water/moisture proof and fire retardant and fixing with stainless steel piano hinges/soft close clip on concealed hinges of required size with necessary full body threaded star headed counter sunk S.S screws, all as per direction of Engineer-In- Charge.

Fittings and fixturesfor cup boards and wardrobes

Stainless steel handles shall be 100 mm size for shutters complete all as per specified and directed. Stainless steel auto closing hinges openable at 0 degree for shutters shall be provided complete all as per specified and directed.

Brass stainless steel finish mortise lock set shall be of four levers in door complete all as specified and directed. Brass hasps and staples (safety type) shall be 150 mm complete all as specified and directed.

FRP Door

Fiber Glass Reinforced plastic (FRP) Door Frames of cross-section 90 mm x 45 mm having single rebate of 32 mm x 15 mm to receive shutter of 30 mm thickness. The laminate shall be moulded with fire resistant grade unsaturated polyester resin and chopped mat. Door frame laminate shall be 2mm thick and shall be filled with suitable wooden block in all the three legs. The frame shall be covered with fiber glass from all sides. M.S. stay shall be provided at the bottom to steady the frame. all as shown in drawings.

30 mm thick Fiberglass Reinforced Plastic (F.R.P.) flush door shutter in different plain and wood finish made with fire retardant grade unsaturated polyester resin, moulded to 3 mm thick FRP laminate all around, with suitable wooden blocks inside at required places for fixing of fittings and polyurethane foam (PUF)/Polystyrene foam to be used as filler material throughout the hollow panel, casted monolithically with testing parameters of F.R.P. laminate conforming to table - 3 of IS: 14856, complete as per direction of Engineer-in-charge.

➢ BUILDERS HARDWARE

Items and Quantities: Hardware fittings shall be provided according to the scales indicated in the Schedule of iron mongery on the relevant drawings. In all buildings iron mongery shall be used of Stainless steel.

In case the size of particular fittings is not given in the drawing, it shall be of size as decided by the AE. All articles of builder's hardware shall bear ISI marking. In case ISI marked articles are not manufactured, these shall conform to the relevant ISI specifications and the specifications given in the MES Schedule for the relevant items.

Finish of articles shall be as specified in clause 9.2.4 of MES Schedule part-I.
Screws used for fixing the articles of builders hardware shall be as specified in clause 9.2.6 of MES Schedule Part-I. All the iron mongery wherever required to be welded, shall be welded with gas welding only.

Articles

Butt Hinges: Butt hinges shall be stainless steel butt hinges with stainless steel screws etc. complete of size 100X58X1.90 mm for FRP door shutters and S.S. 316 Grade BSEN 1634:1:2014 Certified & Mechanically tested BSEN 1935:2002 Satin Finish S.S. 316 Grade Door Hinges approximate size 125mm X 62mm X 2 mm of with S.S. 316 Grade Pin, and Rivet with necessary S.S.304 Grade Self Tapping Phillips Cross Head Screws etc. complete for other doors.

Continuous (Piano Hinges)
Continuous (Piano) hinges shall be mild steel chromium plated all as specified in clause 9.7.6 of MES Schedule Part-I. Stainless steel auto closing hinges shall be openable at 0 degree for cabinet shutter.

Mortise Lock and Handle
Satin Finish S.S. 316 Grade Mortice Handle shall be of □22 X 8 mm size With Rectangle Cap 200X50X11 mm for Mortise Lock Body including necessary Fixing screws complete. Pair of S.S. 316 Grade Satin Finish solid design Mortise Handle shall be of size □22 X 8 mm with S.S. 316 Grade euro profile escutcheons key hole for Mortise Pin Cylinder, high grade brass bushing for extra fixing strength for intensive use of door with back to back fixing screws system of KICH make with both side active mortise handle and spindle fixed with High Quality Stainless Steel Wood Screws (8 PCS.) for minimum door thickness 30 mm. Satin Finish Mortise Latch shall be with approximate size of back set 50 mm, 26 mm brass latch, Stainless steel main & Strike plate suitable for minimum door thickness 30 mm Single door shutter with necessary fixing screw complete.
Satin Finish 4 bolt 9" Mortise Lock body (wide) shall be approximate size of back set 60 mm X 85 mm, with 80 mm Lock and 26 mm latch, Stainless steel main & Strike plate & including back to back fixing feature suitable for Single door shutter with necessary fixing screw complete.
Satin Finish 6 pin Mechanism, high quality brass body Mortise Pin Cylinder shall be with 5 high accuracy Computerized Dotted keys of approved make both side key suitable for minimum door thickness 30 mm with necessary Fixing Screw complete.

Solid design 'N' Type Pull Handle
S.S. 316 Grade Satin Finish Solid design 'N' Type Pull Handle shall be of size □22 X 8 X 200mm(C/C) high Grade Brass Busing should be for Extra Fixing strenght including necessry fixing Accessories of approved make complete.

Stainless Steel Satin Finish Square Tower bolt
S.S. 304 Grade Stainless Steel Satin Finish Square Tower bolt shall be of overall length (excluding Bracket) 150 Mm/ 300mm and inner bolt of 10 mm and outer 15X15 mm Sqaure Pipe with necessary S.S. Fixing Screws complete.

Satin Finish Wall mounted Door Stop
S.S. 316 Grade Satin Finish Wall mounted Door Stop shall be of the length of 75 mm including Rubber with necessary SS screws etc. complete.

Zinc Material Door Stopper
Zinc Material Door Stopper shall be of length of 163 mm including PVC Rubber with necessary screws complete.

Satin Finish S.S. 316 Grade Fix Type Door Knob
Satin Finish S.S. 316 Grade Fix Type Door Knob with Ø 50 mm including necessary fixing screws complete.

Combination finish SS 304 Grade with 2 mm Thickness Aldrops
Combination finish SS 304 Grade shall be of 2 mm Thickness Aldrops Ø 16 mm X 300 mm including 3 nos.fixing Bracket and 1 no. locking bracket with necessary MS nickel Plating Bolts complete.

Stainless steel handles 100 mm
Stainless steel handles shall be of 100 mm size for kitchen cabinet shutters complete including necessary fixing screws complete.

Brass stainless steel finish mortise lock
Brass stainless steel finish mortise lock set four levers for kitchen cabinet shutters complete including necessary Fixing screws complete.

Brass hasps and staples (safety type) 150 mm
Brass hasps and staples (safety type) 150 mm complete including necessary fixing screws complete.

Aluminum pull bolt lock
Aluminum pull bolt lock, ISI marked, shall be of anodized (anodic coating not less than grade AC 10 as per IS: 1868) transparent or dyed of required colour and shade, with necessary screws bolts, nut and washers etc. complete.

50 cm long aluminium kicking plate of size 100x3.15 mm
50 cm long aluminium kicking plate of size 100x3.15 mm shall be of anodised (anodic coating not less than grade AC 10 as per IS: 1868) transparent or dyed to required colour or shade, with necessary

Helical Door Springs
All wire gauged shutter shall be provided with helical door springs made of mild steel all as specified in clause 9.7.8 of MES Schedule Part-I irrespective whatever is shown on drawings. The size of helical door spring shall be 150mm

Towel Rails
Towel rails shall be tubular of aluminum alloy anodised of „D" shape with flanged ends for fixing. It shall be of minimum dia 20mm and 60cm long in case length is not mentioned in drawings.

Wire Cloth
Fly proof stainless steel grade 304 wire gauge shall be of 0.5 mm dia. wire and 1.4mm wide aperture with matching beading complete.

Tie Hanger
Tie hanger shall be 20mm x 6mm flat of aluminum. The length of the tie hanger if not shown on the drawings shall be 400mm.

Knobs
Shutters and drawers of small size built in cabinets/meter and switch boxes and built in furniture shall be provided with aluminum anodised knobs of 40mm dia.

Flush Bolts
Where double shutters have been provided for built in furniture, one of the shutters shall be provided with flush bolts of Stainless steel.

Pegs
Pegs where shown on drawings shall be of stainless steel, cast integral with base plate.

Drapery rod
Drapery fancy type curtain rod shall be 32 mm dia weight not less than 250 Gram per RM of stainless steel drapery rod with including brackets, rings etc. with brass knobs including all fixing arrangement and shall be provided in all living accommodation.

Hydraulic door closer
Hydraulic door closers hall be of aluminum die cast body tubular type universal hydraulic door closer (having brand logo with ISI, IS : 3564, embossed on the body, door weight upto 35 kg and door width upto 700 mm), with necessary accessories and screws etc. complete.

- **uPVC window**

uPVC windows/doors shall be provided all as shown on drawings and as specified herein after:

1) Factory made uPVC glazed/ wire mesh windows/ doors shall be comprising of lead free uPVC multi chambered frame, sash and mullion/ coupler (wherever required) extruded profiles having minimum wall thickness of 1.70 mm for Series R1 and R2 profiles and 2.10 mm for Series R3 and R4 profiles conforming to EN: 12608 in any shape, colour and design duly reinforced with galvanized mild steel section made of required shape & size as per CPWD Specification, uPVC extruded glazing beads, interlocks and Inline sash adaptor (whereever required) of appropriate dimension, EPDM gasket, hardware, SS 304 grade fasteners of minimum 8 mm dia. with countersunk head, comprising of matching polyamide PA6 grade sleeve for fixing frame to finished wall as per IS 1367 : Part 1 to 14, plastic packers, plastic caps and necessary stainless steel screws etc. Profile of frame, sash & mullion (if required) shall be mitred cut and fusion welded/ mechanically jointed duly sealed at all corners, including drilling of holes for fixing hardware and drainage of water etc. After fixing frame the gap between frame and adjacent finished wall shall be filled with weather proof silicon sealant over backer rod of approved size and quality, all complete as per approved drawing conforming to CPWD specification & direction of Engineer-in-Charge. Section of steel reinforcement and cross sections of uPVC profiles to be as per design approved by Engineer-in-Charge.
2) Wire mesh/ Glazing of plain/ toughened/ laminated/ double glass unit with/ without high performance coatings as per design requirements and conforming to IS: 3548 & IS: 16231 shall be paid separately.

Note:- Structural design proof checked from a Government Engineering Institute, to be provided by the manufacturer for :
Sites with basic wind speed > 45 m/sec as per IS 875 – Part 3
Sites with structure height more than 20m for all wind speeds.

a) Three track three panels sliding window shall with fly proof SS wire mesh (Two nos. glazed & one no. wire mesh panels) made of (small series) frame 92x44 mm & sash 32x60 mm both having wall thickness of 1.9 ±0.2 mm and single glazing bead of appropriate dimension (Area of window up to 1.75 sqm).

b) Fixed window/ ventilator with mullion/ transom shall be made using R3 series with frame

(55mm & above) x (45mm & above) & mullion (55mm & above) x (65mm & above). (Height upto 2.5 meter).

c) Ventilator Casement window single panel shall be with or without fixed panel with S.S. 304 friction hinges as per size and weight of sash, single point locking zinc alloy (zamak) powder coated handles and shall be made of using R2 series with frame (39mm & above) x (39mm & above) & sash/ mullion (39mm & above) x (60mm & above). (Height upto 1.2 meter).

Glazing

Glazing to uPVC windows/ventilators shall be with Float glass panes of 4 mm thick glass pane (weight not less than 10 kg/sqm) for panes of area n exc 0.5 Sqm each pane and with 5.0 mm thick glass panes (weight not less than 12.50 kg/sqm) for panes of area exc 0.5 Sqm each pane. Frosted glass panes shall be provided instead of ordinary float glass panes in doors, windows and clerestory window shutters in toilets all as shown on drawings.

Glazing to steel frames, where shown on drawings, shall be fixed with special spring glazing clips and as shown in drawing and glazing to wooden joinery shall be fixed with wooden beading with putty all as specified in clause 16.5 to 16.10.2 of MES Schedule. If fixing detail is not shown in drawing it shall be fixed with putty as per the direction of AE. Glazing to uPVC window shall be fixed as per manufacturer's Instructions.

M.S. grills

M.S. grills of required pattern shall be provided in frames of windows etc. with M.S. flats, square or round bars etc. including priming coat with approved steel primer all complete all as shown on drawings.

- **Steel and Iron Works**

General

Items of steel and iron brought to site by the contractor for incorporation in the work shall be free from defects all as specified in clause 10.4.3 and 10.17.6 of SSR Part-I and shall be conforming to IS specifications as given below

(a) Reinforcement steel : High strength deformed steel bars produced by Thermo Mechanical Treatment Process (TMT steel bars of grades Fe- 500D)meeting all other requirements of IS : 1786 shall be used as indicated on drawings**.**

(b) Structural Steel:-

Steel work shall be in built up tubular (round, square or rectangular hollow tubes etc.) trusses etc., including cutting, hoisting, fixing in position and applying a priming coat of approved steel primer, including welding and bolted with special shaped washers etc. complete. Steel tubes for structural purposes shall conform to IS –1161 and shall be of grade YST-240.

(a) Standard quality structural steel of Grade E 250 [Fe-410W Quality A] conforming to IS – 2062 shall be used for all types of steel structures including those subject to Dynamic Loading

(b) Ordinary quality structural steel wherever mentioned shall be conforming to IS – 2062 of Grade E 165 [Fe-290]. This shall be used for doors, windows, guard bars, grills, steel gates, hand railing, fencing posts etc.

Black/Galvanised Steel Sheets:

(Plain & Corrugated) conforming to IS: 277. Galvanised steel sheets, wherever indicated, shall have 275 grade of zinc coating**.**

Fabric Reinforcement for Concrete:
Conforming to IS: 1566

Source of steel can be checked from Schedule D with approved Govt Vendors.
Quality of steel shall be ascertained by following tests:-

(i) Thermo mechanically treated bars
Tensile test, bend test and rebind test shall be carried out as per clause 8 of IS- 1786-2008. Test specimen shall be taken as per clause 10 of said IS. Minimum tensile strength, yield stress and elongation for different grades shall be as under:-

Ser No	Grade	Yield Stress	Elongation Not less than	Tensile Strength
1.	TMT-500(D)	500 N/Sqmm	18 %	565 N/Sqm.
2.	TMT-550(D)	550 N/Sqmm	18 %	600 N/Sqm.

(ii) **Mild Steel Bars.** Tensile test and bend test shall be carried out as per clause 9 and delivery inspection as per clause 10 of IS-432 (Part-I) 1982. Minimum yield stress shall be 240 N/Sqm.

(iii) **Structural Steel**. Tensile test and bend test shall be carried out as per clause 10 and 11 of IS-2062-2011. Minimum yield stress shall be 250 N/Sqm.

(iv) **Chemical Test.** Chemical test shall be carried out to ascertain chemical composition which shall conform to the norms laid down in relevant ISI codes.

Note: If the test fails and steel has been incorporated in the work, The further execution of the work with that steel will be stopped and matter shall be referred to AE. The decision of the AE regarding acceptance of work done with the steel which has failed in test, with price adjustment as decided by him or redoing the work with steel of proper specifications or any other decision shall be final and binding on the contractor. In case Accepting Officer decide to remove the substandard steel the work executed using substandard steel shall also be demolished and site cleared by the contractor without any extra cost to the Govt.

Weight Conversion
Conversion factor for various sections/sizes of steel shall be as per conversion tables given in SSR. Where conversion table is not available in SSR, IS conversion table shall be followed.
Mixing of different types and grades of bars shall not be done in the same structural member as main reinforcement to satisfy clause 25.1 of IS-456 of 2000.
TMT bars shall not be treated as corrosion resistant steel bars.

Steel Reinforcement
All steel for Reinforcement shall be TMT (Thermo – Mechanically Treatment) process steel and shall be provided as shown on drawings and in the absence thereof in accordance with the provisions of IS-456. Reinforcement shall be fabricated and place in position all as shown on drawings and specified in clause 10.17 to 10.22 of MES Schedule (Part-I) without application of heat**.** Parallel threaded couplers conforming to IS code on "Reinforcement Couplers for Mechanical Splices of Bars for Concrete Reinforcement-Specification", shall be provided to reinforcement bars including threading, enlargement at connection by forging, protecting the prepared reinforcement bars and related operations as required to complete the works.

Structural steel: Structural steel supplied by the contractor shall be procured directly from manufacturers listed in relevant Appendix. In addition, Steel may also be procured even from the manufacturers approved by E-in-C's Branch after date of receipt of tenders.

Galvanized sheets and fabric reinforcement for concrete shall be procured directly from Main manufacturers like SAIL, RINL and TISCO or BIS marked manufacturers at the option of contractor without any minus price adjustment.

All finished steel shall be well and clearly rolled to the dimensions, sections and weights specified. The finished material shall be reasonably free from cracks, surface flaws, laminations, rough jagged and

imperfect edges and any other harmful defects and shall be finished in a proper manner. Tolerance on size and weight of reinforcement bars shall not be more than as specified in Clause 10.17.4 and 10.17.5 of SSR Part – I and as specified in IS – 1786 and IS – 2062 and as per relevant IS codes.

TESTING OF STEEL:

The manufacturers of steel are to carry out inspection and testing of steel in accordance with the relevant BIS provisions. The contractor shall submit manufacturer's test certificate in original or authenticated attested true copy by the manufacturers only along with the test sheet giving the result of each mechanical test as applicable in accordance with relevant IS provision and the chemical composition of the steel or authenticated copy with each consignment. The Engineer-in-Charge shall record these details in a Steel Acceptance Register which will be signed by the Junior Engineer, Engineer-in-Charge, GE and Contractor as given in the format, after due verification and Engineer- in-Charge shall send a certified true copy of test sheet to GE for his records.
Independent testing of Reinforcement steel, Structural Steel, GI Sheets and FabricReinforcement by the GE shall be mandatory.
Ultimate tensile strength elongation, bend and re bend test for reinforcement steel bars shall be carried out as per clause 9 and test specimen shall be as per clause 11 and delivery inspection shall be as per Clause 12 of IS – 1786. Bend tests and tensile tests for structural steel shall be carried out as per IS – 2062 and recorded.

FREQUENCY OF SAMPLING FOR INDEPENDENT TESTING BY GE:

Frequency for nominal mass, tensile strength, bend and re-bend tests of steel for checking nominal mass, tensile strength, bend, re-bend test, test specimen at random shall be selected by the GE at following frequency:

Ser No.	Nominal Size	Frequency
[a]	**STEEL FOR CONCRETE REINFORCEMENT**:	
1	Bars size less than 10 Mm	1 Sample [3 specimens] for each test for every 25 tonnes or part thereof
2	Bar size 10mm to 16 mm	1 Sample [3 specimens] for each test for every 35 tonnes or part thereof
3	Bar size over 16 mm	1 Sample [3 specimens] for each test for every 45 tonnes or part thereof
[b]	**STRUCTURAL STEEL:**	
4	Tensile Test	1 Test for every 25 tonnes of steel or part thereof
5	Bend Test	1 Test for every 10 tonnes of steel or part thereof

The testing by GE as per above frequency is mandatory before payment is released to the contractor in case of structural steel from secondary producers. The GE may also increase the frequency and number of samples / tests for his satisfaction. The cost of these additional tests shall be governed as per Condition 10 [A] of IAFW – 2249. However cost of samples, transportation and other overheads shall be borne by the contractor irrespective of test results.
Test shall not be insisted upon for the steel required for guard bars, holdfasts, grills and such other allied items. In case test results of testing pursuant to clause 10.5.1 are not within the acceptable limits, then that consignment of steel shall stand rejected and contractor shall remove the same from site at his own cost. The rejected material shall not be incorporated in the work. The contractor shall have no claim on this account. Cost of test samples as per frequency given in clause 10.5.1 above shall be borne by the contractor irrespective of test results.

Chemical Test of steel: Chemical tests of steel shall conforming to IS 10790 (Part 2) -1984 Para 4.3.2.2 Table 4 and subsequent paragraphs.

DOCUMENTATION:

Original purchase vouchers from the manufacturer, and original or authenticated test certificates of the manufacturers for the total quantity of steel supplied under each consignment to be incorporated in the work shall be produced to the Engineer-in-Charge of the work by the contractor. All consignments received at the work site shall be inspected by the GE along with the relevant documents before acceptance. The original vouchers and the test certificates shall be defaced and signed by the Engineer-in-Charge and kept on record in the office of the GE duly authenticated and with cross reference to the control number recorded in the steel acceptance register. The steel acceptance register shall be signed by JE, Engineer-in-Charge, GE and contractor. The entire quantity of all consignments shall also be suitably recorded in the measurements book for record purposes as "NOT TO BE ABSTRACTED" before incorporation in the work and shall be signed by the Engineer-in-Charge and contractor. The following provisions shall also be complied:

(a) All original vouchers will be kept in a file serially numbered and to be kept in GE's office.
(b) Test certificates of each steel consignment will be kept in a file, serially numbered and shall be kept in GE's office.
(c) Steel Acceptance Register will be maintained by the GE.
(d) In/Out Register for details of receipt, acceptance/rejection and consumption of steel will be maintained.
(e) Register containing results of independent and additional testing by GE.
(f) Inspection registers

CWE will check the documents personally, connected with the steel, at least once a month and record of these check will be kept in the Inspection Register [Para 10.6.1 [f] above].

STORAGE ACCEPTANCE/PRESERVATION OF STEEL:

The steel procured by the contractor shall be stored in the site of work as directed by Engineer-in-Charge / GE neatly in separate stacks at least 15 cm above GL for various grades / quality / sizes / consignments with distinct paint marks for identification. The steel so stacked shall be removed for incorporation in the work only in the presence of departmental representative. The quantity of steel of various sizes received at site and recommended for incorporation in the work shall be entered in a separate register and signed by the contractor and the Engineer-in-Charge daily.

Steel will be stored in a manner so as to prevent distortion and corrosion till it is consumed in the work. Any section that has deteriorated and corroded or if, considered defective for any other reason, the same shall be removed from site by contractor at his cost.

The contractor will keep a separate stack of steel brought at site for inspection, away from the accepted stack of steel. In case, the consignment does not meet any of the requirements of the relevant IS codes, the steel will be rejected by the GE and it will be removed from the site within 24 hours at the cost of the contractor.

CONVERSION WEIGHT OF STEEL:

The weight of steel shall be calculated as per the conversion factors specified in the MES Schedule. For sections not listed in MES Schedule, ISI conversion table shall be followed or manufacturer's certificate if the weights are not available in SSR/ISI tables.

Normal waste and off-cuts shall be stacked neatly which shall be the property of contractor. Contractor shall be allowed to remove such cut pieces after inspection and certification by the Engineer-in-Charge.

Advance on account of payment made towards these cut pieces shall be adjusted from advance on account of payment immediately falling due and before removal of such cut pieces from site.

PAYMENT IN RAR:

Payment of the steel brought by the contractor should only be released by the GE after taking action on points enumerated in para 10.6 hereinbefore and after completing the documentation mentioned hereinbefore in this regard.

Before procurement of steel, contract and structural drawing shall be read thoroughly and various grades/types of steel to be incorporated in the work shall be identified by contractor and got approved by the GE. Steel shall be procured sufficiently in advance as mentioned hereinafter under clause 10.10.

SAFETY OF STEEL: It will be responsibility of contractor to make sure that all possible arrangement are made for safe custody of the steel. In case of any loss of steel, only contractor will be responsible and the loss will be made good by contractor without any delay or claim what so ever.

SCHEDULE OF SUPPLY: Contractor shall work out complete requirement of steel size wise and phase the same as per the activities planned to be executed in terms of CPM networking. The contractor shall procure all the steel sections in accordance with this CPM chart. Schedule of supply of steel will be finalized by GE in consultation with contractor and same will be incorporated in CPM chart so that supply of steel is monitored in a way to avoid any delay in completion of the work. The schedule of supply of steel will be vetted by CWE from time to time.

Welding

Welding wherever shown on drawings shall be by metal arc process in accordance with IS-1816 and IS-822

Hold Fasts/ Lugs

Flat iron hold fasts/lugs shall be provided by welding as and where shown on drawing except those to be provided to wooden chowkhats which shall be fixed with bolts/nuts as per details shown on drawings. Holes in wooden chowkhats shall be plugged with hard wood plugs**.**

Fan Hook with MS Boxes

Wherever fan hooks/fan points have been shown mild steel boxes with fan hooks as per details shown on drawings shall be provided. Exposed faces shall be treated with two coat of synthetic enamel paint**.**

Angle Iron frame for door

Wherever shown on drawings, angle iron door frames shall be provided to door openings as per detail shown on drawings. The size of angle iron shall be as indicated on the drawing. The joints shall be welded properly to form solid fused welded joints. Welds shall be properly grounded and left with no protrusion of weld material at the joint.

Stainless steel railing

Railing of stainless steel shall be provided all as shown in drawings. The vertical pipes and hand rail shall be of stainless steel, standard quality of grade SS- 304, polish finish of wall thickness 1.6 mm and of size as shown on drawings. SS tubes shall be welded at the turnings and junctions. All the welded portions shall be completely grinded and brought to bright and smooth finish. Anchor fastening bolts shall be provided with grouting so as to achieve full strength of railing. The final finish of the railing shall be bright and smooth.

Aluminium Doors/Windows

Aluminium doors/windows shall be provided all as shown on drawings as described in clause 10.37 of MES Schedule Part-I (2009) (Specifications).

Aluminium work for doors, windows, ventilators and partitions shall be Polyester powder coated aluminium (minimum thickness of polyester powder coating 50 micron) with extruded built up standard tubular sections/ appropriate Z sections and other sections of approved make conforming to IS: 733 and IS: 1285, fixing with dash fasteners of required dia and size, including necessary filling up the gaps at

junctions, i.e. at top, bottom and sides with required EPDM rubber/ neoprene gasket (thermal break profile) etc. Aluminium sections shall be smooth, rust free, straight, mitred and jointed mechanically wherever required including cleat angle, Aluminium snap beading for glazing / paneling, C.P. brass / stainless steel screws, all complete as per architectural drawings and the directions of Engineer-in-charge.
Shutters of doors, windows & ventilators shall include providing and fixing hinges/ pivots and making provision for fixing of fittings wherever required including the cost of EPDM rubber / neoprene gasket required.
Glazing in aluminum door, window, ventilator shutters and partitions etc. shall be with Toughened glass panes of 5.5 mm thickness (weight not less than 12.50 kg/sqm) and with EPDM rubber / neoprene gasket etc. complete as per the architectural drawings and the directions of engineer-in-charge.
Filling of the gap in between aluminum frame & adjacent RCC/ Brick/ Stone work shall be done by providing weather silicon sealant over backer rod of approved quality.
Brass 100mm mortise latch and lock with 6 levers without pair of handles (best make of approved quality) shall be provided for aluminium doors including necessary cutting and making good etc. complete.
12 mm thick frameless toughened glass door shutter shall be provided all as per drawings, of approved brand and manufacture, including providing and fixing top & bottom pivot & double action hydraulic floor spring type fixing arrangement and making necessary holes etc. for fixing required door fittings, all complete as per direction of Engineer-in charge. SS304 grade D type 300mm Pull Handle with 19 mm dia (SD12PSS (19MM)) shall be fixed with screws etc. complete.
Special quality & design Centre patch lock with cylinder shall be provided for frame less 12 mm thick toughened glass shutters including necessary SS Screws etc. of make Dorset Item code no. DPF-325 complete.

FLOORING:

GENERAL:
Provision contained in clause 13.25, 13.27, 13.32, 13.39 and 13.40 of MES Schedule Part I are to be adopted for laying floors.
Floors shall be laid to levels or to falls as shown on drawings and as directed by Engineer-in- Charge.
Floor finish shall be extended over dwarf walls, door openings and other openings.
The dividing lines between the floors of different types wherever they so meet between adjoining rooms shall be determined of the basis of the finish visible when the doors are closed and the applicable finish shall accordingly be provided.
Floor finish over RCC slabs shall be laid all as specified in clause 13.32.5 of MES Schedule Part – I.
Sub floor may not be laid in panels.
Floors of types and composition as indicated in the Schedule of finishes and drawings shall be laid as specified in Section 13 of MES Schedule Part I and as directed by Engineer-in-Charge.

CEMENT: Cement shall be OPC or Portland Pozzolona Cement (PPC) as stipulated here-in- before for concrete works.

MOORUM FILLING UNDER FLOORS: Moorum filling under floors shall be carried out all as specified here-in-after and as directed.

CEMENT CONCRETE FLOORS:

[a] Cement concrete floors shall be provided over PCC sub-base/ slabs at locations all as shown on drawings and as specified in Schedule of Finishes Drawing. The surface shall be finished even and smooth using extra cement.

[b] Cement concrete flooring cast-in-situ shall be laid in panels and size of panel shall be as specified in clause 13.23.1 of MES Schedule Part-I.

[c] Glass dividing strips of 3 mm thick sheet glass shall be provided in cement concrete floors. The width of the glass dividing strips shall be 3 mm less than the thickness of top finished layer of concrete. The top of the strip shall flush with the floor finish. However thickness of the concrete floor

finish is more than 50mm, the flooring shall be carried out in alternative panels without using dividing strips.

[d] The surface shall be cured efficiently by water ponding as directed by Engineer-in- Charge.

MARBLE STONE FLOORING: Marble stone flooring wherever shown in the drawings shall be per polished green marble slabs laid as specified in schedule. The size of the marble slab in flooring shall be minimum 1200mmx600mm. The slabs shall be machine cut and shall be of uniform colour as approved by GE. The thickness of Green marble stone shall be as specified in drawings. The green marble slab shall be set and jointed in neat cement slurry @ 3 Kg/Sq.m over screed bed as indicated in drawings and pointed in white cement with pigments or coloured cement to match the green marble slab.

GRANITE SLAB FLOORING: The granite slabs shall be of best quality and of colour and size as approved or as specified in drawings. Polished Granite stone flooring shall be in required design and patterns, in linear as well as curvilinear portions of the building all complete as per the architectural drawings with 18 mm thick stone slab over 20 mm (average) thick base of cement mortar 1:4 (1 cement : 4 coarse sand) laid and jointed with cement slurry and pointing with white cement slurry admixed with pigment of matching shade including rubbing , curing and polishing etc. all complete as specified and as directed by the Engineer-in-Charge.

KOTA STONE FLOORING: 22-25mm thick Kota stone slab flooring shall jointed with grey cement slurry mixed with pigment to match the shade of the slab, including rubbing and polishing complete laid over 20 mm (average) thick base of cement mortar 1 : 4 (1 cement : 4 coarse sand).

NON SKID CERAMIC TILE FLOORING: Provide non skid ceramic tile flooring at locations all as specified in drawings. Ceramic glazed floor tiles of size 300x300 mm (thickness to be specified by the manufacturer) shall be of 1st quality conforming to IS: 15622 of approved make in colours such as White, Ivory, Grey, Fume Red Brown, laid on 20 mm thick cement mortar 1:4 (1 Cement: 4 Coarse sand), Jointing with grey cement slurry @ 3.3 kg/sqm including pointing the joints with white cement and matching pigment etc., complete. The shade/pattern/design of the tiles shall be as approved. The tiles shall be set, jointed in neat cement slurry and pointed flush in white cement mixed with pigment to match the colour of tile. The tiles shall be laid as per pattern described. The workmanship shall be all as specified in clause No.13.40.2 of MES Schedule Part-I. The top surface of RCC slab shall be cleaned with hard wire brush and cement slurry @ 3.3 Kg/Sq.m shall be applied before laying the floor.

VITRIFIED TILE FLOORING: Vitrified tile flooring shown in drawings shall be carried with premium quality hard, sound, dense, Double Charged and homogenous in texture, free from defects. Mohr hardness shall not be less than 7 and conforming to relevant IS. The tiles are classified under group B1a of the international Standard for Ceramic Tiles ISO-13006 and European Standard EN: 176.

Double charged Vitrified tiles in different sizes as per schedule of finishes (thickness to be specified by the manufacturer), shall be with water absorption less than 0.08% and conforming to IS: 15622, of approved brand & manufacturer, in all colours and shade, infloor/ skirting, riser of steps, laid with cement based high polymer modified quick set tile adhesive (water based) conforming to IS: 15477, in average 6 mm thickness, including grouting of joints. The joints of flooring tiles shall be grouted having joints of 3 mm width, using epoxy grout mix of 0.70 kg of organic coated filler of desired shade (0.10 kg of hardener and 0.20 kg of resin per kg), including filling / grouting and finishing complete as per direction of Engineer-in-charge.

CERAMIC TILE FLOORING: Ceramic tile flooring shown in drawings shall be carried out with plain, first quality, Grade B II (a) confirm to IS-15622. The shade shall be as approved by users. The tiles shall set, jointed in neat cement slurry and pointed flush in coloured cement to match, laid over screed as specified in drawings. The tiles shall be laid as per pattern directed by GE. The workmanship shall be all as specified in clause No.13.40.2 of MES Schedule Part I.

DESIGNER POLISHED CHEQUERED CEMENT CONCRETE TILES: Pre-cast Designer Chequered PCC tiles in floors with 100% grey cement and pigments shall be provided wherever indicated in drawings. The tiles shall comply the requirement of clause 13.17 of MES Schedule Part-I. Workmanship shall be all as specified in Clause 13.25 & 13.39 of MES Schedule Part-I. Tiles shall be laid over screed bed in cement sand mortar as specified in drawings. Tiles shall be set, jointed and pointed in neat cement slurry of colour to match the tiles. The tiles shall confirm to IS-13801, Specification for Chequered Cement Concrete Tiles except for the wear quality and when tested in the manner specified in clause 11.6 of the same IS. The wear for tiles shall not exceed the following values:

(a) Average wear : 2mm
(b) Wear on individual specimen: 2.5mm

INTERLOCKING TYPE PAVER BLOCK: The paver block shall be as mentioned and as shown on drawings, reflective and inter locking type and shall be factory made. The paver block shall be brought from the manufacturer mentioned hereinafter and as approved. Paver blocks shall be conforming to IS 15658- 2006. Shade of coloured tiles wherever specified shall be as directed by the GE. SRI value of paver block shall be >50.
Material used for preparation of paver block shall be as per clause 4 of IS: 15658-2006.

Water absorption: The average water absorption shall not more than 6% and for individual samples not more than 7% when tested as per IS 15658.

Markings: The tiles shall be purchased from an approved manufacturer and shall have the markings as per clause 10 of IS 15658 embossed either on the sides or bottom.

Testing: The tiles shall be tested for the following under laid requirements as per testing procedure specified in IS 15658. The cost of samples and cost of testing shall be borne by the Contractor.

(a) Dimensions and tolerance-Table 2 of IS 15658: 2006 shall be referred.
(b) Thickness of the wearing layer-Table 2 of IS 15658: 2006 shall be referred.
(c) Water absorption-Clause 6.2.4 of IS 15658: 2006 shall be referred.
(d) Compressive strength -Clause 6.2.5 of IS 15658: 2006 shall be referred.
(e) Abrasion resistance- Clause 6.2.6 IS 15658: 2006 shall be referred.
(f) Tensile splitting strength-Clause 6.3.1 of IS 15658: 2006 shall be referred.
(g) Flexural strength/Breaking load-Clause 6.3.2 IS 15658: 2006 shall be referred.

Sampling: The sampling of the blocks for testing shall be done as per clause 8 of IS 15658: 2006 & sampling requirements given in Table 4 of IS 15658-2006. The numbers given there in shall be sampled out of each consignment of blocks supplied at a time, not exceeding 25000 blocks or part thereof.

However one set of samples as per Table 4 shall be obtained from the manufacturer from where the blocks are intended to be procured and submitted to the GE for testing and approval. The cost of samples and cost of testing shall be borne by the Contractor.

HOLLOW PAVER BLOCK/ GRASS PAVER BLOCK

The Grass paver block shall be as mentioned and as shown on drawings, reflective and inter locking type and shall be factory made. The Grass paver block shall be brought from the manufacturer mentioned hereinafter and as approved by the GE. Grass Paver blocks shall be conforming to IS 15658-2006. Shade of Paver block shall be Gray. SRI value of paver block shall be >50. Grade of concrete shall be minimum M30 or above as per manufacturer specification. Opening/ covered proportion shall be as per GRIHA norms.
Material used for preparation of paver block shall be as per clause 4 of IS: 15658-2006.

Water absorption: The average water absorption shall not more than 6% and for individual samples not more than 7% when tested as per IS 15658.

Markings: The tiles shall be purchased from an approved manufacturer and shall have the markings as per clause 10 of IS 15658 embossed either on the sides or bottom.

Testing: The tiles shall be tested for the following under laid requirements as per testing procedure specified in IS 15658. The cost of samples and cost of testing shall be borne by the Contractor.

(h) Dimensions and tolerance-Table 2 of IS 15658: 2006 shall be referred.
(i) Thickness of the wearing layer-Table 2 of IS 15658: 2006 shall be referred.
(j) Water absorption-Clause 6.2.4 of IS 15658: 2006 shall be referred.
(k) Compressive strength -Clause 6.2.5 of IS 15658: 2006 shall be referred.
(l) Abrasion resistance- Clause 6.2.6 IS 15658: 2006 shall be referred.
(m) Tensile splitting strength-Clause 6.3.1 of IS 15658: 2006 shall be referred.
(n) Flexural strength/Breaking load-Clause 6.3.2 IS 15658: 2006 shall be referred.

Sampling: The sampling of the blocks for testing shall be done as per clause 8 of IS 15658: 2006 & sampling requirements given in Table 4 of IS 15658-2006. The numbers given there in shall be sampled out of each consignment of blocks supplied at a time, not exceeding 25000 blocks or part thereof.

However one set of samples as per Table 4 shall be obtained from the manufacturer from where the blocks are intended to be procured and submitted to the GE for testing and approval. The cost of samples and cost of testing shall be borne by the Contractor.

Installation:

- Put down the base of crushed gravel mixed with sand to level the surface.
- Placed the paver block of approved design.
- Fill up the opening of the block with soil for grass plantation.

ITALIAN MARBLE STONE FLOORING: Machine cut, mirror polished, Italian Marble stone flooring shall be laid in required pattern in linear portion of the building all complete as per architectural drawings, with 18 mm thick stone slab laid over 20 mm (average) thick base of cement mortar 1:4 (1 cement: 4 coarse sand) laid and jointed with white cement slurry @ 4.4 kg/sqm including pointing with white cement slurry admixed with pigment to match the marble shade including rubbing, curing and polishing etc. all complete.

SKIRTING AND DADO:

Cement plaster skirting: cement plaster skirting shall be provided all as shown in drawings. Skirting shall be of 5 mm thick in cement mortar (1:3) over 10 mm thick rendering in cement mortar (1:6), and shall be of 100mm high. Surface shall be finished even and smooth with steel trowel using extra cement.

Non skid ceramic tile skirting: Coloured glazed ceramic tile skirting shall be provided all as shown in drawings. Tiles shall be all as specified here-in-before for non skid ceramic tile flooring. Tiles shall be set and jointed in cement slurry. Joints shall be pointed flush with white cement mixed with pigment to match the color of tile.

Kota stone skirting: Kota stone slabs shall be 22-25 mm thick in risers of steps, skirting, dado and pillars laid on 12 mm (average) thick cement mortar 1:3 (1 cement: 3 coarse sand) and jointed with grey cement slurry mixed with pigment to match the shade of the slabs, including rubbing and polishing complete.

Vitrified tile skirting: Vitrified tiles for skirting shall be of the premium quality hard, sound, dense, Double Charged and homogenous in texture, free from defects, Mohr hardness shall not be less than 7 and conforming to relevant IS. The tiles are classified under group B1a of the international Standard for

Ceramic Tiles ISO-13006 and European Standard EN: 176. The thickness of tiles shall be not less than 8.5 mm. and skirting shall be 100 mm high at locations shown in Schedule of finishes drawing over 10 mm thick screed in cement mortar (1:3).

Glazed ceramic tile dado/skirting: Glazed ceramic tiles dado/skirting shall be all as shown drawings. Ist quality ceramic glazed wall tiles conforming to IS: 15622 (thickness to be specified by the manufacturer), shall be of size 600x300mm of approved make, in all colours, shades except burgundy, bottle green, black of any size as approved by Engineer-in-Charge, in skirting, risers of steps and dados, over 12 mm thick bed of cement mortar 1:3 (1 cement : 3 coarse sand) and jointing with grey cement slurry @ 3.3kg per sqm, including pointing in white cement mixed with pigment of matching shade complete. The dado thickness projecting from the rendered wall surface shall be flushed using cement mortar 1:3. The top level of the flushed surface shall be finished to a true line as directed.

Italian marble stone skirting: Machine cut, mirror polished, Italian Marble stone skirting shall be laid in required pattern in linear portion of the building all complete as per architectural drawings, with 18 mm thick stone slab laid over mm (average) thick base of cement mortar 1:3 (1 cement: 3 coarse sand) laid and jointed with white cement slurry @ 4.4 kg/sqm including pointing with white cement slurry admixed with pigment to match the marble shade including rubbing, curing and polishing etc. all complete.

Granite slab dado/skirting: The granite slabs shall be of best quality and of colour and size as approved or as specified in drawings. Polished Granite stone dado/skirting shall be in required design and patterns, in linear as well as curvilinear portions of the building all complete as per the architectural drawings with 18 mm thick stone slab over 12 mm (average) thick base of cement mortar 1:3 (1 cement : 3 coarse sand) laid and jointed with cement slurry and pointing with white cement slurry admixed with pigment of matching shade including rubbing , curing and polishing etc. all complete as specified and as directed by the Engineer-in-Charge.

Glass Fiber Reinforced Concrete (G.F.R.C) Screen, Jali: Glass Fiber Reinforced Concrete (G.F.R.C) Screen, Jali shall be in approved size, pattern, design, thickness (25-30 mm Internal membrane , 40-50 mm External Border Thick) and color .Screen Jali casting shall take place with layering methodology using- Direct Power Spray machines. The Panel should be made from '53 grade' White Portland Cement manufactured by 'JK Cement' or 'Birla white', White Quartz fine graded sieved Silica Sand, Alkali Resistant Glass Fibre manufactured by 'NEG Japan, Owen Corning 'Saint Gobain' or equivalent, Super Plasticizers manufactured by 'Karochem' or equivalent, Polymers manufactured by 'Nova Polychem' or equivalent and U.V resistant Synthetic inorganic pigments should be used for pigmentation manufactured by 'Phenochem industries or equivalent. The materials casting shall take place with layering methodology using- Direct Power Spray machines. The Panel flexural strength average L.O.P should be above or equivalent to 6 N/mm2 & M.O.R should be above or equivalent to 15 N/mm2 for tests done on 28 days cured samples.

PLASTERING AND POINTING:

MATERIALS:

Cement: Cement shall be OPC or Portland Pozzolona Cement (PPC) as stipulated here-in- before for concrete works.
Sand: Sand shall be conformed to the requirements of IS-2116.
Water: Water shall be all as stipulated for concrete works.

PREPARATION OF BACKGROUND FOR APPLICATION OF PLASTER:

All dust and foreign matter on surfaces of masonry and latency on the concrete surfaces shall be removed by watering or brushing as required. In case background contains solvable slats, particularly Sulphate, plastering shall not be done until the efflorescence of the salts is completed.

Joints in masonry shall be raked to a depth of 10mm as the work proceeds. Local projections beyond the general wall face shall be trimmed off to avoid variance in thickness of plaster.

For smooth surfaces of concrete it shall be roughened by wire brushing or hacking and hammering if surface is hard. All projecting burrs shall be removed. The surfaces shall be scrubbed by wire brushes, further pock marks 3 mm deep at spacing of 50 mm shall be done. Adequate drying intervals shall be allowed between erection and plastering to bring the surface suitable for suction adjustment. High rate of suction causes plaster weak, porous and friable. The wall surface shall be damped evenly before plastering dry spot shall be moistened. Excess water will lead to failure of bond between plaster and background.
Dubbing out and rendering coat shall be same type and mix and dubbing coat shall be executed along with rendering coat.
Plastering shall not be done till door frames are firmly fixed. Provide protection to fittings against splash of plaster, however if any plaster of mortar is noticed, it shall be cleaned off immediately.
Screed, 5 cm x 5 cm shall be laid vertically and horizontally by not more than 2 m Apart to serve as guide in bringing the work to an even surface.
In case of 2 coats plaster work, 1st coat shall be allowed to the materially completed before 2nd coat is applied.
The finished work of plastering shall not show more than 4mm projection when checked with straight edge of 2m length placed over it.

In one coat plaster the mortar shall be firmly well pressed into the joints and into depressions of masonry walls for obtaining permanent bond and shall be laid little more than the required and the surfaces shall be leveled with wooden float. On concrete walls rendering shall be dashed on roughened surfaces to ensure adequate bond using strong whipping motion at right angle to face of wall.
In case of two coat work, before the first coat work is hardened shall be scored to provide key for 2nd coat. The rendering coat shall be kept damp for 2 days.

Junction of RCC with Brick/AAC/PCC solid block wall shall be plastered after reinforced with chicken wire netting strip of GI wire of 0.91mm dia and 12 mesh. The width of wire netting shall be 30cm. The wire net shall be properly secured with nails / staples as directed by the Engineer-in-Charge.

CURING: Each coat of rendering shall be kept damp continuously for 2 days. Moisturing shall commence after plaster is sufficiently hardened.

PLASTERING (INTERNAL AND EXTERNAL):

All the internal surfaces of walls/concrete shall be rendered with 12 mm thick cement plaster of mix 1:6 (1 cement : 6 Fine sand) on fair side of single or half brick wall and 15 mm thick cement plaster on the rough side of single or half brick wall of mix 1:6 (1 cement : 6 Fine sand) . All plastered edges shall be rounded off. The internal surfaces shall be finished even and smooth without using extra cement. However, wherever putty finish on plastered surfaces is specified, the plastering shall be finished fair and even.

All external surfaces of walls/concrete shall be rendered with 20 mm thick cement plaster of mix 1:4 (1 cement: 4 fine sand) in one or two coats as shown in drgs. The cement mortar shall be with anti-algae waterproofing compound conforming to IS 2645 as per manufacturer's instructions. The surface shall be finished fair and even. External plastering shall be started from 15 cm below ground level/plinth protection wherever applicable.
RCC Ceiling surfaces shall be rendered with 6 mm cement plaster of mix: 1:3 (1 cement: 3 fine sand).
Provide plaster groves at locations where masonry meets the concrete items such as Beams/Columns. The grove shall be 10mm wide and 5mm deep 'V' type. All groves shall be finished with using extra cement.

SURFACE FINISHES TO BUILDINGS:

GENERAL:
Preparation of plastered surfaces shall be done by using mechanical sander with internal dust extraction system for clean environment certified by the manufacturer. After preparation of surface, approval shall be obtained from Engineer-in-Charge before applying primer and further treatment/coat. Building wise stage passing register shall be maintained.

Finishes i.e. cement based paint, oil bound distemper, acrylic water based interior grade primer, interior acrylic emulsion, acrylic water based exterior grade primer, water based premium acrylic smooth exterior emulsion etc. to surface of walls, ceiling, chajjas, fins, fascias, parapets etc. shall be applied using airless spray technology and capable of operating single spray gun with a suitable hose length. The spray machine should be of reputed manufacturer with pro-guard technology and capability of tracking pressure as well as paint & primer usage. A uniformly finished surface without patches, roller marks shall be obtained.
These equipment shall be certified by approved manufacturer.
The accessories for applying the finishes shall be able to spray in hard to reach areas and penetration of finish on the surface so as to achieve uniform application and quality surface finish.

WALL CARE PUTTY:

White cement based putty shall be of average thickness 1 mm, of approved brand and manufacturer, over the plastered wall surface to prepare the surface even and smooth complete.. Wall care putty shall be mixed by auto unload multipurpose mixer machine. Putty shall be applied using putty sprayer.

PREPARATION OF SURFACE: Wall care putty surface shall be prepared by using vaccum based sanding machine for dust free scraping of the walls with in-built vaccum suction system to remove all the dust. Long handle/short handle sander is to be used as required basis. It shall be done till an even and smooth surface is obtained.

WHITE (LIME) WASHING: White wash shall be provided all as shown in drawings. Lime used for white washing shall be freshly burnt fat lime (Class 'C') white in colour, conforming to IS- 712. Skirting and dado are not to be white washed.

ACRYLIC EMULSION PAINT: Internal Wall painting shall being Two or more coats on new work with premium acrylic emulsion paint of interior grade, having VOC (Volatile Organic Compound) content less than 50 grams/ litre of approved brand and manufacture, including applying additional coats wherever required to achieve even shade and colour.

EXTERNAL WEATHER PROOF PAINT:

Finishing walls with 100% Premium acrylic emulsion paint having VOC less than 50 gm/litre and UV resistance as per IS 15489:2004, Alkali & fungal resistance, dirt resistance exterior paint of required shade (Company Depot Tinted) with silicon additives. New work shall be in two or more coats applied @ 1.43 litre/ 10 sqm. Over and including priming coat of exterior primer applied @ 0.90 litre/10 sqm.

MATERIALS:

(a) Paint shall be weather proof Acrylic emulsion, exterior grade (100%acrylic) premium quality. Paint shall be procured from any of the makes listed hereinafter. Shade of the paint shall be as approved by GE.Primer shall be water based acrylic suitable for exteriors as per manufacturer's instructions. Primer shall be of same make as of paint. The paint and primer shall be brought in manufacturer's sealed containers only by the contractor duly marked with batch number from the manufacturer.

(b) The contractor shall produce manufacturers test certificate along with purchase voucher in original for the paint and primer brought to site before claiming payment for the same Purchase voucher of

paint and primer shall contain the complete description of material, batch No., net weight, test certification No.quantity in each package, No. of packages etc., The quantity of material brought at site indicating No. of packages, quantity in each package, batch No., purchase voucher number, test certification number, date of manufacturing, date of expiry etc., shall be entered in MB as "Not to be Abstracted" and shall be signed by the JE, Engineer-in-Charge, GE and contractor.

(c) Each container of paint and primer shall bear the following particulars:

(i) Manufacturer's trade mark.
(ii) Reference to Indian Standard to which they comply.
(iii) Name of product.
(iv) Net weight.
(v) Date of manufacturing.
(vi) Batch No.
(vii) Storage requirement.
(viii) Storage life.
(ix) Date of expiry.

(d) Each lot of paint and primer shall be checked by Engineer-in-Charge and approved by him after verifying from invoices, package, batch No. and test certificate. Materials shall be incorporated in the work only after written approval from Engineer-in-Charge.

PRIMING COAT: After preparing the surface as approved by Engineer-in-Charge, one coat of exterior water based acrylic primer as approved by manufacturer, thinned with water in 1:1 ratio shall be applied with brush as per manufacturer's instructions and as directed by Engineer-in- Charge.

Notes

1. The shade shall be as approved by GE. The finish of Acrylic emulsion weather paint shall be smooth matt finish.
2. The paint shall be as per Manufacturer's original colour as available or shade card. No mix of tint shall be made into original shade.

GUARANTEE:

(d) The contractor shall obtain a written guarantee for effectiveness of paint against fading out, peeling off, cracking, dust/algae accumulation etc. for **5 (Five) years** from the certified date of completion of entire work from the manufacturer and submit the same to GE before completion of work.

(e) Should the GE at any time during construction or reconstruction or prior to the expiry of the Guarantee period, finds defective performance of the paint, the contractor shall, on demand in writing from the GE specifying the locations complained of, notwithstanding that the same may have been inadvertently passed/certified and paid for, under take to carry out such treatment as may be necessary forthwith to rectify the defects to the full satisfaction of GE. In the event of his failure to do so, within the specified period to be specified by the GE in his demand aforesaid, the GE may undertake such defective work at the risk and expense of the contractor. The liability of the contractor under this condition shall not extend beyond the period of five years from the certified date of completion, unless the GE had previously given notice to the contractor to rectify the defects.

(f) **3% of the cost of the weather proof painting** as decided by the GE shall be retained from the final bill amount towards **Guarantee for Acrylic Emulsion paint** which will be released after satisfactory expiry of **05 (five) years Guarantee period**. If contractor fails to rectify the defects noticed in the treatment or found in the material the aforesaid amount so retained shall be utilized for rectification of defects and contractor shall have no claim whatsoever on this account. The contractor may submit Bank guarantee Bond or Fixed Deposit Receipt from any Nationalized Bank pledged in favor of **GARRISON ENGINEER** for the said sum valid for the period of 05 (five) years from the date of completion of work in which event no further amount will be recovered from the final bill on this account. Defect liability period under condition 46 under General Conditions of Contracts IAFW-2249 shall be deemed to be amended to the extent mentioned above for Acrylic emulsion paint.

SCAFFOLDING:

(g) The exterior painting work shall be carried out by using scaffolding. No zoola is permitted for the work under any circumstances. Suitable scaffolds shall be provided for workmen.

(h) Scaffolding or staging more than 3.5 Metres above the ground or floor, swung or suspended from any overhead support or erected with stationary support shall have a guard rail properly attached, braced and otherwise secured at least 1 Metre high above the floor or platform of such scaffolding or staging and extending along the entire length of the outside and ends thereof with only such openings as may be necessary for the delivery of materials. Such scaffolding or staging shall be so fastened as to pervert it from swaying from the building or structure.

(i) Every opening in the floor of a building or in a working platform be provided with suitable means to prevent the fall of persons or materials by providing suitable fencing or railing whose minimum height shall be 1 Metre.

(j) Safe means of access shall be provided to all working platforms and other working places.

(k)

(l) The rates quoted are deemed to include the above provision of scaffolding and no extra will be payable to contractor on this account. The scaffoldings shall be removed only after obtaining clearance of Engineer-in-Charge after considering the quality of the work undertaken on completion of the painting.

SAFETY PRECAUTIONS:

(m)Contractor shall provide all safety precautions for the labour engaged for this work. All the labours shall be provided with safety belts, helmets, Nose screens etc and the contractor shall adhere to all safety precautions as per Labour Welfare Act.

(n) It is also advised, contractor to have insurance cover for his workmen working at heights against any eventuality from any reputed insurance agencies. Department will not be responsible for any untoward incident happening due to lack of safety precautions taken by contractor.

PAINTING:

GENERAL:

The synthetic enamel paint shall be of 1st quality as approved by GE.

The contractor shall inform the Engineer-in charge, within three weeks of the acceptance of the tender, the brand names of the manufacturer of paint proposed to be used in the works and submit samples thereof and obtain prior written approval of the Engineer-in charge before their use in the work.

Paint for priming coat, under coat and finishing coat will be of the same manufacturer.

Tint of paint, if not mentioned in drawings/schedule of finishes will be approved.

Contractor shall execute painting under the guidance of the Engineer-in-Charge and marked as such before commencement of painting work. Each coat of paint shall be passed by the Engineer- in-Charge before the next coat is applied.

If the undercoat of paint is not executed within six months after applying the priming coat of paint, the priming coat shall be redone by the contractor at no extra cost to the Government.

Surfaces which become inaccessible for painting after execution shall be painted before execution.

Surfaces which are specified to be treated with synthetic enamel paint in the schedule of finishes and drawings shall be prepared and painted with two coats of approved synthetic enamel paint over a coat of primer all as specified. Primer for wood surfaces shall be pink primer and for that of steel surfaces shall be zinc chrome primer.

Colour and shade for under coat and finishing coat shall be decided by Engineer in Charge.

PAINTING TIMBER SURFACES/STEEL SURFACES: Where painting to timber/steel surfaces is indicated on drawings prepare surfaces and apply two coats of synthetic enamel paint over one coat of primer as specified here –in-before. Preparation of surfaces for all locations except gantry girders shall be all as specified in SSR Part I. The steel surfaces of gantry girder shall be prepared by sand blasting. The prepared surface shall be got passed by the GE before applying paint, gantry girders shall be painted with primer and under coat before erection. Painting shall be carried out by spray painting.

WORKMANSHIP:

All wood work required to be painted shall be smoothened, sized and knotted and then applied with priming coat. Stopping and filling[filler coat] shall be done after priming coat and surfaces rubbed down to a level and smooth surface and thereafter under coat and finishing coat applied, all as specified in clause 17.6 of MES Schedule Part – I.
The steel surfaces which are required to be painted shall be given two coats of paint, priming coat and undercoat after fabrication but before assembly and erection and finishing coat after assembly and erection.
All surfaces of iron and steel work shall be prepared and treated with two coats [one undercoat and one finishing coat] of synthetic enamel paint over a coat of primer all as specified here-in-before. Reinforcement bars, tinned or galvanized iron surfaces and steel-work embedded in concrete/plaster shall however not to be painted.
Bottom of door shutters shall be given one coat of primer only.
The finishing coat and undercoat shall be with the same paint.

CLEANING: Before commencement of plastering / painting work all doors / windows / ventilators, Balcony railings etc shall be covered properly for protecting from the drips of paint / primer while painting, to the entire satisfaction of Engineer-in-Charge. Covering shall be done with tarpaulin or ply wood. After completion, the surrounding area, glass panes, flooring shall be cleaned and all the paint marks on it shall be removed.

TARRING: Prepare and apply two coats of tar to the hold fasts, backs of wooden frame in contract with brick work/plaster, etc. Hold fast shall be given two coats of tar and sanded.

ROOFING

PUFF PANEL ON ROOF

80mm thick insulated Puff panels on roof shall be of approved colour conforming to relevant IS code including overlapping, jointing, riveting, bolting, clamping etc. all complete as per instructions of Engineer-in-charge and manufacturer's specifications. The panels having density not less than 40Kg/M3 (+/-2), U value 0.53 W/M2 K, tensile strength 3.7 Kg/Sqm and bending strength 4Kg/Sqm (* Note- Colour and design shall be approved by Architect.)

Pre-coated galvanised iron profile sheets
Pre-coated galvanised iron profile sheets (size, shape and pitch of corrugation as appro ed by Engineer-in-charge) shall be of 0.50 mm(+0.05 %) total coated th1 kness with zinc coating 120 grams per sqm as per IS:277, in 240 MPa steel grade, 5-7 microns epoxy primer on both side of the sheet and polyester top coat 15-18 microns. Sheet should have protective guard film of 25 microns minimum to avoid scratches during transportation and should be supplied in single length up to 12 meter or as desired by Engineer-in- charge. The sheet shall be fixed using self-drilling/ self- tapping screws of size (5.5x55 mm) with EPDM seal, complete up to any pitch in horizontal/ vertical or curved surfaces, excluding the cost of purlins, rafters and trusses and including cutting to size and shape wherever required.
Pre-coated galvanised steel sheet roofing accessories 0.50 mm (+0.05 %) total coated thickness, Zinc coating 120 grams per sqm as per IS:2-77, in 240 MPa Steel grade, 5-7microns epoxy primer on both side of the sheet and polyester top coat 15-18 microns using self-drilling/ self- tapping screws complete:
Ridges plain (500 - 600mm)
Flashings/ Aprons. (Upto 600 mm)
Gutter. (600 mm over all girth)

Microcell Polycarbonate single panel sheet
16mm thick Microcell Polycarbonate single panel sheet, width shall not be less than 900mm to ensure best performance under wind uplift, vibration and visual appearance. The panels shall be uniform in colour with an integral Microcell/Multicell. Colour of sheet shall be approved by client / consultant.

Panels shall be manufactured with vertical standing seam with maximum height 15mm at both sides of the panel. Snap-on polycarbonate connector to interlock the panels shall have a double tooth grip lock locking mechanism to ensure maximum uplift capability (strength). Panel shall be con-extruded with special antiglare compound to make it anti-glare/soft light to prevent glare and sun streaks. Panel shall be with aluminium end cap of U profile (mill finish) for ends flashing. Panel shall be co-extruded 99.9% on both sides UV protected, U-value= 1.53/1.62 (w/m 2 K). Panel shall be fixed over structural steel purlins with Trapezoidal heavy duty stainless steel fastener (Z type) with flat head screws (4.8* 19mm-3 nos. minimum). Fixing method shall be strictly followed as per manufacture guide lines, including transportation, delivery at site, unloading storage and handling at site, sheet shall be bend and cut as per drawings, site assembly and finally erection at appropriate location. The work shall be completed in all respects as per drawings, technical specification, approved make and direction of the Engineer-in-Charge. (Net laid area to be measured for payment) Approved Make: 1) Dan Pal (India) Private Limited 2) Coxwell Domes Engineers Private Limited. (At the extended portions of terrace). Microcell Polycarbonate single panel sheet shall be provided as shown on drawings.

Making khurras 45x45 cm with average minimum thickness of 5 cm shall be in cement concrete 1:2:4 (1 cement: 2 coarse sand: 4 graded stone aggregate of 20 mm nominal size) over P.V.C. sheet 1 m x1 m x 400 micron, finished with 12 mm cement plaster 1:3 (1 cement: 3 coarse sand) and a coat of neat cement, rounding the edges and making and finishing the outlet complete.
Single socketed unplasticised Rigid PVC rain water pipes of dia as shown in drawings, conforming to IS: 13592 Type A shall be provided including jointing with seal ring conforming to IS: 5382, leaving 10 mm gap for thermal expansion including all fittings such as coupler, bend,shoe etc. complete.
Unplasticised -PVC pipe clips of approved design shall be provided to unplasticised - PVC rain water pipes by means of 50x50x50 mm hard wood plugs, screwed with M.S. screws of required length, including cutting brick work and fixing in cement mortar 1:4 (1 cement : 4 coarse sand) and making good the wall etc. complete.
The inlet mouth of rain water pipe shall be cast iron grating of 15 cm diameter and weighing not less than 440 grams.

FALSE CEILING

False ceiling shall be provided all as per schedule of finisheds and as shown on drawings.
GI Metal Ceiling shall be Lay in plain Tegular edge Global white color tiles of size 595x595 mm, and 0.5 mm thick with 8 mm drop; made of G I sheet having galvanizing of 100 gms/sqm (both sides inclusive) and electro statically polyester powder coated of thickness 60 microns (minimum), including factory painted after bending.
Tiled false ceiling shall be of size 595x595 mm in true horizontal level, suspended on inter locking metal grid of hot dipped galvanized steel sections (galvanized @ 120 grams/ sqm, both side inclusive) consisting of main "T" runner with suitably spaced joints to get required length and of size 24x38 mm made from 0.30 mm thick (minimum) sheet, spaced at 1200 mm center to center and cross "T" of size 24x25 mm made of 0.30 mm thick (minimum) sheet, 1200 mm long spaced between main "T" at 600 mm center to center to form a grid of 1200x600 mm and secondary cross "T" of length 600 mm and size 24x25 mm made of 0.30 mm thick (minimum) sheet to be interlocked at middle of the 1200x600 mm panel to form grids of 600x600 mm and wall angle of size 24x24x0.3 mm and laying false ceiling tiles of approved texture in the grid including, required cutting/making, opening for services like diffusers, grills, light fittings, fixtures, smoke detectors etc. Main "T" runners to be suspended from ceiling using GI slotted cleats of size 27 x 37 x 25 x1.6 mm fixed to ceiling with 12.5 mm dia and 50 mm long dash fasteners, 4 mm GI adjustable rods with galvanised butterfly level clips of size 85 x 30 x 0.8 mm spaced at 1200 mm center to center along main T, bottom exposed width of 24 mm of all T-sections shall be pre-painted with polyester paint, all complete for all heights as per specifications, drawings and as directed by Engineer-in-charge.

15 mm thick densified tegular edged ecofriendly light weight calcium silicate false ceiling tiles shall be of approved texture of size 595 x 595 mm in true horizontal level, suspended on inter locking metal grid of hot dipped galvanised steel sections (galvanising @ 120 grams per sqm including both side) consisting of main 'T' runner suitably spaced at joints to get required length and of size 24x38 mm made

from 0.33 mm thick (minimum) sheet, spaced 1200 mm centre to centre, and cross "T" of size 24x28 mm made out of 0.33 mm (Minimum) sheet, 1200 mm long spaced between main 'T' at 600 mm centre to centre to form a grid of 1200x600 mm and secondary cross 'T' of length 600 mm and size 24 x28 mm made of 0.33 mm thick (Minimum) sheet to be inter locked at middle of the 1200x 600 mm panel to from grid of size 600x600 mm, resting on periphery walls /partitions on a Perimeter wall angle pre-coated steel of size(24x24X3000 mm made of 0.40 mm thick (minimum) sheet with the help of rawl plugs at 450 mm centre to centre with 25 mm long drywall screws @ 230 mm interval and laying 15 mm thick densified edges calicum silicate ceiling tiles of approved texture in the grid, including, cutting/ making opening for services like diffusers, grills, light fittings, fixtures, smoke detectors etc., wherever required. Main 'T' runners to be suspended from ceiling using G.I. slotted cleats of size 25x35x1.6 mm fixed to ceiling with 12.5 mm dia and 50 mm long dash fasteners, 4 mm G.I. adjustable rods with galvanised steel level clips of size 85 x 30 x 0.8 mm, spaced at 1200 mm centre to centre along main 'T', bottom exposed with 24 mm of all Tsections shall be pre-painted with polyster baked paint, for all heights, as per specifications, drawings and as directed by Engineer-in-Charge.
Approved makes- Armstrong, Durlum, Hunter Douglas or equivalent) Note: - Only calcium silicate false ceiling area will be measured from wall to wall. No deduction shall be made for exposed frames/opening (cut outs) having area less than 0.30 sqm. The calcium silicate ceiling tile shall have NRC value of 0.50 (Minimum), light reflection > 85%, non- combustible as per B.S. 476 part IV, 100% humidity resistance and also having thermal conductivity <0.043 w/mK.

WATER PROOFING SUNKEN FLOOR

Two component elastomeric acrylic polymer modified cementitious waterproofing coating shall be provided in sunken portion of toilets/kitchen. The mixing ratio of the coating shall be 3 parts of powder & 2 part of liquid without any water addition in the mixing etc. complete all as per manufacturer's specifications. The work shall include surface preparation, cleaning, grinding, bore packing, crack repair, injection grouting if required etc. complete all as per manufacturer's specification and instruction including loosely lay 40 GSM Geotextile (non-woven polyester) with a min of 100mm wide overlap and laying slope making and protection to the waterproofing treatment with 30 mm avg. thick M20 grade screed for floors and providing and applying 15 mm thick with CM 1:4 for wall plastering admixed with PC based integral waterproofing compound, etc. complete, as per manufacturer's specifications (Only plan area of washrooms will be measured for payment purpose).

TERRACE WATER PROOFING

High build elastomeric waterproofing coating based on pure polyurethane shall be cold applied of spray / brush applied. The system includes final base preparation, 1 coat of impregnated epoxy based primer @250 gm/sqm and applying PU under screed in two or more coats to achieve a minimum thickness of 1.2mm, etc. complete all as per manufacturer specifications. The work shall include surface preparation, cleaning, grinding, bore packing, crack repair, injection grouting if required etc. complete all as per manufacturer's specification and instruction including the following processes complete in all aspects:
Laying protective screed of M20 grade with slope 1:100 containing 12 mm, 100% virgin polypropylene fibers @ 0.9 Kg per Cubic Meter with a plain finish, well compacted, cured for at least 7 days etc. complete. The screed shall be laid in panels 2mx2m with 10mm wide & deep construction joint and filling the panel joints with pour grade Polysulphide Sealant.
Over the Protection Screed, providing and applying fibre reinforced elastomeric liquid water proofing membrane with resilient acrylic polymers having Sun Reflectivity Index (SRI) of 105 on top of concrete roof in three coats @10.76 litre/ 10 sqm. One coat of self-priming of elastomeric waterproofing liquid (dilution with water in the ratio of 3:1) and two coats of undiluted elastomeric waterproofing liquid (dry film thickness of complete application/system not less than 500 microns). The operation shall be carried out after scrapping and properly cleaning the surface to remove loose particles with wire brushes, complete in all respect as per the direction of Engineer-in-Charge.
(Only plan area of terraces will be measured for payment purpose).

SINAGE

Room Plate-Changeable plaques (Made of anodized aluminium with laser cut graphics and text cut-out from 1mm steel sheet with acrylic/HDHMR/WPC).

ROAD

Earth work in excavation shall be done in all kinds of soil by manual/ mechanical means Hydraulic excavator) over areas (exceeding 30 cm in depth, 1.5 mm width as well as 10 sqm on plan) including getting out and disposal of excavated earth lead up to 50 m and lift up to 1.5 m, as directed by Engineer-in-charge.
Earthwork in filling shall be done with available earth (excludlng rock) in trenches, plinth, sides of foundation etc in layers not exceeding 20 cm thick including brooking of clods, consolidating each layer by ramming and watering, lead up to 50 m and lift up to 1.5m.
Plain cement concrete works shall be in PCC 1:4:8 (1 Cement : 4 coarse sand : 8 graded stone aggregate 40 mm nominal size) in foundation bod for footing steps, walls, brick works etc below plinth level as directed and specified including dewatering If necessary, and curing complete .Shuttering where necessary shall be provided.
Preparation and consolidation of sub grade shall be done with power road roller of 8 to 12 tonne capacity after excavating earth to an average of 22.5 cm depth, dressing to camber and consolidating with road roller including making good the undulations etc. and re-rolling the sub grade and disposal of surplus earth with lead upto 50 meters. Compaction of earth work in embankment shall be done under optimum moisture conditions to give at least 95% of the maximum dry density (proctor density).

Granular sub-base shall be done with material conforming to Grade-I (size range 75 mm to 0.075 mm) having CBR Value-30, by providing close graded Material conforming to specifications, mixing in a mechanical mix plant at OMC, carriage of mixed material by tippers to work site, for all leads & lifts, spreading in uniform layers of specified thickness with motor grader on prepared surface and compacting with vibratory power roller to achieve the desired density, complete as per specifications and directions of Engineer-in-Charge.

Wet mix macadam shall be done by providing, laying, spreading and compacting graded stone aggregate (size range 53 mm to 0.075 mm), including premixing the material with water at OMC in for all leads & lifts, laying in uniform layers with mechanical paver finisher in sub- base / base course on well prepared surface and compacting with vibratory roller of 8 to 10 tonne capacity to achieve the desired density, complete as per specifications and directions of Engineer-in-Charge.

C.C. pavement shall be of mix M-25 (with cement @330 Kg/cum) with ready mixed concrete from batching plant. The ready mixed concrete shall be laid and finished with screed board vibrator , vacuum dewatering process and finally finished by floating, brooming with wire brush etc. complete as per specifications and directions of Engineer-in charge. The panel shuttering work shall be done as required. Reinforcement shall be provided as per design.

Thermomechanically Treated Reinforcement TMT bars up to 1st floor level shall conform to relevant I.S. Code for R.C.C. work/ R.B. walling including straightening, cleaning, cutting and binding to proper shapes and length as per details including supplying and binding with 20 G annealed black wire and placing in position with proper blocks, supports, chairs, spacers etc. complete inclusive of all wastage lappage, hooks, chairs, anchorage etc.

Expansion joints shall be provided using grade ‘A’ sealing compound as per requirement.

Painting road surface for marking shall be with adequate nos of coats to give uniform finish with ready mixed road marking paint conforming to IS: 164, on bituminous surface in white/yellow shade, including cleaning the surface of all dirt, scales, oil, grease and foreign material etc. complete.

Factory made kerb stone of M-25 grade cement concrete shall be in position to the required line, level and curvature, jointed with cement mortar 1:3 (1 cement: 3 coarse sand), including making joints with or without grooves (thickness of joints except at sharp curve shall not to more than 5mm), including making drainage opening wherever required complete etc. as per direction of Engineer-in-charge.

Factory made chamfered edge Cement Concrete paver blocks shall be 80mm thick cement concrete paver block of M-35 grade with approved colour, design & pattern, in footpath, parks, lawns, drive ways or light traffic parking etc, of required strength, thickness & size/ shape, made by table vibratory method using PU mould, laid in required colour & pattern over 50mm thick compacted bed of sand, compacting and proper embedding/laying of inter locking paver blocks into the sand bedding layer through vibratory compaction by using plate vibrator, filling the joints with sand and cutting of paver blocks as per required size and pattern, finishing and sweeping extra sand. Complete all as per direction of Engineer-in-Charge.

Painting Kerb stones with two or more coats over an under coat of suitable shade with ordinary paint of approved brand and manufacture with synthetic enamel paint of approved brand and manufacture of required colour to give an even shade.

SANITARY AND TOILET FITTINGS

General

All sanitary appliances shall be of vitreous china (white or colored as specified) first quality and shall conform to IS-2556 for General requirement and the specific requirements be as mentioned in clause 18.32 to 18. 40 of MES Schedule Part-I. These shall be of an approved make as per Appx`A"of makes attached hereinafter.

All waste pipe and fittings upto floor/nahani trap shall be galvanized steel tubing medium grade all as specified in clause 18.4 of MES Schedule Part-I.

Flush pipe and socket of flushing rim of WC shall be jointed with white cement and red lead (white cement and red lead in equal proportion by weight) and linseed oil to form paste.

CI „P" or „S" trap shall be jointed to WC pan with cement joints as specified in clause 18.86.1 of MES Schedule Part-I. Low level flushing cistern, dual action, water saver, PVC flushing cistern with valve less syphonic action fitting compete. The sizes, given here-in-after are approximate sizes. The sizes or sanitary fittings to be provided shall be the nearest size as per manufacturer" catalogue.

Water Closet (Squatt Pattern)

Water Closet (Squatt Pattern) Orissa type wherever provided shall conform to IS- 2556 Part-III and shall be of approved make of size 580x440mm provided with cast iron „P" or „S" trap and the following fittings/items irrespective of whatever is shown on drawing:-

- A pair of cast iron brackets.
- 32mm dia PVC flush pipe of required length including PVC coupling and bend.
- 15mm dia polythene overflow pipe upto 75mm from floor level with polythene antimosquito rose.
- Low level, dual action water saver PVC flushing cistern of total capacity 10 litres and one time discharge capacity of 5 liters with valve less symphonic fittings, complete.
- The pan shall be set in cement mortar (1:2) at least 15cms around and finished just below the rim to receive the specified thickness of floor finish.

Wash Hand Basin oval type with granite top

Wash hand basin(Vitreous China), glazed, oval shaped, counter type, fixed on RCC slab after laying black granite (as shown on drawing) as approved by GE over 10 mm thick screed in cement mortar 1:3. The edges shall be bull nosed as directed by Engineer-in-Engineer. If more than 1 wash hand basin are shown at same location, the RCC shelf with granite stone be continuous.

All wash hand basin shall have following accessories :-

(i) Waste coupling 32 mm dia full threaded.
(ii) 32mm dia CP waste coupling.
(iii) CP pillar cock, cast copper alloy with capstan head with long screwed and fly nuts suitable for 15mm bore pipe.

32mm dia galvanized steel medium grade waste pipe fitted with brass chromium plated waste coupling outlet complete. Length of waste pipe shall be as indicated on drawings/as directed by Engineer-in-Charge. Where bottle trap in lieu of waste pipe is shown on drgs, CP brass bottle traps suitable for 32mm waste coupling shall be provided.

Water Closet (Pedestal pattern)

Water closet (Pedestal pattern) shall be fixed with cast iron „P" trap and shall consist of following:-

- Water closet with wash down pattern of height 40cm, vitreous china ware and, P" trap all as per IS-2556 part-II.
- Plastic seat and cover with mat under side, solid moulding closed front pattern, with cover conforming to IS-2548, seat and cover shall be white colour with chromium plated hinge and nuts.
- 6 litre low level white PVC flushing cistern duel capacity 6/3 Litres & C.P. flush bend with fittings & C.I. brackets A pair of standard brackets/clamps as supplied by manufacturer.
- 15mm dia polythene overflow pipe 75mm length with polythene anti mosquito rose.
- 32mm dia flush pipe of chromium plated brass tube bent to required shape including chromium plated brass coupling.
- The closet shall be screwed with brass screws to sheesham wood plugs embedded in floor.
- CP fancy type health faucet with 8mm dia 1m long flexible tube fixed with 15mm dia pipe.

Water Closet (Anglo Indian type)

Water closet (Anglo Indian type) shall be fixed with cast iron „P" trap and shall consist of following:-

- Water closet of vitreous china ware with „P" trap height as per IS-2556 part-II all as specified therein.
- Plastic seat and cover with mat under side, solid moulding closed front pattern, with cover conforming to IS-2548, seat and cover shall be white coloFur with chromium plated hinge and nuts.
- Low level, dual action water saver PVC flushing cistern of total capacity 10 liters and one time discharge capacity of 5 liters with valve less syphonic fittings, complete.
- A pair of standard brackets/clamps as supplied by manufacturer.
- 15mm dia polythene overflows pipe 75 mm lengths with polythene ant mosquito rose.
- 32mm dia flush pipe of chromium plated brass tube bent to required shape including chromium plated brass coupling.
- The closet shall be screwed with brass screws to sheesham wood plugs embedded in floor.
- CP jet with connection pipe.

Urinals: Urinal shall be half stall type, white, vitreous china, conforming to IS with Grating and union including the following fittings:-

- 5 Liters discharge capacity, PVC flushing cistern..
- 20mm bore medium grade galvanized iron flush pipe from cistern to pan.
- Chromium plated brass coupling to connect urinal pan with bottle trap.
- The pan shall be fixed with brass screws on sheesham wooden plugs embedded in the wall in CM (1:2).
- Urinal partition of marble / granite shall be provided as per details shown on Drawings.

Mirror: Looking mirror of thickness not less than 5mm shall be provided where shown on drawings. It shall be well polished, defect free waveness and mirror shall be fixed on 12mm commercial plywood BWR grade mitered at corners and provided with aluminium angle heavy quality of suitable size frame. Mirror shall be hung by key sets on screws fixed to plug embedded in walls unless otherwise shown on

drawings. Size of mirror where not shown on drawings shall be 60x45 cm. The mirror shall be any of the make mentioned in Appx`A‟ of makes attached herewith.

Wash Hand Basin with granite top: White color vitreous China above counter wash basin with R.S. or CI bracket and 32 mm dia outlet, with brass C.P. wall cap and extension pieces, 15 mm CP Brass single hole basin mixer, 15 mm dia C.P. brass angle stop cock with 10mm dia C.P. brass connection pipe etc. CP brass chain, CP wall flange, rubber adopter for waste connection complete, CP brass chain CP waste and CP pipe to wall with CP wall flange and rubber adopter for waste connection complete,, including cutting and making good the walls wherever required. [Make WB :Euronics, Model: C005-WB, Basin Mixer Make - Euronics, Model -ORL-2001D/ Make Jaquar Model - FLS-WHT-5935, Mixer - FLR-5001B] or approved equivalent.

Water Closet (Pedestal pattern): Water closet (Pedestal pattern) shall be fixed with cast iron „P‟ trap and shall consist of following:-
Vitreous china Wash down water closet pan (pedestal pattern) composite type (one piece) with flushing cistern 10 ltr capacity dual flushing, coloured, including fixing bolt, plastic water closet seat soft type, CP jet including all necessary fittings. Cat Part No LYS-WHT-388511S, Make : jaquar and „P‟ trap all as per IS-2556 part- II.

Urinals: Vitreous china Half stall of size 580x380x350 mm, flat back, complete including water spreader, waste pipe of suitable size and length providing and fixing plugs, bedding urinal against wall in cement mortar 1:2, securing urinal to plugs with and including 60 mm long brass screws, pointing around urinal back in cement; fixing flush pipe, grating and union for discharge pipe. Cat Part No URS-WHT-13261, Make jaquar with following accessories

(i) Chromium plated brass coupling to connect urinal pan with bottle trap.
(ii) Urinal partition of marble / granite shall be provided as per details shown on drawings.

Stainless steel sink: Stainless Steel Kitchen Sink shall be ISI 304 (18/8), Kitchen sink shall be with drain board of size 510x1040 mm bowl depth 200 mm as per IS 13983 with C.I. brackets and stainless steel plug 40 mm including painting of fittings and brackets, cutting and making good the walls wherever required . Make of sink shall be: Jayna, Model: SBSD 09 A, Make - Nirali Model - Elegance or approved equivalent.
CP brass swan neck wall mounted sink mixer shall be with wall flange and swinging casted spout complete as required and making good the walls wherever required including cutting & making good the walls.and as per the direction of Engineer-in-charge. [Make: Euronics, Model:FLO-3012A / Make - Jaquar Model - FLR-5165].or approved equivalent.

Bottle trap: Bottle trap where specified to be provided or shown on drawings shall be of CP Brass 32mm size Bottle Trap of approved quality & make including cutting & making good the walls.and as per the direction of Engineer-in-charge. [Make: Euronics, Model :EBT32-CP / Make - Jaquar Model - ALD-769L250X190]. Or equivalents.

Toilet paper holder: Toilet paper holder where specified to be provided or shown on drawings shall be of SS304, Chrome Plated including cutting & making good the walls and as per the direction of Engineer-in-charge. [Make :Euronics, Model :ACC08/ Make - Jaquar Model - AKP-35751P] or approved equivalent.

Health fauscet: CP BRASS Health fauscet where specified to be provided or shown on drawings and can tolerate water pressure up to 6 bar flow pressure with metal hose and holder in Polished Chrome . [Make: Euronics, Model : EHF01/ Make - Jaquar Model - ALD-587].or approved equivalent.

➢ PLUMBING WORK

General

Plumbing work shall be carried out all as specified in clauses 18.13 to 18.27 and 18.40,18.62 to 18.67 of MES Schedule Part-I.

Soil/Waste/Vent pipe/Fittings/Accessories: Centrifugally cast (spun) iron socketed pipe as per IS:3989 shall be provided for soil and waste water including all fittings (plain or door) e.g. bends, paint, junctions, terminal guard, cowls, offsets, floor clean out plug, end cap, access pieces jointing with SS 304 grade coupling with EPDM rubber gasket including fixing the pipe on the wall/ceiling with suitable clamps ,holder bat clamps and anchor fastener of approved design to sand cast iron (spun) pipe embedded, cement concrete block 10x10x 10 cm of 1:2:4 (1 cement: 4 coarse sand: 4 graded stone aggregate 20 mm nominal size), cutting holes in wall and floors, excavation, refilling and disposal of surplus earth where required and marked good complete etc. and as per direction of Engineer in Charge.The soil pipe shall be 100mm dia nominal bore and waste and vent pipe shall be 75mm dia nominal bore pipe.

Jointing: CI Pipes pipes and fitting laid under floor/hidden portion shall be jointed as specified in clause 18.40 and 18.67 of MES Schedule Part-I and all other joints shall be in cement mortar as specified in MES Schedule Part-I.

Fixing of Pipes to Walls: CI Pipes and fittings shall be fixed to wall with mild steel clamps as specified in clause 18.67 to 18.67.6 of MES Schedule Part-I.

Nahani/Floor traps: Nahani/floor traps shall be of size 100 mm inlet and 75 mm outlet, trap of solf-cleanslng design with screwed down or hinged grating with or without vent arm complete, including cost of cutting and making good the walls and floors with sand cast Iron S&S as per IS:3989:. SS grating shall be of approved quality and colour and circular type 125 mm nominal dia [Make :Euronics, Model: EFG03-55C].

Shorter lengths: Except for WC connectors, the contractor may use pipe pieces without sockets in shorter lengths (less than one pipe length), where approved and connect these to pipe fittings with double socket/collars including additional joints as specified above without extra cost to the Government.

uPVC Waste pipe

uPVC Waste pipes 40/50mm dia for WB, Urinal FT & FD and Sink Drain pipe shall be 6 kg/cm2 (IS: 4985:2000) including with all fittings e.g. couplings, tees, bends, reducers and screwed adoptors jointing with solvent cement as per Manufacturer's specifications complete including cutting holes or chases in wall and making good the same wherever required.

uPVC Waste pipes 160/110 mm dia for waste/rain water pipe shall be 6 kg/cm2 (IS: 4985:2000) including all fittings e.g. couplings, tees, bends, reducers and screwed adoptors jointing with solvent cement as per Manufacturer's specifications complete including cutting holes or chases in wall and making good the same wherever required.

Semi rigid 40mm dia P.V.C. Waste pipe for sink or wash basin including P.V.C. waste fittings complete.

Gully Trap

- Gully traps shall be salt glazed stoneware complying with the requirements of IS-651. These shall be surrounded in PCC (1:3:6) type C-1 15cm thick in all the four sides and 10cm thick at bottom. Jointing to drain pipe shall be done in cement mortar (1:1).
- Cast iron perforated grating shall be 150mmx150mm bituminous coated and fixed as directed by Engineer-in-Charge. PCC (1:2:4) type B-1 kerb and RCC cover slabs shall be provided all as directed by Engineer-in-Charge.

Trenches for Pipe Line: Excavation for trenches shall be done as per the width given in clause 3.2.3 of MES Schedule Part-II and depth as required at site. The trenches shall be back filled after testing of pipes with approved excavated earth in layers not exceeding 250mm and surplus spoil disposed of to distance not exceeding 100 meters.

Testing: On completion of work, all soil, waste and vent pipes including fittings shall be tested as specified in clauses 18.79 and 18.93 of SSR Pt-I to the entire satisfaction of Engineer-in-Charge. Joints found leaking or defective shall be made good by the Contractor without any extra cost to Govt. Record of testing shall be maintained for each building separately duly signed by Engineer-in-Charge and Contractor. The Contractor's Lump sum quoted against this Schedule shall deemed to include this aspect.

INTERNAL WATER SUPPLY

Water tubing, Bib taps, Stop Valves and Shower Rose

Internal Work water tubing - Exposed on Wall of 25/40mm outer dia of pipe shall be Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply including all CPVC plain & brass threaded fittings i/c fixing the pipe with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and testing of joints complete as per direction of Engineer in Charge.

Concealed work piping including cutting chases and making good the walls etc. shall be of 20/25mm outer dia pipe of Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply including all CPVC plain & brass threaded fittings i/c fixing the pipe with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and the cost of cutting chases and making good the same including testing of joints complete as per direction of Engineer in Charge.

G.I. pipes of 15/20/25mm dia nominal bore with two coats of anti-corrosive bitumastic paint of approved quality: complete with G.I. fittings and clamps, i/c cutting and making good the walls etc.shall be provided for internal work exposed on walls all as shown on drawings.
G.I. pipes of 25/40mm dia nominal bore with two coats of anti-corrosive bitumastic paint of approved quality : complete with G.I. fittings and clamps, i/c trenching and refilling etc.shall be provided for External work all as shown on drawings.
18.4 of MES Schedule Part-I. Bib taps and stop valves shall be all as specified in clause 18.14 and 18.15 of MES Schedule Part-I.

Bib taps:
C.P. brass bib cock shall be of 15mm nominal bore and of approved quality conforming to IS: 8931 including cutting & making good the walls.and as per the direction of Engineer-in-charge. [Make: Euronics, Model: RIV-1010R/ Make - Jaquar Model - FLR 5047N]. or approved equivalent.

Angle valve:
C.P. brass angle valve shall be of 15mm nominal bore and of approved quality conforming to IS: 8931 including cutting & making good the walls.and as per the direction of Engineer-in-charge. Make: Euronics, Model: RIV-1003R/ Make - Jaquar Model - FLR 5063N].or approved equivalent.

Shower rose:
C.P. brass shower rose shall be of 150mm dia and for 15mm dia nominal bore of pipe and of approved quality including cutting & making good the walls.and as per the direction of Engineer-in-charge.

Cp brass single lever telephonic wall mixer:
C.P. brass single lever telephonic wall mixer shall be for 15mm dia nominal bore of pipe and of approved quality including cutting & making good the walls.and as per the direction of Engineer-in-charge.

PVC connection:
Uplasticised PVC connection pipe with brass unions shall be of 45 cm long and for 15mm dia nominal bore of pipe and of approved quality.

Cp brass twin coat hooks:
C.P. brass twin coat hooks shall be fixed to PVC rawl plug with SS screws including cutting & making good the walls.and as per the direction of Engineer-in-charge. [Make: Euronics, Model: EC02/ Make - Jaquar Model - ACN-1161N].or approved equivalent.

Cp brass towel ring:
C.P. cast brass towel ring shall be fixed with C.P. brass screws complete in all respects including cutting & making good the walls.and as per the direction of Engineer-in-charge. [Make: Euronics, Model: ACC03 / Make - Jaquar Model - AQN-7221].or approved equivalent.

Cp brass soap dispencer :
Liquid manual soap dispenser shall be with stainless steel lid and brackets fixed to wooden cleats with C.P. brass screws [Make: Euronics, Model: ES12 / Make - Jaquar Model - SDR-WHT-DJ0010F].or approved equivalent.

Laying and Fixing Pipes

- The pipes for supply of water to all fittings in the buildings shall be run on the walls except otherwise as specified in these tender documents or shown on drawings, connected to various fittings and shall be brought in the room at point/position approved by the Engineer-in-Charge at site.
- Where pipes are laid underground, the trenches shall be excavated as directed by the Engineer-in-Charge. The pipes running along face of the walls shall be clamped in the walls as specified in SSR.

PVC Pipe Connection
Readymade PVC connection pipes of standard make, length and style as mentioned in relevant item of schedule-`A" suitable for 15mm nominal bore shall be provided.

Water storage tanks
Polyethylene water storage tank, IS: 12701 marked, shall be with cover and suitable locking arrangement and making necessary holes for inlet, outlet and overflow pipes,fittings and the base support for tank.
Gun metal gate valve 25/40mm dia bore with shall be C.I. wheel of approved quality (screwed end).
Gun metal non- return valve of 25 mm nominal bore vertical shall be approved quality (screwed end).
20mm nominal bore forged brass ball valve shall be of brass body with hard chrome plated steel ball inside PTFE (Teflon) seat & ring with chrome plated centre handle with female BSP threads complete in all respects.
Forged brass single acting air release valve shall be with screwed inlet and of 25 mm dia nominal bore.

➢ EXTERNAL WATER SUPPLY

MATERIALS

Mild steel galvanised tubes (Pipes) and fittings
These shall conform to the clause 18.4.1 to 18.4.5 and shall bear ISI certification mark. G.I. pipes of 25/40mm dia nominal bore with two coats of anti-corrosive bitumastic paint of approved quality : complete with G.I. fittings and clamps, i/c trenching and refilling and sand filling etc. shall be provided for External work all as shown on drawings. Gun metal gate valve 25/40mm dia bore with shall be C.I. wheel of approved quality (screwed end) .
Gun metal non- return valve of 25/40 mm nominal bore vertical shall be approved quality (screwed end).

Masonry valve pits

Masonry Chamber 30x30x50 cm inside shall be built with common burnt clay F.P.S.(non modular) bricks of class designation 7.5, in cement mortar 1:4 (1 cement :4 coarse sand) for stop cock, with C. I. surface box 100x100 x75 mm (inside) with hinged cover fixed in cement concrete slab 1:2:4 mix (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size), i/c necessary excavation, foundation concrete 1:5:10 (1 cement : 5 fine sand : 10 graded stone aggregate 40 mm nominal size) and inside plastering with cement mortar 1:3 (1 cement : 3 coarse sand) 12mm thick, finished with a floating coat of neat cement complete as per standard design and as per requirements.

Masonry Chamber 60x60x75 cm inside size shall be built with common burnt clay F.P.S.(non modular) bricks of class designation 7.5,in mortar 1:4 (1 cement: 4 coarse ;and) for sluice valve, 1th C.I. surface box 100 mm top diameter, 160 f!lm bottom diameter and 180 mm deep (inside) with chained hd and RCC top slab 1:2:4 mix (1 cement: 2 coarse sand: 4 graded :5tone aggregate 20 mm nominal size), i/c necessary excavation, foundation concrete 1:5:1o (1 cement: 5 fine sand: 10 graded stone aggregate 40 mm nominal size) and inside plastering with cement mortar -1:3 (1 cement: 3 coarse sand) 12 mm thick, finished with a floating coat of neat cement complete as per standard design and as per requirements.

Back fillings of trenches

It shall be all as specified in clause 18.56 of MES Schedule Part-I.

Making connection of GI distribution with GI main

It shall be as per clause 18.59 of MES Schedule Part-I.

Cutting of GI Pipe line fixing meter and stop valves

It shall be as specified in clause 18.63 to 18.63.2 of MES Schedule Part-I.

Testing of pipe line

Testing of pipe shall be carried out as specified in clause 18.54 of MES Schedule Part-I.

- **SEWAGE DISPOSAL**

Excavation and earth work

Excavating in trenches of required width for pipes, cables, etc shall include excavation for sockets, and dressing of sides, ramming of bottoms, depth upto 1.5 m, including getting out the excavated soil, and then returning the soil as required, in layers not exceeding 20 cm in depth, including consolidating each deposited layer by ramming, watering, etc. and disposing of surplus excavated soil as directed, within a lead of 50 m.

SGSW Pipe and Fittings

- Non-pressure NP2 class (light duty) RCC pipes of 150/200/250/300mm dia bore with collars jointed with stiff mixture of cement mortar in the proportion of 1:2 (1 cement: 2 fine sand) including testing of joints etc. complete. Dia of pipe shall be as per standard design and as shown on drawings.
- PCC in concrete bedding and haunching shall be cement concrete 1:5:10 (1 cement: 5 coarse sand: 10 graded stone aggregate 40 mm nominal size) up to haunches of RCC. Pipes including bed concrete as per standard design.
- Making connection of drain or sewer line with existing manhole shall include breaking into and making good the walls, floors with cement concrete 1:2:4 mix (1cement: 2 coarse sand: 4 graded stone aggregate 20mm nominal size) cement plastered on both sides with cement mortar 1:3 (1cement: 3 coarse sand) finished with a floating coat of neat cement and making necessary channels for the drain etc. complete for pipes 100 to 250mm dia.
- Filling of soil in trenches and ramming of earth shall be carried out in layers not exceeding 25cm thick and surface left slightly proud of the adjacent ground.

Testing

Drains and pipe shall be tested as per clause, 18.79 of MES Schedule Part-I.

RCC Manholes Cover and Frames

a) Brick masonry manhole shall be of Inside size 90×80 cm and depth as required as per slope of the pipe line, including C.I. cover with frame (light duty) 455x610 mm internal dimensions, total weight of cover and frame to be not less than 38 kg (weight of cover 23 kg and weight of frame 15 kg) built with Sewer bricks conforming to IS : 4885in cement mortar 1:4 (1 cement : 4 coarse sand) with R.C.C. top slab with 1:1.5:3 mix (1 cement : 1.5 coarse sand (zone- III) : 3 graded stone aggregate 20 mm nominal size), foundation concrete 1:4:8 mix (1 cement : 4 coarse sand (zone- III) : 8 graded stone aggregate 40 mm nominal size), inside plastering 12 mm thick with cement mortar 1:3 (1 cement : 3 coarse sand) finished with floating coat of neat cement and making channels in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) finished with a floating coat of neat cement complete as per standard design .

b) Brick masonry manhole shall be of Inside size 120x90 cm and depth as required for slope of pipe, including C.I. cover with frame (medium duty) 500 mm internal diameter, total weight of cover and frame to be not less than 116 kg (weight of cover 58 kg and weight of frame 58 kg)With Sewer bricks conforming to IS : 4885, built with Sewer bricks conforming to IS : 4885in cement mortar 1:4 (1 cement : 4 coarse sand) with R.C.C. top slab with 1:1.5:3 mix (1 cement : 1.5 coarse sand (zone- III) : 3 graded stone aggregate 20 mm nominal size), foundation concrete 1:4:8 mix (1 cement : 4 coarse sand (zone- III) : 8 graded stone aggregate 40 mm nominal size), inside plastering 12 mm thick with cement mortar 1:3 (1 cement : 3 coarse sand) finished with floating coat of neat cement and making channels in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) finished with a floating coat of neat cement complete as per standard design .

c) Safety foot rest shall be of orange colour and of minimum 6 mm thick plastic encapsulated as per IS : 10910 on 12mm dia steel bar conforming to IS : 1786 having minimum cross section as 23 mmx25mm and over all minimum length 263 mm and width as 165mm with minimum 112 mm space between protruded legs having 2 mm tread on top surface by ribbing or chequering besides necessary and adequate anchoring projections on tail length on 138 mm as per standard drawing and suitable to with stand the bend test and chemical resistance test as per specifications and having manufacture's permanent identification mark to be visible even after fixing, including fixing in manholes with 30x20x15 cm cement concrete block 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 20 mm nominal size) complete as per design.

Septic Tanks and Soakage wells

On site LLDPE septic tank for 20 Users (Capacity as per design requirements) shall be with UPFLOW FILTER INLCUDING MEDIA designed to carry sewage and sullage water, excavation in any type of soil, PCC 1:4:8 below foundation, Vent shaft, connection etc. complete.

Soakage wells shall be of size 1.2 M dia X 3 M effective depth including excavation, in any type of soil, foundation in PCC 1:3:6, walls of honey combed masonry with top ring of M25 concrete including intercepting chamber and screen chamber made of Brick masonry in CM, RCC cover slab in M25/ SFRC cover, interconnecting pipes of RCC/DWC complete filled with brick bats .No of soakage wells shall be as per design requirements.

- **STORM WATER DRAINAGE**

Excavation and earth work

Excavating in trenches of required width for pipes, cables, etc shall include excavation for sockets, and dressing of sides, ramming of bottoms, depth upto 1.5 m, including getting out the excavated soil, and then returning the soil as required, in layers not exceeding 20 cm in depth, including consolidating each deposited layer by ramming, watering, etc. and disposing of surplus excavated soil as directed, within a lead of 50 m.

RCC Pipe and Fittings

- Non-pressure NP2 class (light duty) RCC pipes of 150/200/250/300mm dia bore with collars jointed with stiff mixture of cement mortar in the proportion of 1:2 (1 cement: 2 fine sand) including testing of joints etc. complete. Dia of pipe shall be as per standard design and as shown on drawings.
- PCC in concrete bedding and haunching shall be cement concrete 1:5:10 (1 cement: 5 coarse sand: 10 graded stone aggregate 40 mm nominal size) up to haunches of RCC. Pipes including bed concrete as per standard design.
- Filling of soil in trenches and ramming of earth shall be carried out in layers not exceeding 25cm thick and surface left slightly proud of the adjacent ground.

RCC Manholes Cover and Frames

Brick masonry manhole shall be of Inside size 120x90 cm and 100 cm deep including C.I. cover with frame (medium duty) 500 mm internal diameter, total weight of cover and frame to be not less than 116 kg (weight of cover 58 kg and weight of frame 58 kg) built in cement mortar 1:4 (1 cement : 4 coarse sand) with R.C.C. top slab with 1:1.5:3 mix (1 cement : 1.5 coarse sand (zone-III) : 3 graded stone aggregate 20 mm nominal size), foundation concrete 1:4:8 mix (1 cement : 4 coarse sand (zone-III) : 8 graded stone aggregate 40 mm nominal size), inside plastering 12 mm thick with cement mortar 1:3 (1 cement : 3 coarse sand) finished with floating coat of neat cement and making channels in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) finished with a floating coat of neat cement complete as per standard design.

Brick masonry road gully chamber shall be of size 50x45x60 cm with common burnt clay F.P.S. (non modular) bricks of class designation 7.5bricks in cement mortar 1:4 (1 cement : 4 coarse sand) including 500x450 mm pre-cast R.C.C. horizontal grating with frame complete as per standard design.

Safety foot rest shall be of orange colour and of minimum 6 mm thick plastic encapsulated as per IS : 10910 on 12mm dia steel bar conforming to IS : 1786 having minimum cross section as 23 mmx25mm and over all minimum length 263 mm and width as 165mm with minimum 112 mm space between protruded legs having 2 mm tread on top surface by ribbing or chequering besides necessary and adequate anchoring projections on tail length on 138 mm as per standard drawing and suitable to with stand the bend test and chemical resistance test as per specifications and having manufacture's permanent identification mark to be visible even after fixing, including fixing in manholes with 30x20x15 cm cement concrete block 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 20 mm nominal size) complete as per design.

➢ INTERNAL ELECTRIFICATION

General Requirements. Refer clause 19.2.1 to 19.2.8 of MES Schedule Part-I.

Type of Wiring

The type of wiring (concealed conduit) shall be as given in drawings and all as described in Schedule „**B**". Point wiring for light/power/fan/bell or buzzer point(s) includes all works mentioned in preambles to the rates in MES Schedule Part-II for point wiring unless otherwise indicated in these tender documents.

Internal Electrical Work

- Cable for internal wiring for light, power, and sub main cables shall be with copper conductor and shall be of the type and size as indicated in schedule „A", Copper conductor cable fire retardant low smoke conforming to IS-694 shall be used.
- **Flexible Cords, Twisted Copper Conductor**
  Flexible cords, three core, each with tinned annealed stranded copper conductor elastomer insulated and textile braided twisted together, size nominal cross sectional area 1.5 Sqmm shall be as per IS-9968 Part-I.
- **Wooden Battens block and boards and round block**
  These shall be in accordance with clause 19.28(19.28.1,19.28.2 and 19.28.3) of MES Schedule

Part-I. Wood shall be first class hard wood (Sheesham) in lieu of teak wood.

- **Plug/Gutties, Screws and Fastenings**
  These shall be in accordance with clause 19.30 and 19.31 of MES Schedule Part-I.
- **Ceiling rose, shades and bulk head fittings**
  These shall be in accordance with clause 19.32, 19.33 and 19.34 of MES Schedule Part-I and as specified and as shown on drawings.
- **Sunk type boxes**
  These shall be in accordance with clause 19.38 of MES Schedule Part-I.
- **Switch socket outlets**
  These shall be in accordance with clause 19.40 of MES Schedule Part-I.
- **Lamp Holders**
  These shall be as per clause 19.41 of MES Schedule Part-I.
- **Miniature Circuit Breakers**
  These shall conform to IS-8828 (Specification for MCB and isolator for voltage not exceeding 1000 volts). All MCB‟s/MCCB‟s shall be housed in suitable size sheet metal enclosure of MS sheet supplied by the same manufacturer of MCBs/MCCB‟s.

Earthing and Testing

Earthing shall be carried out as described in clause 19.137 to 19.139 and as shown in Electrical Plate No. 3 of MES Schedule Part-I.

Sitting of Electrical Equipment

The sitting of cable conduit run controls, distribution boards, fittings and accessories etc. shall be as laid down in IS-4648" Guide for electrical layout in residential buildings" or as directed by the Engineer-in-Charge. The location of fittings etc. shall be marked in advance on walls etc and approved by the AE.

System of Wiring

Wiring shall be carried out with FRLS cable. All conductors as far as possible shall run near walls and ceiling so as to be easily accessible and capable of being thoroughly inspected. Power wiring shall be kept separate and distinct from light wiring. In all type of wiring due consideration shall be given for neatness and good appearance and safety. Diagonal runs will not be permitted.

Control at point of entry of supply

These shall be linked with main switch gear (isolator) with the MCB on each live conductor of the supply mains at the point of entry. The wiring throughout the installation shall be such that there is no break in the neutral wire except in the form of the linked switch gear. No fuses shall be inserted in the earth neutral.

Type of switch boards

Hinged type metal boards for mounting the MCB and electrical meters shall be as per clause 19.105.1 of MES Schedule Part-I. Meter Box shall be made of 16 gauge MS sheet with provision of locking arrangement and glass window.

Joints and looping back

These shall be as per clause No. 19.109 of MES Schedule Part-I.

Passing through walls and floors

Refer clause 19.111 of MES Schedule Part-I for passing the conductors through walls and floors. The rates for PVC/steel conduit concealed wiring against internal electrification shall be deemed to include the provisions mentioned in clause 19.111 of MES Schedule Part-I.

Record drawings

On completion of the wiring to the building the contractor shall submit three copies of the line plans of the building (Scale 1:100) indicating actual position of all controls and fittings and actual runs of all main and sub-circuit and such other information which the Engineer-in-Charge may require. All circuits

shall be clearly indicated and numbered in the wiring diagram and all points shall be given the same number as the circuit to which they are electrically connected phase and neutral wires shall be shown in red and black colours respectively.

Conduit wiring

The system of conduit wiring shall be as per clause 19.125 of MES schedule Part-I. Grade of conduit shall be medium.

Material and sample board

All materials unless otherwise specified shall possess ISI mark or conform to relevant IS specifications or to BSS if ISS is not available. Approval of GE referred to in clause 19.2.1 and 19.2.2 of MES Schedule shall be in writing. Approved samples shall be labelled as such and signed both by the contractor and the Engineer-in-Charge. They shall remain in the custody of Engineer-in-Charge, till final completion of work. The contractor is deemed to have included in rates, cost of making holes/chases where required through masonry or concrete work for taking in cables/conduits and conductors etc and making good the same to match with existing work.

End termination

All cable termination for internal electrification for various switches. Light fittings, MCBs, MCCBs junction boxes, connectors etc shall be provided with suitable crimpled legs/studs/sleeves as required to avoid any possibility of loose connections and sparking.

Electrical tests

On completion of wiring, the whole installation will be tested in accordance with IS- 732, clause 8(a) (b) & (c) and test certificate as per Appendix „B" of the above IS rendered duly signed by the contractor and Engineer-in- Charge. If the test results are not acceptable, all repairs and replacement and extra work of removal and relaying or refixing shall be carried out by the contractor at his own expense and installation retested, until test result indicate compliance with the pre scribed requirement. The contractor shall supply all necessary apparatus, lab and instruments or equipments required for testing. The quoted amount/rate for respective item/part of Sch „A" shall be deemed to include for the above provision.

- **External Electrification.**

Scope of work

The extent of work is as per items given in schedule „A". All references to clause in the succeeding paragraphs pertain to MES Schedule Part-I.

General Requirement

Materials, execution, testing and record of installation shall conform to relevant IS specifications and as given in clause 19.2.1 to 19.2.6 and as also in accordance with Indian Electricity Rules 1956**.**

Making Good

The contractor is deemed to have included in his lumpsum, cost of cutting holes/making chases when required through roads/bricks or concrete work for taking in cables conduit and conductors etc and making good the same to match with the existing work**.**

Materials.

- Insulator and insulator fittings shall be as specified in clause 19.6.1 to 19.6.4. Stay wire and stay wire assemblies shall conform to specification given in clause 19.7 to 19.8.
- Steel cross arms shall conform to specifications given in clause 19.9.
- Conductors shall conform specifications given in clause 19.10.
- Bearer wires shall conform to specifications given in clause 19.11.
- Lightning arrestors shall conform to specifications given in clause 19.12 and 19.13.

Excavation

- Excavation in trenches for cable sand laying of cables in trenches
- Shall be carried out all as specified in clause 19.74 to 19.76 of SSR Part-I.
- Measurement of excavation shall be as per authorized width as given in section 3, clause 3.2.3 para (a),
  (b) and (c) on pages 17 & 18 of MES Schedule (Part-II).

Sand cushioning

Sand cushioning to UG cable shall be carried out as specified in Sch „A‟ and all as described in clause 19.75 of MES Schedule.

Cable protection

Brick cover as specified in relevant item of Sch „A‟ shall be used in cable protection, all as specified in relevant clauses of SSR Part-I.

Protection of existing work

- All pipes, water mains, cables etc., met within the course of excavation shall be carefully protected and supported without extra cost to the Government.
- The rates quoted by the contractor for various items of relevant parts of Schedule -A‟ shall be deemed to include for all the contingencies referred above. No claim whatsoever will be entertained by the department on this account.

➢ MISC TEMS OF WORK

The work shall be carried out as specified in respective items of Sch „B‟ and as specified in relevant Sch of SSR 2009 Part-I.

Miniature Circuit Breakers

These shall conform to IS-8828 (Specification for MCB and isolator for voltage not exceeding 1000 volts). All MCB‟s/MCCB‟s shall be housed in suitable size sheet metal enclosure of MS sheet supplied by the same manufacturer of MCBs/MCCB‟s.

LED Fittings; LED light fittings shall be as specified in relevant item of Sch `B‟. **FAN/EXHAUST FANS:** These shall be as specified in relevant item of Sch `B‟ and as directed. **Underground cables** These shall be laid in trenches and shall conform to clauses 19.75, 19.76, 19.78, 19.80 to 19.82 and as given in Schedule „B‟.

Cable laying and record: The following essential data shall be furnished by the contractor as cable record of all the buried cable installation:-

(a) Size, type and make of cable.
(b) Location of cable in relation to bench marks or any other permanent structure.
(c) Cross-section showing where cables are laid in pipes or trenches giving their sizes, type and depth.
(d) Position and type of all joints.
(e) Position and depth of all pipes, ducts to which it met and obstructions to the cable run.
(f) Record of accurate lengths from joints to joint and phase sequence between joints to joints to each cable run.
(g) The contractor shall provide LT cable metal tags indicating sizes, each run Joints, length of cable between sub lead centers, so that at any spot each cable can be identified easily.
(h) While laying LT cable under the roads, paths etc, exact depth at which the cables are to be laid shall be as per SSR and as directed by the Engineer-in- Charge.
(j) Cable shall not be bent to small radius while laying in trenches/ducts. The Minimum safe bending radius shall be taken as 12 D, where `D‟ indicates dia of cable.

(k) Before laying the cable, the trenches shall be provided with a layer of sand to the thickness as directed by Engineer-in-Charge, for the purpose of cushioning. Cable ends with exposed ends shall be provided with cable sockets. Sand cushioning for protection of underground cable in trenches shall be done as described in clause 19.75 of MES Schedule.

(l) All jointing of cables in joint boxes, etc. shall be done strictly as per Manufacturer‟s instructions. The joints shall conform the relevant IS. Each jointing will be inspected and passed by Engineer- in-Charge. Random checks shall be exercised by AE also and the findings recorded. The PVC cable shall be terminated through a gland, made of suitable sizes. Before making joints in cables near the proposed building sufficient loops shall be provided for further maintenance.

Testing of cable & equipments

LT/HT cable (where the quantity of particular size is more than 500m), HT panel/DG set, transformers, Compact package type substations, RMU and the like shall be inspected & tested in presence of Accepting officer Rep and Engr-in- charge in factory premises prior to dispatch of these items . The contractor shall inform well in advance to the department for inspection at factory premises**.**

Testing of underground cables

During and after laying of cables testing shall be done as specified in clause 19.93 to 19.96 of SSR Part-I. The testing shall be carried out by the contractor in presence of Engineer- in-Charge; recorded and signed by both. For cable laying, jointing and testing, the relevant clause in pages 19.19 to 19.23 of SSR Part-I (1991) shall also be kept in view. The rates quoted by the contractor for relevant items of Schedule „A‟ shall be deemed to include for the testing

Cables boxes

These shall be straight through TC or end boxes for HT and LT cables as specified in the Schedule „B‟. Jointing of cables shall be as specified in relevant IS.

LT/HT Poles

These shall be as specified in relevant clauses of MES SSR 2009 Part-I. Erection of poles shall conform to clause 19.50 to 19.52**.**

LT SWITCH BOARD PANEL

LT Panel shall be of CRCA sheet construction (minimum 2 mm thick) fixed on masonry platform of suitable size 60cm above GL and 30 cm below GL. The design of LT panel shall ensure that weights of components are adequately supported without any distortion/deformation. Ample space for housing the cable and connections for the purpose of installation and maintenance of cable shall be provided at the back/front with two doors along with locking arrangements**.**

The bus bar shall be of high conductivity aluminum alloy grade EGIE and of adequate cross section to ensure that the temperature rise is within the permissible limits. The bus bar shall be insulated with PVC sleeves, supported at uniform intervals with non-hygroscopic insulated supports to withstand short circuit faults and enclosed in a separate chamber. High tensile bolts and spring washer shall be provided at all bus bar joints. Connections from main bus bar to functional circuit shall be provided with appropriate size aluminum strips and so arranged as to withstand without any damage or deformation the thermal and dynamic stresses due to short circuit. Neutral bus bar shall be half the size of phase bus bar. LT panel should be factory made. The drawings of LT panel will be got approved from AE before manufacturing /assembly.

Testing.

Pre-commissioning test of all electric equipments/ machinery installed under this contract shall be carried out by Electric Inspector in presence of Contractor before issuance of satisfactory completion certificate of the work by the GE. The record of such tests will be maintained by the AE duly signed by all concerned and a copy thereof shall be forwarded to Accepting Officer for record purpose. The equipments required for all the tests to be carried out. The quoted amount/rate of respective parts/items of Sch „B‟ shall be deemed to include for the above provision**.**

DIESEL ENGINE (DG SET)

The diesel engine shall be water cooled diesel engine driven generating set enclosed in acoustic cover of capacities shown in relevant items of Schedule „A", 415 volt, 3 phase, 4 wire, 50 Hz at 1500 RPM conforming to the requirement of Euro-II conforming to ISO-900: 1994 and consisting of the following standard accessories and controls:-

(i) Engine speed governor (Electronic/ mechanical).
(ii) Air filter dry/oil both type as per manufacturer"s standard specification.
(iii) Turbo charger after cooler.
(iv) Tor signal vibrator damper.
(v) Electric motor starter.
(vi) Gear Pump for forced lubrication.
(vii) Fuel injection pump.
(viii) Lub oil filter and lub oil cooler.
(ix) Instrument panel comprising of temperature gauge, tacho-cum-hour counter meter and fuses, battery charging Ammeter.
(x) One set of indicating lamps for load on, main load on, set fails to start, low oilpressure, high temperature alarm/ high temperature trip and alternator over load.
(xi) One audio alarm hooter.
(xii) One KWH meter 3 phase unbalanced load.
(xiii) One KW meter of suitable capacity.
(xiv) One set of bus bar.
(xv) One power factor meter.
(xvi) Corrosion resister.
(xvii) Set of tools as per Manufacturer"s catalogue.
(xviii) Spares as Manufacturer catalogue.

LUBRICATION OIL SYSTEM

Force feed lubricating system of adequate capacity comprising of gear type lubricating oil pump, oil sump, oil cooler, oil filter, lubricating oil pump. It shall be placed at readily accessible place. It shall be provided with regulator valve and pressure relief valve to protect the system from excessive pressure and to maintain constant oil pressure in complete system.

ELECTRIC STARTING SYSTEM

Electric starting system shall comprise of BOSCH"s/LUCAS/Mico starter complete with copper leads of adequate size connected to the system start/ stop button, starter gear ring and battery charging generator with regulator to charge the batteries.

EXHAUST SYSTEM

Exhaust system shall include provision of a suitable size silencer and complete pipe system of suitable size to carry the exhaust gases out of the generator room without creating undue back pressure. System shall be cladded with asbestos rope.

ENGINE PROTECTION DEVICES

The tenderer shall clearly indicate the alarms and safety device incorporated in his offer. However, system must have following protection devices with Engine (Audio/ visual) indicator with sheet down:-

(a) Low lubricating oil pressure.
(b) Over speeding of engine.
(c) High water temperature in radiator/ high cylinder temperature.

FUEL TANK

Fuel tank offered by tenderer shall be of capacity not less than 12 hours running at full load with level indicator, stop cock, drain plug alongwith suitable filing arrangement consisting of semi rotary hand operated pump with suitable connections. The rate quoted by tenderers in Schedule „B" against Gen Set shall be deemed to include the same.

TESTING AT FACTORY

Testing of DG Set/ Alternator and panel at factory shall be done during manufacturing process. Contractor will intimate Accepting Officer through concerned GE at least one month in advance to nominate representative of Accepting Officer for testing at factory.

TESTING AT SITE

The DG set after installation will be tested for 12 hours continuous run on resistive load or water load in the presence of rep of AE as follows:-

INITIAL RUN

(i) at 25% load for one hour.
(ii) at 50% load for one hour.
(iii) at 75% load for one hour.
(iv) at 100% load for one hour.
(v) at 110% load for one hour.
(vi) at 100% load for rest hour

All necessary arrangement of load and fuel and other equipments required for testing will be arranged by contractor. No extra payment will be made for the testing.

In case of failure, contractor will repair or replace defective part or complete set at his own cost. GE"s decision shall be final on this aspect.

Spare parts and tool kit as per manufacturer's recommendations shall be provided by the contractor without any extra cost to the department.

Acoustic Enclosure: Acoustic enclosure should be made as per CPCB guidelines and it should satisfy all CPCB conditions. Certificate for Noise test from NAL to be obtained by contractor. Engine should be conforming to latest IS code.

2. SCHEDULE OF FINISHES

SCHEDULES

September 2024

FINISHING SCHEDULE

MARRIED ACCN FOR MAJS BLOCK OF 8 (G+1)

Sl No.	Location	Floor	Skirting 100mm	Dado	Internal wall Plaster	xternal wall Plaste	Ceiling Plaster	Internal Walls Finishes	Exrternal finishes	Ceiling finishes	Wooden/Steel surface finishes	Doors	Windows	Railing
	GROUND FLOOR													
1	Staircase hall	Combination of flamed finish/Polished Granite stone flooring	Combination of flamed finish/Polished Granite stone 100mm high					Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based putty				Wooden door frames and 35mm th.flush door shutters decorative type		SS Railing
2	Master Bed Room	Double charged Vitrified tiles 600x1200mm	Double Charged Vitrified tiles of 100 mm high					Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based putty				Wooden door frames and 35mm th.flush door shutters decorative type	UPVC Three track three panels sliding window with MS plate & bar for safety	
3	Toilets	395x395 mm and 7-8 mm th. non skid ceramic tiles over 20 mm th screed in cm (1:6)		600x300 Vitrified tiles upto ceiling level				600x300 Vitrified tiles upto ceiling level				FRP door	UPVC Ventilator with fixed panel and provision for 300 dia exhaust fan	
4	Dressing	Double charged Vitrified tiles 600x1200mm	Double Charged Vitrified tiles of 100 mm high					Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based putty above dado upto ceiling						
5	Bed Room	Double charged Vitrified tiles 600x1200mm	Double Charged Vitrified tiles of 100 mm high					Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based putty				Wooden door frames and 35mm th.flush door shutters decorative type	UPVC Three track three panels sliding window with MS plate & bar for safety	
6	Living /Drawing room	Double charged Vitrified tiles 600x1200mm	Double Charged Vitrified tiles of 100 mm high					Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based putty				Wooden door frames and 35mm th.flush door shutters decorative type	UPVC Three track three panels sliding window with MS plate & bar for safety	
7	Dining room	Double charged Vitrified tiles 600x1200mm	Double Charged Vitrified tiles of 100 mm high					Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based putty		Ceiling painting with acrylic emulsion paint of interior grade over 1mm thick white cement based putty		Wooden door frames and 35mm th.flush door shutters decorative type	UPVC Three track three panels sliding window with MS plate & bar for safety	
8	Balcony/ Vera	395x395 mm and 7-8 mm th. non skid ceramic tiles over 20 mm th screed in cm (1:6)	Double Charged Vitrified tiles of 100 mm high		15 mm th cement plaster in cm (1:6)	20 mm th cement plaster in two layers of 10 mm each with cm (1:4) applyig WPC	5 mm th cement plaster in cm (1:3)		Two coats of weather proof paint over a coat of primer on plastered surfaces		Two coats of synthetic enamel paint over one coat of wood primer on exposed wooden surfaces.	Wooden door frames and 35mm th.flush door shutters decorative type		SS Railing
9	Wash area/Drying Balcony	395x395 mm and 7-8 mm th. non skid ceramic tiles over 20 mm th screed in cm (1:6)		300x600mm Ist quality ceramic glazed wall tiles upto cill level								Wooden door frames and 35mm th.flush door shutters decorative type		SS Railing
10	Passage	Granite flooring	Granite skirting 100mm high					Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based putty				Wooden door frames and 35mm th.flush door shutters decorative type		SS Railing
11	Kitchen	395x395 mm and 7-8 mm th. non skid ceramic tiles over 20 mm th screed in cm (1:6)(Granite on Kitchen Platform) (SS sink single bowl with drain boare)		300x600mm Ist quality ceramic glazed wall tiles upto Lintle level				Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based putty above dado upto false ceiling				Wooden door frames and 35mm th.flush door shutters decorative type	UPVC Three track three panels sliding window with partly fixed window & provision for 300 dia exhaust fan	
12	Staircase	Combination of flamed finish/Polished Granite stone flooring	Polished Granite stone Riser/Skirting					Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based putty					18 mm thick single extruded WPC colour board Jali, CNC & UPVC Fixed window/ ventilator	SS Railing
13	Servent Room	Ceramic tiles 600x600mm	Ceramic tiles of 100 mm high					Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based putty				Wooden door frames and 35mm th.flush door shutters decorative type	UPVC Three track three panels sliding window with MS plate & bar for safety	
15	Servant Stairs	Kota stone flooring	Kota stone skirting					Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based putty						
16	WC/Bath/Was	395x395 mm and 7-8 mm th. non skid ceramic tiles over 20 mm th screed in cm (1:6)(Granite on Kitchen Platform)		300x600mm Ist quality ceramic glazed wall tiles upto ceiling level				Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based putty				Fibre glass reinforced plastic (FRP) door frames and shutters	UPVC Ventilator with fixed panel and provision for 300 dia exhaust fan	
17	Garrage	75 mm th PCC (1:2:4) type B2 over 100 mm thick PCC (1:4:8)	5mm th Cement plaster in CM 1:2 over 10mm thick cement plaster in CM 1:4					Three coats of white wash on walls		Three coats of white wash on ceiling		Mild steel Gate/Rolling shutter		
18	Ramp	75 mm th PCC (1:2:4) type B2 with chequred finish over 100 mm thick PCC (1:4:8)												
19	Open to sky	Kota stone flooring	Kota stone skirting											
20	External pathv	Combination of PCC and rough Kota												
21	Plinth protecti	750 mm wide		Polished Kota wall cladding from top of plinth protection to 600 mm high										

	Other Specifications	
1	Bathroom	Bathroom fixtures and fittings shall be of Jaguar/Cera/Hindustan
2	Electrical	Electrical wire and switch sockets shall be of ISI mark Anchor/Polycab/Havells

FINISHING SCHEDULE

MARRIED ACCN FOR MAJS BLOCK OF 8 (G+1)

Sl No.	Location	Floor	Skirting 100mm	Dado	Internal wall Plaster	ternal wall Plast	Ceiling Plaster	Internal Walls Finishes	Exrternal finishes	Ceiling finishes	Wooden/Steel surface finishes	Doors	Windows	Railing
	FIRST FLOOR													
1	Staircase hall	Combination of flamed finish/Polished Granite stone flooring	Combination of flamed finish/Polished Granite stone 100mm high		15 mm th cement plaster in cm (1:6)	20 mm th cement plaster in two layers of 10 mm each with cm (1:4) applyig WPC	5 mm th cement plaster in cm (1:3) in case of RCC slab	Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based putty	Two coats of weather proof paint over a coat of primer on plastered surfaces	RCC/ Steel truss as per drawing with 0.5 mm thick galvalume sheet and Ceiling painting with acrylic emulsion paint of interior grade over 1mm thick white cement based putty	Two coats of synthetic enamel paint over one coat of wood primer on exposed wooden surfaces.	Wooden door frames and 35mm th.flush door shutters decorative type		
2	Master Bed Room	Double charged Vitrified tiles 600x1200mm	Double Charged Vitrified tiles of 100 mm high					Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based putty				Wooden door frames and 35mm th.flush door shutters decorative type	UPVC Three track three panels sliding window with MS plate & bar for safety	
3	Toilets	395x395 mm and 7-8 mm th. non skid ceramic tiles over 20 mm th screed in cm (1:6)		600x300 Vitrified tiles upto ceiling level				600x300 Vitrified tiles upto ceiling level				FRP door	UPVC Ventilator with fixed panel and provision for 300 dia exhaust fan	
4	Dressing	Double charged Vitrified tiles 600x1200mm	Double Charged Vitrified tiles of 100 mm high					Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based putty above dado upto ceiling						
5	Bed Room	Double charged Vitrified tiles 600x1200mm	Double Charged Vitrified tiles of 100 mm high					Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based putty				Wooden door frames and 35mm th.flush door shutters decorative type	UPVC Three track three panels sliding window with MS plate & bar for safety	
6	Living /Drawing room	Double charged Vitrified tiles 600x1200mm	Double Charged Vitrified tiles of 100 mm high					Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based putty				Wooden door frames and 35mm th.flush door shutters decorative type	UPVC Three track three panels sliding window with MS plate & bar for safety	
7	Dining room	Double charged Vitrified tiles 600x1200mm	Double Charged Vitrified tiles of 100 mm high					Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based putty				Wooden door frames and 35mm th.flush door shutters decorative type	UPVC Three track three panels sliding window with MS plate & bar for safety	
8	Balcony/ Vera	395x395 mm and 7-8 mm th. non skid ceramic tiles over 20 mm th screed in cm (1:6)	Double Charged Vitrified tiles of 100 mm high									Wooden door frames and 35mm th.flush door shutters decorative type		SS Railing
9	Wash area/Drying Balcony	395x395 mm and 7-8 mm th. non skid ceramic tiles over 20 mm th screed in cm (1:6)		300x600mm Ist quality ceramic glazed wall tiles								Wooden door frames and 35mm th.flush door shutters decorative type		SS Railing
10	Passage	Granite flooring	Granite skirting 100mm high					Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based putty				Wooden door frames and 35mm th.flush door shutters decorative type		SS Railing
11	Kitchen	395x395 mm and 7-8 mm th. non skid ceramic tiles over 20 mm th screed in cm (1:6)(Granite on Kitchen Platform) (SS sink single bowl with drain boare)		300x600mm Ist quality ceramic glazed wall tiles upto Lintle level				Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based putty above dado upto false ceiling				Wooden door frames and 35mm th.flush door shutters decorative type	UPVC Three track three panels sliding window with partly fixed window & provision for 300 dia exhaust fan	
12	Staircase	Combination of flamed finish/Polished Granite stone flooring	Polished Granite stone Riser/Skirting					Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based putty					18 mm thick single extruded WPC colour board Jali, CNC & UPVC Fixed window/ ventilator	SS Railing
13	Servent Room	Ceramic tiles 600x600mm	Ceramic tiles of 100 mm					Wall painting with premium				Wooden door frames and	UPVC Three track three	
14	WC/Bath/Was	395x395 mm and 7-8 mm th. non skid ceramic tiles over 20 mm th screed in cm (1:6)(Granite on Kitchen Platform)		300x600mm Ist quality ceramic glazed wall tiles upto ceiling level				Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based putty				Fibre glass reinforced plastic (FRP) door frames and shutters	UPVC Ventilator with fixed panel and provision for 300 dia exhaust fan	
15	Terrace	395x395 mm and 7-8 mm th. non skid ceramic tiles over 20 mm th screed in cm (1:6)	Double Charged Vitrified tiles of 100 mm high									Wooden door frames and 35mm th.flush door shutters decorative type	UPVC Three track three panels sliding window	SS Railing
16	Open to sky									Steel structure with Translucent sheeting				

	Other Specifications	
1	Bathroom	Bathroom fixtures and fittings shall be of Jaguar/Cera/Hindustan
2	Electrical	Electrical wire and switch sockets shall be of ISI mark Anchor/Polycab/Havells

SCHEDULES

September 2024

FINISHING SCHEDULE

SINGLE OFFR ACCOMODATION (G+2)

Sl No.	Location	Floor	Skirting 100mm	Dado	Internal wall Plaster	External wall Plaster	Ceiling Plaster	Internal Walls Finishes	Exrternal finishes	Ceiling finishes	Wooden/Steel surface finishes	Doors	Windows	Railing
	BASEMENT													
1	Staircase	Combination of flamed finish/Polished Granite stone flooring	Polished Granite stone Riser/Skirting		15 mm th cement plaster in cm (1:6)		5 mm th cement plaster in cm (1:3)	Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based putty		Ceiling painting with acrylic emulsion paint of interior grade over 1mm thick white cement based putty	Two coats of synthetic enamel paint over one coat of wood primer on exposed wooden surfaces.			SS Railing
2	Lobby	Double charged Vitrified tiles 600 600mm	Double Charged Vitrified tiles of 100 mm high			20 mm th cement plaster in two layers of 10 mm each with cm (1:4) applyig WPC						Wooden door frames and 35mm th.flush door shutters decorative type		
3	Electrical room	Kota stone flooring	Kota stone skirting									Wooden door frames and 35mm th.flush door shutters decorative type		
4	Parking	150 thick VDS flooring		Polished Kota wall cladding from top of plinth protection to 500 mm high		20 mm th cement plaster in two layers of 10 mm each with cm (1:4) applyig WPC			Two coats of weather proof paint over a coat of primer on plastered surfaces					
	GROUND FLOOR													
1	Entrance steps	Combination of flamed finish/Polished Granite stone flooring		Polished granite wall cladding upto 300 mm above floor finish level	15 mm th cement plaster in cm (1:6)	20 mm th cement plaster in two layers of 10 mm each with cm (1:4) applyig WPC	5 mm th cement plaster in cm (1:3)		Two coats of weather proof paint over a coat of primer on plastered surfaces	Ceiling painting with acrylic emulsion paint of interior grade over 1mm thick white cement based putty	Two coats of synthetic enamel paint over one coat of wood primer on exposed wooden surfaces.			
2	Staircase	Combination of flamed finish/Polished Granite stone flooring	Polished Granite stone Riser/Skirting					Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based putty				Wooden door frames and 35mm th.flush door shutters decorative type	18 mm thick single extruded WPC colour board Jali, CNC & UPVC Fixed window/ ventilator	SS Railing
3	Lift lobby	Double charged Vitrified tiles 600 600mm	Double Charged Vitrified tiles of 100 mm high					Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based putty				Wooden door frames and 35mm th.flush door shutters decorative type	UPVC Three track three panels sliding window	
4	Corridor	Double charged Vitrified tiles 600 600mm	Double Charged Vitrified tiles of 100 mm high					Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based putty				Wooden door frames and 35mm th.flush door shutters decorative type	UPVC fixed ventilator with 6mm glass	SS Railing
5	Service staircase	Kota stone flooring	Kota stone skirting					Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based putty						SS Railing
6	Living area	Double charged Vitrified tiles 600 600mm	Double Charged Vitrified tiles of 100 mm high					Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based putty				Wooden door frames and 35mm th.flush door shutters decorative type	UPVC fixed ventilator with 6mm glass	
7	Kitchen	395x395 mm and 7-8 mm th. non skid ceramic tiles over 20 mm th screed in cm (1:6)(Granite on Kitchen Platform) (SS sink single bowl with drain boare)		300x600mm Ist quality ceramic glazed wall tiles upto Lintle level				Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based putty above dado upto false ceiling				Wooden door frames and 35mm th.flush door shutters decorative type	UPVC Three track three panels sliding window with partly fixed window & provision for 300 dia exhaust fan	
8	Store	Kota stone flooring	Kota stone skirting					Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based putty				Wooden door frames and 35mm th.flush door shutters decorative type	UPVC Three track three panels sliding window	
9	Bed Room	Double charged Vitrified tiles 600 600mm	Double Charged Vitrified tiles of 100 mm high					Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based putty				Wooden door frames and 35mm th.flush door shutters decorative type	UPVC Three track three panels sliding window	
10	Toilets	395x395 mm and 7-8 mm th. non skid ceramic tiles over 20 mm th screed in cm (1:6)						600x300 Vitrified tiles upto ceiling level				FRP door	UPVC Ventilator with fixed panel and provision for 300 dia exhaust fan	
11	Dressing	Double charged Vitrified tiles 600 600mm	Double Charged Vitrified tiles of 100 mm high					Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based putty above dado upto ceiling						
12	Balcony/ Verandah	395x395 mm and 7-8 mm th. non skid ceramic tiles over 20 mm th screed in cm (1:6)	Double Charged Vitrified tiles of 100 mm high									Wooden door frames and 35mm th.flush door shutters decorative type	UPVC Three track three panels sliding window	SS Railing
13	Ramp	75 mm th PCC (1:2:4) type B2 with chequred finish over 100 mm thick PCC (1:4:8)												SS Railing
14	Plinth protection	750 mm wide		Polished Kota wall cladding from top of plinth protection to 450 mm high										

SCHEDULES

September 2024

FINISHING SCHEDULE

SINGLE OFFR ACCOMODATION (G+2)

Sl No.	Location	Floor	Skirting 100mm	Dado	Internal wall Plaster	External wall Plaster	Ceiling Plaster	Internal Walls Finishes	Exrternal finishes	Ceiling finishes	Wooden/Steel surface finishes	Doors	Windows	Railing
	FIRST FLOOR													
1	Staircase	Combination of flamed finish/Polished Granite stone flooring	Polished Granite stone Riser/Skirting		15 mm th cement plaster in cm (1:6)	20 mm th cement plaster in two layers of 10 mm each with cm (1:4) applyig WPC	5 mm th cement plaster in cm (1:3)		Two coats of weather proof paint over a coat of primer on plastered surfaces	Ceiling painting with acrylic emulsion paint of interior grade over 1mm thick white cement based putty	Two coats of synthetic enamel paint over one coat of wood primer on exposed wooden surfaces.		18 mm thick single extruded WPC colour board Jali, CNC & UPVC Fixed window/ ventilator	SS Railing
2	Lift lobby	Double charged Vitrified tiles 600 600mm	Double Charged Vitrified tiles of 100 mm high		15 mm th cement plaster in cm (1:6)							Wooden door frames and 35mm th.flush door shutters decorative type	UPVC Three track three panels sliding window	
3	Corridor	Double charged Vitrified tiles 600 600mm	Double Charged Vitrified tiles of 100 mm high		15 mm th cement plaster in cm (1:6)							Wooden door frames and 35mm th.flush door shutters decorative type	UPVC fixed ventilator with 6mm glass	SS Railing
4	Service staircase	Kota stone flooring	Kota stone skirting		15 mm th cement plaster in cm (1:6)									SS Railing
5	Living area	Double charged Vitrified tiles 600 600mm	Double Charged Vitrified tiles of 100 mm high		15 mm th cement plaster in cm (1:6)							Wooden door frames and 35mm th.flush door shutters decorative type	UPVC Three track three panels sliding window	
6	Kitchen	395x395 mm and 7-8 mm th. non skid ceramic tiles over 20 mm th screed in cm (1:6)(Granite on Kitchen Platform) (SS sink single bowl with drain boare)		300x600mm Ist quality ceramic glazed wall tiles upto Lintle level	15 mm th cement plaster in cm (1:6) above dado							Wooden door frames and 35mm th.flush door shutters decorative type	UPVC Three track three panels sliding window with partly fixed window & provision for 300 dia exhaust fan	
7	Store	Kota stone flooring	Kota stone skirting		15 mm th cement plaster in cm (1:6)							Wooden door frames and 35mm th.flush door shutters decorative type	UPVC Three track three panels sliding window	
8	Bed Room	Double charged Vitrified tiles 600 600mm	Double Charged Vitrified tiles of 100 mm high		15 mm th cement plaster in cm (1:6)							Wooden door frames and 35mm th.flush door shutters decorative type	UPVC Three track three panels sliding window	
9	Toilets	395x395 mm and 7-8 mm th. non skid ceramic tiles over 20 mm th screed in cm (1:6)			15 mm th cement plaster in cm (1:6)							FRP door	UPVC Ventilator with fixed panel and provision for 300 dia exhaust fan	
10	Dressing	Double charged Vitrified tiles 600 600mm	Double Charged Vitrified tiles of 100 mm high		15 mm th cement plaster in cm (1:6) (waterproof)									
11	Balcony/ Verandah	395x395 mm and 7-8 mm th. non skid ceramic tiles over 20 mm th screed in cm (1:6)	Double Charged Vitrified tiles of 100 mm high		15 mm th cement plaster in cm (1:6)							Wooden door frames and 35mm th.flush door shutters decorative type	UPVC Three track three panels sliding window	SS Railing

SCHEDULES

September 2024

FINISHING SCHEDULE

SINGLE OFFR ACCOMODATION (G+2)

Sl No.	Location	Floor	Skirting 100mm	Dado	Internal wall Plaster	External wall Plaster	Ceiling Plaster	Internal Walls Finishes	Exrternal finishes	Ceiling finishes	Wooden/Steel surface finishes	Doors	Windows	Railing
	SECOND FLOOR													
1	Staircase	Combination of flamed finish/Polished Granite stone flooring	Polished Granite stone Riser/Skirting		15 mm th cement plaster in cm (1:6)	20 mm th cement plaster in two layers of 10 mm each with cm (1:4) applyig WPC	5 mm th cement plaster in cm (1:3) in case of RCC slab		Two coats of weather proof paint over a coat of primer on plastered surfaces	RCC/ Steel truss as per drawing with 0.5 mm thick galvalume sheet and Ceiling painting with acrylic emulsion paint of interior grade over 1mm thick white cement based putty	Two coats of synthetic enamel paint over one coat of wood primer on exposed wooden surfaces.		18 mm thick single extruded WPC colour board Jali, CNC & UPVC Fixed window/ ventilator	SS Railing
2	Lift lobby	Double charged Vitrified tiles 600 600mm	Double Charged Vitrified tiles of 100 mm high		15 mm th cement plaster in cm (1:6)							Wooden door frames and 35mm th.flush door shutters decorative type	UPVC Three track three panels sliding window	
3	Corridor	Double charged Vitrified tiles 600 600mm	Double Charged Vitrified tiles of 100 mm high		15 mm th cement plaster in cm (1:6)							Wooden door frames and 35mm th.flush door shutters decorative type	UPVC fixed ventilator with 6mm glass	SS Railing
4	Service staircase	Kota stone flooring	Kota stone skirting		15 mm th cement plaster in cm (1:6)									SS Railing
5	Living area	Double charged Vitrified tiles 600 600mm	Double Charged Vitrified tiles of 100 mm high		15 mm th cement plaster in cm (1:6)							Wooden door frames and 35mm th.flush door shutters decorative type	UPVC Three track three panels sliding window	
6	Kitchen	395x395 mm and 7-8 mm th. non skid ceramic tiles over 20 mm th screed in cm (1:6)(Granite on Kitchen Platform) (SS sink single bowl with drain boare)		300x600mm Ist quality ceramic glazed wall tiles upto Lintle level	15 mm th cement plaster in cm (1:6) above dado							Wooden door frames and 35mm th.flush door shutters decorative type	UPVC Three track three panels sliding window with partly fixed window & provision for 300 dia exhaust fan	
7	Store	Kota stone flooring	Kota stone skirting		15 mm th cement plaster in cm (1:6)							Wooden door frames and 35mm th.flush door shutters decorative type	UPVC Three track three panels sliding window	
8	Bed Room	Double charged Vitrified tiles 600 600mm	Double Charged Vitrified tiles of 100 mm high		15 mm th cement plaster in cm (1:6)							Wooden door frames and 35mm th.flush door shutters decorative type	UPVC Three track three panels sliding window	
9	Toilets	395x395 mm and 7-8 mm th. non skid ceramic tiles over 20 mm th screed in cm (1:6)			15 mm th cement plaster in cm (1:6)							FRP door	UPVC Ventilator with fixed panel and provision for 300 dia exhaust fan	
10	Dressing	Double charged Vitrified tiles 600 600mm	Double Charged Vitrified tiles of 100 mm high		15 mm th cement plaster in cm (1:6) (waterproof)									
11	Balcony/ Verandah	395x395 mm and 7-8 mm th. non skid ceramic tiles over 20 mm th screed in cm (1:6)	Double Charged Vitrified tiles of 100 mm high		15 mm th cement plaster in cm (1:6)							Wooden door frames and 35mm th.flush door shutters decorative type	UPVC Three track three panels sliding window	SS Railing

	Other Specifications	
1	Bathroom	Bathroom fixtures and fittings shall be of Jaguar/Cera/Hindustan
2	Electrical	Electrical wire and switch sockets shall be of ISI mark Anchor/Polycab/Havells

SCHEDULES September 2024

FINISHING SCHEDULE

OR LINES (LG+G+1)

Sl No.	Location	Floor	Skirting 100mm	Dado	Internal wall Plaster	External wall Plaster	Ceiling Plaster	Internal Walls Finishes	Exrternal finishes	Ceiling finishes	Wooden/Steel surface finishes	Doors	Windows	Railing
	LOWER GROUND FLOOR													
1	Staircase	Combination of flamed finish/Polished	Polished Granite stone Riser/Skirting		15 mm th cement plaster in cm (1:6)	20 mm th cement plaster in two layers of 10 mm each with cm (1:4) applyig WPC	5 mm th cement plaster in cm (1:3)	Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white	Two coats of weather proof paint over a coat of primer on plastered surfaces	Ceiling painting with acrylic emulsion paint of interior grade over 1mm thick white cement based putty	Two coats of synthetic enamel paint over one coat of wood primer on exposed wooden surfaces.			SS Railing
2	Corridor	Double charged Vitrified tiles 600 600mm	Double Charged Vitrified tiles of 100 mm high		15 mm th cement plaster in cm (1:6)	20 mm th cement plaster in two layers of 10 mm each with cm (1:4) applyig WPC	5 mm th cement plaster in cm (1:3)	Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white	Two coats of weather proof paint over a coat of primer on plastered surfaces	Ceiling painting with acrylic emulsion paint of interior grade over 1mm thick white cement based putty	Two coats of synthetic enamel paint over one coat of wood primer on exposed wooden surfaces.			
3	Room	Double charged Vitrified tiles 600 600mm	Double Charged Vitrified tiles of 100 mm high		15 mm th cement plaster in cm (1:6)	20 mm th cement plaster in two layers of 10 mm each with cm (1:4) applyig WPC	5 mm th cement plaster in cm (1:3)	Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white	Two coats of weather proof paint over a coat of primer on plastered surfaces	Ceiling painting with acrylic emulsion paint of interior grade over 1mm thick white cement based putty	Two coats of synthetic enamel paint over one coat of wood primer on exposed wooden surfaces.	Wooden door frames and 35mm th.flush door shutters decorative type	UPVC Three track three panels sliding window	
4	Toilet	395x395 mm and 7-8 mm th. non skid ceramic tiles over 20			15 mm th cement plaster in cm (1:6)	20 mm th cement plaster in two layers of 10 mm each with cm (1:4) applyig WPC	5 mm th cement plaster in cm (1:3)	600x300 Vitrified tiles upto ceiling level	Two coats of weather proof paint over a coat of primer on plastered surfaces	Ceiling painting with acrylic emulsion paint of interior grade over 1mm thick white cement based putty	Two coats of synthetic enamel paint over one coat of wood primer on exposed wooden surfaces.	Wooden door frames and 35mm th.flush door shutters decorative type	UPVC Ventilator Casement window single panel	
5	Terrace	Double charged Vitrified tiles 600 600mm	Double Charged Vitrified tiles of 100 mm high			20 mm th cement plaster in two layers of 10 mm each with cm (1:4) applyig WPC	5 mm th cement plaster in cm (1:3)		Two coats of weather proof paint over a coat of primer on plastered surfaces	Ceiling painting with acrylic emulsion paint of interior grade over 1mm thick white cement based putty	Two coats of synthetic enamel paint over one coat of wood primer on exposed wooden surfaces.			SS Railing
	GROUND FLOOR													
1	Entrance steps	Combination of flamed finish/Polished		Polished granite wall cladding upto 300 mm above floor finish	15 mm th cement plaster in cm (1:6)	20 mm th cement plaster in two layers of 10 mm each with cm (1:4) applyig WPC								
2	Staircase	Combination of flamed finish/Polished	Polished Granite stone Riser/Skirting		15 mm th cement plaster in cm (1:6)	20 mm th cement plaster in two layers of 10 mm each with cm (1:4) applyig WPC	5 mm th cement plaster in cm (1:3)	Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white	Two coats of weather proof paint over a coat of primer on plastered surfaces	Ceiling painting with acrylic emulsion paint of interior grade over 1mm thick white cement based putty	Two coats of synthetic enamel paint over one coat of wood primer on exposed wooden surfaces.			SS Railing
3	Corridor	Double charged Vitrified tiles 600 600mm	Double Charged Vitrified tiles of 100 mm high		15 mm th cement plaster in cm (1:6)	20 mm th cement plaster in two layers of 10 mm each with cm (1:4) applyig WPC	5 mm th cement plaster in cm (1:3)	Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white	Two coats of weather proof paint over a coat of primer on plastered surfaces	Ceiling painting with acrylic emulsion paint of interior grade over 1mm thick white cement based putty	Two coats of synthetic enamel paint over one coat of wood primer on exposed wooden surfaces.			
4	Room	Double charged Vitrified tiles 600 600mm	Double Charged Vitrified tiles of 100 mm high		15 mm th cement plaster in cm (1:6)	20 mm th cement plaster in two layers of 10 mm each with cm (1:4) applyig WPC	5 mm th cement plaster in cm (1:3)	Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white	Two coats of weather proof paint over a coat of primer on plastered surfaces	Ceiling painting with acrylic emulsion paint of interior grade over 1mm thick white cement based putty	Two coats of synthetic enamel paint over one coat of wood primer on exposed wooden surfaces.	Wooden door frames and 35mm th.flush door shutters decorative type	UPVC Three track three panels sliding window	
5	Toilet	395x395 mm and 7-8 mm th. non skid ceramic tiles over 20			15 mm th cement plaster in cm (1:6)	20 mm th cement plaster in two layers of 10 mm each with cm (1:4) applyig WPC	5 mm th cement plaster in cm (1:3)	600x300 Vitrified tiles upto ceiling level	Two coats of weather proof paint over a coat of primer on plastered surfaces	Ceiling painting with acrylic emulsion paint of interior grade over 1mm thick white cement based putty	Two coats of synthetic enamel paint over one coat of wood primer on exposed wooden surfaces.	Wooden door frames and 35mm th.flush door shutters decorative type	UPVC Ventilator Casement window single panel	
6	Terrace	Double charged Vitrified tiles 600 600mm	Double Charged Vitrified tiles of 100 mm high			20 mm th cement plaster in two layers of 10 mm each with cm (1:4) applyig WPC	5 mm th cement plaster in cm (1:3)		Two coats of weather proof paint over a coat of primer on plastered surfaces	Ceiling painting with acrylic emulsion paint of interior grade over 1mm thick white cement based putty	Two coats of synthetic enamel paint over one coat of wood primer on exposed wooden surfaces.			SS Railing
7	Entertainment room	Double charged Vitrified tiles 600 600mm	Double Charged Vitrified tiles of 100 mm high		15 mm th cement plaster in cm (1:6)	20 mm th cement plaster in two layers of 10 mm each with cm (1:4) applyig WPC	5 mm th cement plaster in cm (1:3)	Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white	Two coats of weather proof paint over a coat of primer on plastered surfaces	Ceiling painting with acrylic emulsion paint of interior grade over 1mm thick white cement based putty	Two coats of synthetic enamel paint over one coat of wood primer on exposed wooden surfaces.	Wooden door frames and 35mm th.flush door shutters decorative type	UPVC Three track three panels sliding window	
8	Ramp	type B2 with chequred finish over 100 mm thick PCC (1:4:8)												SS Railing
9	Plinth protection			Polished Kota wall cladding from top of plinth protection to										

SCHEDULES

September 2024

FINISHING SCHEDULE
OR LINES (LG+G+1)

Sl No.	Location	Floor	Skirting 100mm	Dado	Internal wall Plaster	External wall Plaster	Ceiling Plaster	Internal Walls Finishes	Exrternal finishes	Ceiling finishes	Wooden/Steel surface finishes	Doors	Windows	Railing
	FIRST FLOOR													
1	Staircase	Combination of flamed finish/Polished	Polished Granite stone Riser/Skirting		15 mm th cement plaster in cm (1:6)	20 mm th cement plaster in two layers of 10 mm each with cm (1:4) applyig WPC	5 mm th cement plaster in cm (1:3) in case of RCC slab	Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white	Two coats of weather proof paint over a coat of primer on plastered surfaces	RCC/ Steel truss as per drawing with 80 mm thick puff panels over 15 mm thick tegular/butt edged without perforation plain/designer light weight calcium silicate Anti-Microbial Bio-Safe coated false ceiling tiles	Two coats of synthetic enamel paint over one coat of wood primer on exposed wooden surfaces.			SS Railing
2	Corridor	Double charged Vitrified tiles 600 600mm	Double Charged Vitrified tiles of 100 mm high		15 mm th cement plaster in cm (1:6)	20 mm th cement plaster in two layers of 10 mm each with cm (1:4) applyig WPC		Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white	Two coats of weather proof paint over a coat of primer on plastered surfaces		Two coats of synthetic enamel paint over one coat of wood primer on exposed wooden surfaces.			
3	Room	Double charged Vitrified tiles 600 600mm	Double Charged Vitrified tiles of 100 mm high		15 mm th cement plaster in cm (1:6)	20 mm th cement plaster in two layers of 10 mm each with cm (1:4) applyig WPC		Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white	Two coats of weather proof paint over a coat of primer on plastered surfaces		Two coats of synthetic enamel paint over one coat of wood primer on exposed wooden surfaces.	Wooden door frames and 35mm th.flush door shutters decorative type	UPVC Three track three panels sliding window	
4	Terrace	Double charged Vitrified tiles 600 600mm	Double Charged Vitrified tiles of 100 mm high			20 mm th cement plaster in two layers of 10 mm each with cm (1:4) applyig WPC			Two coats of weather proof paint over a coat of primer on plastered surfaces		Two coats of synthetic enamel paint over one coat of wood primer on exposed wooden surfaces.			SS Railing

	Other Specifications	
1	Bathroom	Bathroom fixtures and fittings shall be of Jaguar/Cera/Hindustan
2	Electrical	Electrical wire and switch sockets shall be of ISI mark Anchor/Polycab/Havells

FINISHING SCHEDULE

CSD BUILDING (G+2)

Sl No.	Location	Floor	Skirting 100mm	Dado	Internal wall Plaster	External wall Plaster	Ceiling Plaster	Internal Walls Finishes	External wall finishes	Ceiling finishes	Wooden/Steel surface finishes	Doors	Windows	Railing
	GROUND FLOOR													
1	Entrance steps	Combination of flamed		Polished granite wall cladding upto 300 mm										
2	Entrance ramp	Chequered tile												SS Railing
3	Corridor/ Staircase lobby/ Lift lobby	Granite flooring	Granite skirting 100mm high	600x600 Full body tile cladding upto 1200mm from floor finish (Dado at lift front upto ceiling level)	15 mm th cement plaster in cm (1:6)	20 mm th cement plaster in two layers of 10 mm each with cm (1:4) applyig WPC		Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based putty	Two coats of weather proof paint over a coat of primer on plastered surfaces	15 mm thick tegular/butt edged without perforation plain/designer light weight calcium silicate Anti-Microbial Bio-Safe coated false ceiling	Two coats of synthetic enamel paint over one coat of wood primer on exposed wooden surfaces.	Wooden door frames and 35mm th.flush door shutters decorative type	UPVC fixed window with 6mm glass	
4	Staircase	Granite flooring	Granite skirting 100mm high	600x600 Full body tile cladding upto 1200mm from floor finish		20 mm th cement plaster in two layers of 10 mm each with cm (1:4) applyig WPC	5 mm th cement plaster in cm (1:3)	Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based putty	Two coats of weather proof paint over a coat of primer on plastered surfaces	Ceiling painting with acrylic emulsion paint of interior grade over 1mm thick white cement based putty			18 mm thick single extruded WPC colour board Jali, CNC & UPVC Fixed window/ ventilator	SS Railing
5	Ramp	Vitrified parking tiles 300x300mm	Vitrified parking tile skirting 100mm high	600x600 Full body tile cladding upto 1200mm from floor finish		20 mm th cement plaster in two layers of 10 mm each with cm (1:4) applyig WPC	5 mm th cement plaster in cm (1:3)	Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based putty	Two coats of weather proof paint over a coat of primer on plastered surfaces	Ceiling painting with acrylic emulsion paint of interior grade over 1mm thick white cement based putty			18 mm thick single extruded WPC colour board Jali, CNC & UPVC Fixed window/ ventilator	SS Railing
6	Space for trolley	Granite flooring	Granite skirting 100mm high	600x600 Full body tile cladding upto 1200mm from floor finish		20 mm th cement plaster in two layers of 10 mm each with cm (1:4) applyig WPC	5 mm th cement plaster in cm (1:3)	Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based putty	Two coats of weather proof paint over a coat of primer on plastered surfaces	Ceiling painting with acrylic emulsion paint of interior grade over 1mm thick white cement based putty	Two coats of synthetic enamel paint over one coat of wood primer on exposed wooden surfaces.	Wooden door frames and 35mm th.flush door shutters decorative type	UPVC Three track three panels sliding window	
7	Toilet	Combination of flamed finish/Polished Granite stone flooring (granite		600x300 Vitrified tiles upto ceiling level		20 mm th cement plaster in two layers of 10 mm each with cm (1:4) applyig WPC		600x300 Vitrified tiles upto ceiling level	Two coats of weather proof paint over a coat of primer on plastered surfaces	GI Metal Ceiling Lay in plain Tegular edge Global white color tiles of size 595x595 mm	Two coats of synthetic enamel paint over one coat of wood primer on exposed wooden surfaces.	Wooden door frames and 35mm th.flush door shutters decorative type & FRP door in cubicles	UPVC Ventilator with fixed panel and provision for 300 dia exhaust fan	
8	Grocery food items	Double charged Vitrified tiles 600x1200mm	Double Charged Vitrified tiles of 100 mm high			20 mm th cement plaster in two layers of 10 mm each with cm (1:4) applyig WPC		Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based putty	Two coats of weather proof paint over a coat of primer on plastered surfaces	15 mm thick tegular/butt edged without perforation plain/designer light weight calcium silicate Anti-Microbial Bio-Safe coated false ceiling tiles	Two coats of synthetic enamel paint over one coat of wood primer on exposed wooden surfaces.	Wooden door frames and 35mm th.flush door shutters decorative type	UPVC Three track three panels sliding window	
9	Grocery store	Double charged Vitrified tiles 600x1200mm	Double Charged Vitrified tiles of 100 mm high			20 mm th cement plaster in two layers of 10 mm each with cm (1:4) applyig WPC		Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based putty	Two coats of weather proof paint over a coat of primer on plastered surfaces		Two coats of synthetic enamel paint over one coat of wood primer on exposed wooden surfaces.	Wooden door frames and 35mm th.flush door shutters decorative type	UPVC fixed window/ventilator with 6mm glass	
10	Plinth protection	750 mm wide		Polished Kota wall cladding from top of plinth										

SCHEDULES

September 2024

FINISHING SCHEDULE

CSD BUILDING (G+2)

Sl No.	Location	Floor	Skirting 100mm	Dado	Internal wall Plaster	External wall Plaster	Ceiling Plaster	Internal Walls Finishes	External wall finishes	Ceiling finishes	Wooden/Steel surface finishes	Doors	Windows	Railing
	FIRST FLOOR													
1	Corridor/ Staircase lobby/ Lift lobby	Granite flooring	Granite skirting 100mm high	600x600 Full body tile cladding upto 1200mm from floor finish (Dado at	15 mm th cement plaster in cm (1:6)	20 mm th cement plaster in two layers of 10 mm each with cm (1:4) applyig WPC	5 mm th cement plaster in cm (1:3)	Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick	Two coats of weather proof paint over a coat of primer on plastered	15 mm thick tegular/butt edged without perforation plain/designer light weight calcium silicate Anti-Microbial Bio-Safe coated false ceiling tiles	Two coats of synthetic enamel paint over one coat of wood primer on	Wooden door frames and 35mm th.flush door shutters decorative type	UPVC Three track three panels sliding window	
2	Toilet	Combination of flamed		600x300 Vitrified tiles upto ceiling level		20 mm th cement plaster in two layers of 10 mm each	5 mm th cement plaster in cm (1:3)	600x300 Vitrified tiles upto ceiling level	Two coats of weather proof paint over a coat	GI Metal Ceiling Lay in plain Tegular edge Global white	Two coats of synthetic enamel paint over one	Wooden door frames and 35mm th.flush door shutters	UPVC Ventilator with fixed panel and	
3	Liquor shop	Double charged Vitrified tiles 600 600mm	Double Charged Vitrified tiles of 100 mm			20 mm th cement plaster in two layers of 10 mm each with cm (1:4) applyig WPC	5 mm th cement plaster in cm (1:3)	Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based putty	Two coats of weather proof paint over a coat of primer on plastered surfaces		Two coats of synthetic enamel paint over one coat of wood primer on exposed wooden	Wooden door frames and 35mm th.flush door shutters decorative type	UPVC fixed window/ventilator with 6mm glass	
4	Liquor store	Double charged Vitrified tiles 600	Double Charged			20 mm th cement plaster in two layers of 10 mm each	5 mm th cement plaster in cm (1:3)	Wall painting with premium acrylic emulsion paint of	Two coats of weather proof paint over a coat		Two coats of synthetic enamel paint over one	Wooden door frames and 35mm th.flush door shutters	UPVC fixed window/ventilator	
5	Cosmetics shop	Double charged Vitrified tiles 600	Double Charged			20 mm th cement plaster in two layers of 10 mm each	5 mm th cement plaster in cm (1:3)	Wall painting with premium acrylic emulsion paint of	Two coats of weather proof paint over a coat		Two coats of synthetic enamel paint over one	Wooden door frames and 35mm th.flush door shutters	UPVC fixed window/ventilator	
6	URC office	Double charged Vitrified tiles 600	Double Charged			20 mm th cement plaster in two layers of 10 mm each	5 mm th cement plaster in cm (1:3)	Wall painting with premium acrylic emulsion paint of	Two coats of weather proof paint over a coat		Two coats of synthetic enamel paint over one	Aluminium door frames with 6mm glass panel	UPVC Three track three panels sliding window	
7	OIC/ URC	Double charged Vitrified tiles 600	Double Charged			20 mm th cement plaster in two layers of 10 mm each	5 mm th cement plaster in cm (1:3)	Wall painting with premium acrylic emulsion paint of	Two coats of weather proof paint over a coat		Two coats of synthetic enamel paint over one	Aluminium door frames with 6mm glass panel	UPVC Three track three panels sliding window	
	SECOND FLOOR													
1	Corridor/ Staircase lobby/ Lift lobby	Combination of flamed finish/Polished		600x600 Full body tile cladding upto 1200mm from floor finish (Dado at	15 mm th cement plaster in cm (1:6)	20 mm th cement plaster in two layers of 10 mm each with cm (1:4) applyig WPC	5 mm th cement plaster in cm (1:3) in case of RCC slab	Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick	Two coats of weather proof paint over a coat of primer on plastered	RCC/ Steel truss as per drawing with 80 mm thick puff panels over 15 mm thick tegular/butt edged without perforation plain/designer light weight calcium silicate Anti-Microbial Bio-Safe coated false ceiling tiles	Two coats of synthetic enamel paint over one coat of wood primer on	Wooden door frames and 35mm th.flush door shutters decorative type	UPVC Three track three panels sliding window	
2	Electronic shop	Double charged Vitrified tiles 600	Double Charged			20 mm th cement plaster in two layers of 10 mm each		Wall painting with premium acrylic emulsion paint of	Two coats of weather proof paint over a coat		Two coats of synthetic enamel paint over one	Wooden door frames and 35mm th.flush door shutters	UPVC fixed window/ventilator	
3	Electronic store	Double charged Vitrified tiles 600	Double Charged			20 mm th cement plaster in two layers of 10 mm each		Wall painting with premium acrylic emulsion paint of	Two coats of weather proof paint over a coat		Two coats of synthetic enamel paint over one	Wooden door frames and 35mm th.flush door shutters	UPVC fixed window/ventilator	
4	Baggage, Shoe and other items shop	Double charged Vitrified tiles 600	Double Charged			20 mm th cement plaster in two layers of 10 mm each		Wall painting with premium acrylic emulsion paint of	Two coats of weather proof paint over a coat		Two coats of synthetic enamel paint over one	Wooden door frames and 35mm th.flush door shutters	UPVC fixed window/ventilator	
	Other Specifications													
1	Bathroom	Bathroom fixtures and fittings shall be of Jaguar/Cera/Hindustan												
2	Electrical	Electrical wire and switch sockets shall be of ISI mark Anchor/Polycab/Havells												

FINISHING SCHEDULE
CLUB HOUSE (G+1)

Sl No.	Location	Floor	Skirting 100mm	Dado	Internal wall Plaster	xternal wall Plaste	Ceiling Plaster	Internal Walls Finishes	External wall finishes	Ceiling finishes	Wooden/Steel surface finishes	Doors	Windows	Railing
	GROUND FLOOR													
1	Entrance staircase	Italian marble finish tiles		Polished granite wall cladding upto 300 mm above floor										
2	Entrance lobby	Italian marble finish tiles	Italian marble finish tile skirting 100mm high				5 mm th cement plaster in cm (1:3)	Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based		Ceiling painting with acrylic emulsion paint of interior grade over 1mm thick white cement		Wooden door frames and 35mm th.flush door shutters	UPVC fixed window/ventilator/glazing with 6mm glass	
3	Main staircase	Italian marble finish tiles	Italian marble finish tile skirting 100mm high	Polished granite upto cill level			5 mm th cement plaster in cm (1:3)	Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based		Ceiling painting with acrylic emulsion paint of interior grade over 1mm thick white cement			18 mm thick single extruded WPC colour board Jali, CNC & UPVC Fixed	SS Railing
4	Reception/ Back office	Italian marble finish tiles	Italian marble finish tile skirting 100mm high				5 mm th cement plaster in cm (1:3)	Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based					UPVC fixed glazing with 6mm glass	
5	Corridor	Italian marble finish tiles	Italian marble finish tile skirting 100mm high				5 mm th cement plaster in cm (1:3)	Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based		Ceiling painting with acrylic emulsion paint of interior grade over 1mm thick white cement		6mm thick glass door with partial fixed window	UPVC fixed ventilator with 6mm glass	SS Railing
6	Ante room	Double charged Vitrified tiles 600x1200mm	Double Charged Vitrified tiles of 100 mm high				5 mm th cement plaster in cm (1:3)	Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based		Ceiling painting with acrylic emulsion paint of interior grade over 1mm thick white cement		6mm thick glass door	UPVC Three track three panels sliding window	
7	Bar	Double charged Vitrified tiles 600x1200mm	Double Charged Vitrified tiles of 100 mm high					Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based		POP false ceiling with acrylic emulsion paint of interior grade over 1mm thick white cement based putty		Wooden door frames and 35mm th.flush door shutters decorative type	UPVC Three track three panels sliding window	
8	BAR counter	Double charged Vitrified tiles 600x1200mm	Double Charged Vitrified tiles of 100 mm high					Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based					UPVC Three track three panels sliding window	
9	BAR (BOH)	Double charged Vitrified tiles 600x1200mm	Double Charged Vitrified tiles of 100 mm high		15 mm th cement plaster in cm (1:6)	20 mm th cement plaster in two layers of 10 mm each with cm (1:4) applyig WPC		Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based					UPVC Three track three panels sliding window	
10	BAR store	Kota stone flooring					5 mm th cement plaster in cm (1:3)	600x300 Vitrified tiles upto ceiling level	Two coats of weather proof paint over a coat of primer on plastered surfaces	Ceiling painting with acrylic emulsion paint of interior grade over 1mm thick white cement	Two coats of synthetic enamel paint over one coat of wood primer on exposed wooden surfaces.		UPVC Three track three panels sliding window	
11	Toilet	Combination of flamed finish/Polished Granite stone flooring (granite finish on counter)					5 mm th cement plaster in cm (1:3)	600x300 Vitrified tiles upto ceiling level		Ceiling painting with acrylic emulsion paint of interior grade over 1mm thick white cement		Wooden door frames and 35mm th.flush door shutters	UPVC Ventilator with fixed panel and provision for 300 dia exhaust fan	
12	Kitchen	Kota stone flooring					5 mm th cement plaster in cm (1:3)	600x300 Vitrified tiles upto ceiling level		Ceiling painting with acrylic emulsion paint of interior grade over 1mm thick white cement			UPVC Three track three panels sliding window with partly fixed window &	
13	Cooking area	Kota stone flooring					5 mm th cement plaster in cm (1:3)	600x300 Vitrified tiles upto ceiling level		Ceiling painting with acrylic emulsion paint of interior grade over 1mm thick white cement			UPVC Three track three panels sliding window	
14	Kitchen store	Kota stone flooring					5 mm th cement plaster in cm (1:3)	600x300 Vitrified tiles upto ceiling level		Ceiling painting with acrylic emulsion paint of interior grade over 1mm thick white cement		Wooden door frames and 35mm th.flush door shutters decorative type	UPVC Three track three panels sliding window	
15	Plate wash	Granite stone flooring		600x300 Vitrified tiles upto cill level			5 mm th cement plaster in cm (1:3)	Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based		Ceiling painting with acrylic emulsion paint of interior grade over 1mm thick white cement			UPVC Three track three panels sliding window	
16	Pot wash	Granite stone flooring		600x300 Vitrified tiles upto cill level			5 mm th cement plaster in cm (1:3)	Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based		Ceiling painting with acrylic emulsion paint of interior grade over 1mm thick white cement			UPVC Three track three panels sliding window	
17	Service staircase	Udaipur gren		Polished granite upto cill level			5 mm th cement plaster in cm (1:3)	Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based		Ceiling painting with acrylic emulsion paint of interior grade over 1mm thick white cement			18 mm thick single extruded WPC colour board Jali, CNC & UPVC Fixed	SS Railing
18	Tandoori grill area	75 mm th PCC (1:2:4) type B2 over 100 mm thick PCC (1:4:8)		600x300 Vitrified tiles upto cill level										
19	Ramp	Chequered tile finish												SS Railing
14	Plinth protection	750 mm wide		Tiles in façade upto 1200mm highfrom plinth finish level										

SCHEDULES

September 2024

FINISHING SCHEDULE

CLUB HOUSE (G+1)

Sl No.	Location	Floor	Skirting 100mm	Dado	Internal wall Plaster	External wall Plaste	Ceiling Plaster	Internal Walls Finishes	External wall finishes	Ceiling finishes	Wooden/Steel surface finishes	Doors	Windows	Railing
	FIRST FLOOR													
1	Corridor	Italian marble finish tiles	Italian marble finish tile skirting 100mm		15 mm th cement plaster in cm (1:6)	20 mm th cement plaster in two layers of 10 mm each with cm (1:4) applyig WPC	5 mm th cement plaster in cm (1:3) in case of RCC slab	Wall painting with premium acrylic emulsion paint of	Two coats of weather proof paint over a coat of	RCC/ Steel truss as per drawing with 0.5mm thick galvalume shet over POP false ceiling with acrylic emulsion paint of interior grade over 1mm thick white cement based putty	Two coats of synthetic enamel paint over one coat of wood primer on exposed wooden surfaces.	Wooden door frames and 35mm	UPVC Three track three panels sliding	SS Railing
2	Toilet	Combination of flamed finish/Polished Granite stone						600x300 Vitrified tiles upto ceiling level	Two coats of weather proof paint over a coat of			Wooden door frames and 35mm	UPVC Three track three panels sliding	
3	Toilet corridor	600x600 full body tile	600x600 full body tile of 100 mm high					Wall painting with premium acrylic emulsion paint of	Two coats of weather proof paint over a coat of			th.flush door shutters	UPVC Three track three panels sliding	
4	Common eating/ Seating area	600x600 full body tile		Polished granite upto cill level				Wall painting with premium acrylic emulsion paint of	Two coats of weather proof paint over a coat of			Wooden door frames and 6mm	UPVC Three track three panels sliding	
5	Pantry	Kota stone flooring						600x300 Vitrified tiles upto ceiling level	Two coats of weather proof paint over a coat of			Wooden door frames and 35mm	UPVC Three track three panels sliding	
6	Living room	Double charged Vitrified tiles 600x1200mm	Double Charged Vitrified tiles of 100					Wall painting with premium acrylic emulsion paint of	Two coats of weather proof paint over a coat of			Wooden door frames and 35mm	UPVC Three track three panels sliding	
7	Bed room	Double charged Vitrified tiles 600x1200mm	Double Charged Vitrified tiles of 100					Wall painting with premium acrylic emulsion paint of	Two coats of weather proof paint over a coat of			Wooden door frames and 35mm	UPVC Three track three panels sliding	
8	Dressing area	Double charged Vitrified tiles 600x1200mm	Double Charged Vitrified tiles of 100					Wall painting with premium acrylic emulsion paint of	Two coats of weather proof paint over a coat of			Wooden door frames and 35mm	UPVC Three track three panels sliding	
9	Toilet	395x395 mm and 7-8 mm th. non skid ceramic tiles over 20						600x300 Vitrified tiles upto ceiling level	Two coats of weather proof paint over a coat of			FRP doors	UPVC Three track three panels sliding	
10	Balcony	395x395 mm and 7-8 mm th. non skid ceramic tiles over 20	Double Charged Vitrified tiles of 100						Two coats of weather proof paint over a coat of	Ceiling painting with acrylic emulsion paint		UPVC Three track three panels	UPVC Three track three panels sliding	Glass railing with SS fittings
	Other Specifications													
1	Bathroom	Bathroom fixtures and fittings shall be of Jaguar/Cera/Hindustan												
2	Electrical	Electrical wire and switch sockets shall be of ISI mark Anchor/Polycab/Havells												

FINISHING SCHEDULE

GUEST ROOMS (G+2)

Sl No.	Location	Floor	Skirting 100mm	Dado	Internal wall Plaster	xternal wall Plaste	Ceiling Plaster	Internal Walls Finishes	xrternal finishe	Ceiling finishes	Wooden/Steel surface finishes	Doors	Windows	Railing
	GROUND FLOOR													
1	Entrance steps	Combination of flamed finish/Polished Granite		Polished granite wall cladding upto 300 mm	15 mm th cement plaster in cm (1:6)	20 mm th cement plaster in two layers of 10 mm each with cm (1:4) applyig WPC	5 mm th cement plaster in cm (1:3)		Two coats of weather proof paint over a coat of primer on plastered surfaces		Two coats of synthetic enamel paint over one coat of wood primer on exposed wooden surfaces.			
2	Staircase	Combination of flamed finish/Polished Granite stone flooring	Polished Granite stone Riser/Skirting					Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based putty		Ceiling painting with acrylic emulsion paint of interior grade over 1mm thick white cement based putty			18 mm thick single extruded WPC colour board Jali, CNC & UPVC Fixed window/ ventilator	SS Railing
3	Corridor	Double charged Vitrified tiles 600 600mm	Double Charged Vitrified tiles of 100 mm high					Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based putty		Ceiling painting with acrylic emulsion paint of interior grade over 1mm thick white cement based putty		Wooden door frames and 35mm th.flush door shutters decorative type	UPVC Three track three panels sliding window	SS Railing
4	Room	Double charged Vitrified tiles 600 600mm	Double Charged Vitrified tiles of 100 mm high					Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based putty		Ceiling painting with acrylic emulsion paint of interior grade over 1mm thick white cement based putty		Wooden door frames and 35mm th.flush door shutters decorative type	UPVC Three track three panels sliding window	
5	Toilets	395x395 mm and 7-8 mm th. non skid ceramic tiles over 20 mm th screed in cm (1:6)		600x300 Vitrified tiles upto ceiling level				600x300 Vitrified tiles upto ceiling level		Ceiling painting with acrylic emulsion paint of interior grade over 1mm thick white cement based putty		FRP door	UPVC Ventilator Casement window single panel	
6	Balcony/ Vera	395x395 mm and 7-8 mm th. non skid ceramic tiles over 20 mm th screed in cm (1:6)	Double Charged Vitrified tiles of 100 mm high							Ceiling painting with acrylic emulsion paint of interior grade over 1mm thick white cement based putty		Wooden door frames and 35mm th.flush door shutters decorative type	UPVC Three track three panels sliding window	SS Railing
7	Plinth protection			Polished Kota wall cladding from top of										
	FIRST FLOOR													
1	Staircase	Combination of flamed finish/Polished Granite stone flooring	Polished Granite stone Riser/Skirting		15 mm th cement plaster in cm (1:6)	20 mm th cement plaster in two layers of 10 mm each with cm (1:4) applyig WPC	5 mm th cement plaster in cm (1:3)	Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white	Two coats of weather proof paint over a coat of primer on plastered surfaces	Ceiling painting with acrylic emulsion paint of interior grade over 1mm thick white	Two coats of synthetic enamel paint over one coat of wood primer on exposed wooden surfaces.		18 mm thick single extruded WPC colour board Jali, CNC & UPVC	SS Railing
2	Corridor	Double charged Vitrified tiles 600 600mm	Double Charged Vitrified tiles of 100 mm high					Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based putty		Ceiling painting with acrylic emulsion paint of interior grade over 1mm thick white cement based putty		Wooden door frames and 35mm th.flush door shutters decorative type	UPVC Three track three panels sliding window	
3	Room	Double charged Vitrified tiles 600 600mm	Double Charged Vitrified tiles of 100 mm high					Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white		Ceiling painting with acrylic emulsion paint of interior grade over 1mm thick white		Wooden door frames and 35mm th.flush door	UPVC Three track three panels sliding window	
4	Toilets	395x395 mm and 7-8 mm th. non skid ceramic tiles		600x300 Vitrified tiles upto ceiling level				600x300 Vitrified tiles upto ceiling level		Ceiling painting with acrylic emulsion paint of interior		FRP door	UPVC Ventilator Casement window	
5	Balcony	395x395 mm and 7-8 mm th. non skid ceramic tiles over 20 mm th screed in	Double Charged Vitrified tiles of 100 mm high							Ceiling painting with acrylic emulsion paint of interior grade over 1mm thick white		Wooden door frames and 35mm th.flush door	UPVC Three track three panels sliding window	SS Railing

SCHEDULES

September 2024

FINISHING SCHEDULE

GUEST ROOMS (G+2)

Sl No.	Location	Floor	Skirting 100mm	Dado	Internal wall Plaster	xternal wall Plaste	Ceiling Plaster	Internal Walls Finishes	xrternal finishe	Ceiling finishes	Wooden/Steel surface finishes	Doors	Windows	Railing
	SECOND FLOOR													
1	Staircase	Combination of flamed finish/Polished Granite stone flooring	Polished Granite stone Riser/Skirting		15 mm th cement plaster in cm (1:6)	20 mm th cement plaster in two layers of 10 mm each with cm (1:4) applyig WPC	5 mm th cement plaster in cm (1:3) in case of RCC slab	Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white	Two coats of weather proof paint over a coat of primer on plastered surfaces	RCC/ Steel truss as per drawing with 0.5 mm thick galvalume sheet and Ceiling painting with acrylic emulsion paint of interior grade over 1mm thick white cement based putty	Two coats of synthetic enamel paint over one coat of wood primer on exposed wooden surfaces.		18 mm thick single extruded WPC colour board Jali, CNC & UPVC	SS Railing
2	Corridor	Double charged Vitrified tiles 600 600mm	Double Charged Vitrified tiles of 100 mm high					Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based putty				Wooden door frames and 35mm th.flush door shutters decorative type	UPVC Three track three panels sliding window	
3	Room	Double charged Vitrified tiles 600 600mm	Double Charged Vitrified tiles of 100 mm high					Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white				Wooden door frames and 35mm th.flush door	UPVC Three track three panels sliding window	
4	Toilets	395x395 mm and 7-8 mm th. non skid ceramic tiles		600x300 Vitrified tiles upto ceiling level				600x300 Vitrified tiles upto ceiling level				FRP door	UPVC Ventilator Casement window	
5	Balcony	395x395 mm and 7-8 mm th. non skid ceramic tiles over 20 mm th screed in	Double Charged Vitrified tiles of 100 mm high									Wooden door frames and 35mm th.flush door	UPVC Three track three panels sliding window	SS Railing

	Other Specifications	
1	Bathroom	Bathroom fixtures and fittings shall be of Jaguar/Cera/Hindustan
2	Electrical	Electrical wire and switch sockets shall be of ISI mark Anchor/Polycab/Havells

SCHEDULES

September 2024

OFFICE GE SHILONG G+2

Sl No.	Location	Floor	Skirting 100mm	Dado	Internal wall	External wall Plaster	Ceiling Plaster	Internal Walls Finishes	Exrternal finishes	Ceiling finishes	Wooden/Steel surface finishes	Doors	Windows	Railing
	GROUND FLOOR													
1	Entrance steps	Combination of flamed finish/Polished Granite stone		Polished granite wall cladding upto								Aluminium main frame with glass door and partial fixed		
2	Corridor	600x600 full body tile		600x600 Full body tile cladding upto 1200mm from floor finish	15 mm th cement plaster in cm (1:6)	20 mm th cement plaster in two layers of 10 mm each with cm (1:4) applyig WPC	5 mm th cement plaster in cm (1:3)	Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based putty	Two coats of weather proof paint over a coat of primer on plastered surfaces	Ceiling painting with acrylic emulsion paint of interior grade over 1mm thick white cement based putty	Two coats of synthetic enamel paint over one coat of wood primer on exposed wooden surfaces.	Wooden door frames and 35mm th.flush door shutters decorative type	UPVC Three track three panels sliding window	
3	Staircase	Combination of flamed finish/Polished Granite stone flooring		600x600 Full body tile cladding upto 1200mm from floor finish	15 mm th cement plaster in cm (1:6)	20 mm th cement plaster in two layers of 10 mm each with cm (1:4) applyig WPC	5 mm th cement plaster in cm (1:3)	Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based putty	Two coats of weather proof paint over a coat of primer on plastered surfaces	Ceiling painting with acrylic emulsion paint of interior grade over 1mm thick white cement based putty			18 mm thick single extruded WPC colour board Jali, CNC & UPVC Fixed window/ ventilator	SS Railing
4	Triple height area	600x600 full body tile												
5	Visitors room	Double charged Vitrified tiles 600 600mm	Double Charged Vitrified tiles of 100 mm high		15 mm th cement plaster in cm (1:6)	20 mm th cement plaster in two layers of 10 mm each with cm (1:4) applyig WPC		Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based putty	Two coats of weather proof paint over a coat of primer on plastered surfaces	15 mm thick tegular/butt edged without perforation plain/designer light weight calcium silicate Anti-Microbial Bio-Safe coated false ceiling tiles	Two coats of synthetic enamel paint over one coat of wood primer on exposed wooden surfaces.	Wooden door frames and 35mm th.flush door shutters decorative type	UPVC fixed ventilator with 6mm glass	
6	Sample room, Electricain, Upholster, fitte rgen mech, ferro printer, Carpenter & Records room	Kota stone flooring	Kota stone skirting		15 mm th cement plaster in cm (1:6)	20 mm th cement plaster in two layers of 10 mm each with cm (1:4) applyig WPC	5 mm th cement plaster in cm (1:3)	600x300 Vitrified tiles upto ceiling level	Two coats of weather proof paint over a coat of primer on plastered surfaces	Ceiling painting with acrylic emulsion paint of interior grade over 1mm thick white cement based putty	Two coats of synthetic enamel paint over one coat of wood primer on exposed wooden surfaces.	Aluminium main frame with glass door	UPVC Three track three panels sliding window and UPVC fixed ventilator	
7	Toilets	Combination of flamed finish/Polished Granite stone flooring (granite finish on counter)			15 mm th cement plaster in cm (1:6)	20 mm th cement plaster in two layers of 10 mm each with cm (1:4) applyig WPC	5 mm th cement plaster in cm (1:3)	600x300 Vitrified tiles upto ceiling level	Two coats of weather proof paint over a coat of primer on plastered surfaces	Ceiling painting with acrylic emulsion paint of interior grade over 1mm thick white cement based putty	Two coats of synthetic enamel paint over one coat of wood primer on exposed wooden surfaces.	Wooden door frames and 35mm th.flush door shutters decorative type & FRP door in cubicles	UPVC Ventilator with fixed panel and provision for 300 dia exhaust fan	
8	Service staircase	Combination of flamed finish/Polished Granite stone flooring		600x600 Full body tile cladding upto 1200mm from floor finish	15 mm th cement plaster in cm (1:6)	20 mm th cement plaster in two layers of 10 mm each with cm (1:4) applyig WPC	5 mm th cement plaster in cm (1:3)	Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based putty	Two coats of weather proof paint over a coat of primer on plastered surfaces	Ceiling painting with acrylic emulsion paint of interior grade over 1mm thick white cement based putty			18 mm thick single extruded WPC colour board Jali, CNC & UPVC Fixed window/ ventilator	SS Railing
9	Ramp	Chequered tile finish												SS Railing
10	Plinth protection	750 mm wide		Polished Kota wall cladding from top										
	FIRST FLOOR													
1	Corridor	600x600 full body tile		600x600 Full body tile cladding upto 1200mm from floor finish	15 mm th cement plaster in cm (1:6)	20 mm th cement plaster in two layers of 10 mm each with cm (1:4) applyig WPC	5 mm th cement plaster in cm (1:3)	Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based putty	Two coats of weather proof paint over a coat of primer on plastered surfaces	Ceiling painting with acrylic emulsion paint of interior grade over 1mm thick white cement based putty	Two coats of synthetic enamel paint over one coat of wood primer on exposed wooden surfaces.	Wooden door frames and 35mm th.flush door shutters decorative type	UPVC Three track three panels sliding window	
2	Staircase	Combination of flamed finish/Polished Granite stone flooring		600x600 Full body tile cladding upto 1200mm from floor finish	15 mm th cement plaster in cm (1:6)	20 mm th cement plaster in two layers of 10 mm each with cm (1:4) applyig WPC	5 mm th cement plaster in cm (1:3)	Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based putty	Two coats of weather proof paint over a coat of primer on plastered surfaces	Ceiling painting with acrylic emulsion paint of interior grade over 1mm thick white cement based putty			18 mm thick single extruded WPC colour board Jali, CNC & UPVC Fixed window/ ventilator	SS Railing
3	All rooms	Double charged Vitrified tiles 600 600mm	Double Charged Vitrified tiles of 100 mm high		15 mm th cement plaster in cm (1:6)	20 mm th cement plaster in two layers of 10 mm each with cm (1:4) applyig WPC	5 mm th cement plaster in cm (1:3)	Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based putty	Two coats of weather proof paint over a coat of primer on plastered surfaces	Ceiling painting with acrylic emulsion paint of interior grade over 1mm thick white cement based putty	Two coats of synthetic enamel paint over one coat of wood primer on exposed wooden surfaces.	Aluminium main frame with glass door	UPVC Three track three panels sliding window and UPVC fixed ventilator	
4	Conference	Double charged Vitrified tiles 600 600mm	Double Charged Vitrified tiles of 100 mm high		15 mm th cement plaster in cm (1:6)	20 mm th cement plaster in two layers of 10 mm each with cm (1:4) applyig WPC		Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based putty	Two coats of weather proof paint over a coat of primer on plastered surfaces	15 mm thick tegular/butt edged without perforation plain/designer light weight calcium silicate Anti-Microbial Bio-Safe coated false ceiling	Two coats of synthetic enamel paint over one coat of wood primer on exposed wooden surfaces.	Aluminium main frame with glass door	UPVC Three track three panels sliding window	
5	Toilets	Combination of flamed finish/Polished Granite stone flooring (granite finish on counter)			15 mm th cement plaster in cm (1:6)	20 mm th cement plaster in two layers of 10 mm each with cm (1:4) applyig WPC	5 mm th cement plaster in cm (1:3)	600x300 Vitrified tiles upto ceiling level	Two coats of weather proof paint over a coat of primer on plastered surfaces	Ceiling painting with acrylic emulsion paint of interior grade over 1mm thick white cement based putty	Two coats of synthetic enamel paint over one coat of wood primer on exposed wooden surfaces.	Wooden door frames and 35mm th.flush door shutters decorative type & FRP door in cubicles	UPVC Ventilator with fixed panel and provision for 300 dia exhaust fan	
6	Service staircase	Combination of flamed finish/Polished Granite stone flooring		600x600 Full body tile cladding upto 1200mm from floor finish	15 mm th cement plaster in cm (1:6)	20 mm th cement plaster in two layers of 10 mm each with cm (1:4) applyig WPC	5 mm th cement plaster in cm (1:3)	Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based putty	Two coats of weather proof paint over a coat of primer on plastered surfaces	Ceiling painting with acrylic emulsion paint of interior grade over 1mm thick white cement based putty			18 mm thick single extruded WPC colour board Jali, CNC & UPVC Fixed window/ ventilator	SS Railing

SCHEDULES

September 2024

FINISHING SCHEDULE

OFFICE GE SHILONG G+2

Sl No.	Location	Floor	Skirting 100mm	Dado	Internal wall	External wall Plaster	Ceiling Plaster	Internal Walls Finishes	Exrternal finishes	Ceiling finishes	Wooden/Steel surface finishes	Doors	Windows	Railing
	GROUND FLOOR													
	SECOND FLOOR													
1	Corridor	600x600 full body tile		600x600 Full body tile cladding upto 1200mm from floor finish	15 mm th cement plaster in cm (1:6)	20 mm th cement plaster in two layers of 10 mm each with cm (1:4) applyig WPC	5 mm th cement plaster in cm (1:3) in case of RCC slab	Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based putty	Two coats of weather proof paint over a coat of primer on plastered surfaces	RCC/ Steel truss as per drawing with 80 mm thick puff panels over 15 mm thick tegular/butt edged without perforation plain/designer light weight calcium silicate Anti-Microbial Bio-Safe coated false ceiling tiles	Two coats of synthetic enamel paint over one coat of wood primer on exposed wooden surfaces.	Wooden door frames and 35mm th.flush door shutters decorative type	UPVC Three track three panels sliding window	
2	Staircase	Combination of flamed finish/Polished Granite stone flooring		600x600 Full body tile cladding upto 1200mm from floor finish	15 mm th cement plaster in cm (1:6)	20 mm th cement plaster in two layers of 10 mm each with cm (1:4) applyig WPC		Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based putty	Two coats of weather proof paint over a coat of primer on plastered surfaces				18 mm thick single extruded WPC colour board Jali, CNC & UPVC Fixed window/ ventilator	SS Railing
3	All rooms	Double charged Vitrified tiles 600 600mm	Double Charged Vitrified tiles of 100 mm high		15 mm th cement plaster in cm (1:6)	20 mm th cement plaster in two layers of 10 mm each with cm (1:4) applyig WPC		Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based putty	Two coats of weather proof paint over a coat of primer on plastered surfaces		Two coats of synthetic enamel paint over one coat of wood primer on exposed wooden surfaces.	Aluminium main frame with glass door	UPVC Three track three panels sliding window and UPVC fixed ventilator	
4	Toilets	Combination of flamed finish/Polished Granite stone flooring (granite finish on counter)			15 mm th cement plaster in cm (1:6)	20 mm th cement plaster in two layers of 10 mm each with cm (1:4) applyig WPC		600x300 Vitrified tiles upto ceiling level	Two coats of weather proof paint over a coat of primer on plastered surfaces		Two coats of synthetic enamel paint over one coat of wood primer on exposed wooden surfaces.	Wooden door frames and 35mm th.flush door shutters decorative type & FRP door in cubicles	UPVC Ventilator with fixed panel and provision for 300 dia exhaust fan	
5	Service staircase	Combination of flamed finish/Polished Granite stone flooring		600x600 Full body tile cladding upto 1200mm from floor finish	15 mm th cement plaster in cm (1:6)	20 mm th cement plaster in two layers of 10 mm each with cm (1:4) applyig WPC		Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based putty	Two coats of weather proof paint over a coat of primer on plastered surfaces				18 mm thick single extruded WPC colour board Jali, CNC & UPVC Fixed window/ ventilator	SS Railing
6	Triple height area									Steel structure with Translucent				

	Other Specifications	
1	Bathroom	Bathroom fixtures and fittings shall be of Jaguar/Cera/Hindustan
2	Electrical	Electrical wire and switch sockets shall be of ISI mark Anchor/Polycab/Havells

SCHEDULES

September 2024

FINISHING SCHEDULE

APS SCHOOL (G+1)

Sl No.	Location	Floor	Skirting 100mm	Dado	Internal wall Plaster	External wall Plaster	Ceiling Plaster	Internal Walls Finishes	Exrternal finishes	Ceiling finishes	Wooden/Steel surface finishes	Doors	Windows	Railing
	GROUND FLOOR													
1	Entrance steps	Combination of flamed finish/Polished Granite stone flooring		Polished granite wall cladding upto 300 mm above floor finish level	15 mm th cement plaster in cm (1:6)									
2	Staircase	Combination of flamed finish/Polished Granite stone flooring	Polished Granite stone Riser/Skirting		15 mm th cement plaster in cm (1:6)	20 mm th cement plaster in two layers of 10 mm each with cm (1:4) applyig WPC	5 mm th cement plaster in cm (1:3)	Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based putty	Two coats of weather proof paint over a coat of primer on plastered surfaces	Ceiling painting with acrylic emulsion paint of interior grade over 1mm thick white cement based putty			18 mm thick single extruded WPC colour board Jali, CNC & UPVC Fixed window/ ventilator	SS Railing
3	Corridor	Double charged Vitrified tiles 600 600mm		Polished Kota wall cladding from top of plinth protection to 500 mm high	15 mm th cement plaster in cm (1:6)	20 mm th cement plaster in two layers of 10 mm each with cm (1:4) applyig WPC	5 mm th cement plaster in cm (1:3)	Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based putty	Two coats of weather proof paint over a coat of primer on plastered surfaces	Ceiling painting with acrylic emulsion paint of interior grade over 1mm thick white cement based putty	Two coats of synthetic enamel paint over one coat of wood primer on exposed wooden surfaces.	Wooden door frames and 35mm th.flush door shutters decorative type	UPVC Three track three panels sliding window and UPVC fixed ventilator with 6mm glass	SS Railing
4	Class room	Double charged Vitrified tiles 600 600mm		Polished Kota wall cladding from top of plinth protection to 500 mm high	15 mm th cement plaster in cm (1:6)	20 mm th cement plaster in two layers of 10 mm each with cm (1:4) applyig WPC	5 mm th cement plaster in cm (1:3)	Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based putty	Two coats of weather proof paint over a coat of primer on plastered surfaces	Ceiling painting with acrylic emulsion paint of interior grade over 1mm thick white cement based putty	Two coats of synthetic enamel paint over one coat of wood primer on exposed wooden surfaces.		UPVC Three track three panels sliding window and UPVC fixed ventilator with 6mm glass	
5	Principal room	Double charged Vitrified tiles 600 600mm		Polished Kota wall cladding from top of plinth protection to 500 mm high	15 mm th cement plaster in cm (1:6)	20 mm th cement plaster in two layers of 10 mm each with cm (1:4) applyig WPC	5 mm th cement plaster in cm (1:3)	Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based putty	Two coats of weather proof paint over a coat of primer on plastered surfaces	Ceiling painting with acrylic emulsion paint of interior grade over 1mm thick white cement based putty	Two coats of synthetic enamel paint over one coat of wood primer on exposed wooden surfaces.		UPVC Three track three panels sliding window and UPVC fixed ventilator with 6mm glass	
6	Toilets	395x395 mm and 7-8 mm th. non skid ceramic tiles over 20 mm th screed in cm (1:6)			15 mm th cement plaster in cm (1:6)	20 mm th cement plaster in two layers of 10 mm each with cm (1:4) applyig WPC	5 mm th cement plaster in cm (1:3)	Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based putty	Two coats of weather proof paint over a coat of primer on plastered surfaces	Ceiling painting with acrylic emulsion paint of interior grade over 1mm thick white cement based putty	Two coats of synthetic enamel paint over one coat of wood primer on exposed wooden surfaces.		UPVC Ventilator with fixed panel and provision for 300 dia exhaust fan	
7	Ramp	75 mm th PCC (1:2:4) type B2 with chequred finish over 100 mm thick PCC												SS Railing
8	Plinth protection			Polished Kota wall cladding from top of plinth										
	FIRST FLOOR													
1	Staircase	Combination of flamed finish/Polished Granite stone flooring	Polished Granite stone Riser/Skirting		15 mm th cement plaster in cm (1:6)	20 mm th cement plaster in two layers of 10 mm each with cm (1:4) applyig WPC	5 mm th cement plaster in cm (1:3) in case of RCC slab	Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based putty	Two coats of weather proof paint over a coat of primer on plastered surfaces	RCC/ Steel truss as per drawing with 80 mm thick puff panels over 15 mm thick tegular/butt edged without perforation plain/designer light weight calcium silicate Anti-Microbial Bio-Safe coated false ceiling tiles			18 mm thick single extruded WPC colour board Jali, CNC & UPVC Fixed window/ ventilator	SS Railing
2	Corridor	Double charged Vitrified tiles 600 600mm		Polished Kota wall cladding from top of plinth protection to 500 mm high	15 mm th cement plaster in cm (1:6)	20 mm th cement plaster in two layers of 10 mm each with cm (1:4) applyig WPC		Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based putty	Two coats of weather proof paint over a coat of primer on plastered surfaces		Two coats of synthetic enamel paint over one coat of wood primer on exposed wooden surfaces.	Wooden door frames and 35mm th.flush door shutters decorative type	UPVC Three track three panels sliding window and UPVC fixed ventilator with 6mm glass	SS Railing
3	Class room	Double charged Vitrified tiles 600 600mm		Polished Kota wall cladding from top of plinth protection to 500 mm high	15 mm th cement plaster in cm (1:6)	20 mm th cement plaster in two layers of 10 mm each with cm (1:4) applyig WPC		Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based putty	Two coats of weather proof paint over a coat of primer on plastered surfaces		Two coats of synthetic enamel paint over one coat of wood primer on exposed wooden surfaces.		UPVC Three track three panels sliding window and UPVC fixed ventilator with 6mm glass	
4	Staff room	Double charged Vitrified tiles 600 600mm		Polished Kota wall cladding from top of plinth protection to 500 mm high	15 mm th cement plaster in cm (1:6)	20 mm th cement plaster in two layers of 10 mm each with cm (1:4) applyig WPC		Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based putty	Two coats of weather proof paint over a coat of primer on plastered surfaces		Two coats of synthetic enamel paint over one coat of wood primer on exposed wooden surfaces.		UPVC Three track three panels sliding window and UPVC fixed ventilator with 6mm glass	
5	Conference roor	Double charged Vitrified tiles 600 600mm		Polished Kota wall cladding from top of plinth protection to 500 mm high	15 mm th cement plaster in cm (1:6)	20 mm th cement plaster in two layers of 10 mm each with cm (1:4) applyig WPC		Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based putty	Two coats of weather proof paint over a coat of primer on plastered surfaces		Two coats of synthetic enamel paint over one coat of wood primer on exposed wooden surfaces.		UPVC Three track three panels sliding window and UPVC fixed ventilator with 6mm glass	
6	Toilets	395x395 mm and 7-8 mm th. non skid ceramic tiles over 20 mm th screed in cm (1:6)			15 mm th cement plaster in cm (1:6)	20 mm th cement plaster in two layers of 10 mm each with cm (1:4) applyig WPC		Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based putty	Two coats of weather proof paint over a coat of primer on plastered surfaces		Two coats of synthetic enamel paint over one coat of wood primer on exposed wooden surfaces.		UPVC Ventilator with fixed panel and provision for 300 dia exhaust fan	

	Other Specifications	
1	Bathroom	Bathroom fixtures and fittings shall be of Jaguar/Cera/Hindustan
2	Electrical	Electrical wire and switch sockets shall be of ISI mark Anchor/Polycab/Havells

SCHEDULES

September 2024

FINISHING SCHEDULE

MISCELLANEOUS BLOCKS

Sl No.	Location	Floor	Skirting 100mm	Dado	Internal wall Plaster	External wall Plaster	Ceiling Plaster	Internal Walls Finishes	Exrternal finishes	Ceiling finishes	Wooden/Steel	Doors	Windows	Railing
	SENTRY BLOCK													
1	External steps	Kota stone flooring on platform and steps	Kota stone riser on platform an	Polished Kota wall cladding from top of plinth protection to window lintel level										
2	Sentry room	Double charged Vitrified tiles 600x600mm	Double Charged Vitrified tiles of 100 mm high and granite finish on counter top		15 mm th cement plaster in cm (1:6)	20 mm th cement plaster in two layers of 10 mm each with cm (1:4) applyig WPC	5 mm th cement plaster in cm (1:3	Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based putty	Two coats of weather proof paint over a coat of primer on plastered surfaces	RCC sloping roof with waterproofing and Ceiling painting with acrylic emulsion paint of interior grade over 1mm thick white	Two coats of synthetic enamel paint over one coat of wood primer on exposed wooden	Wooden door frames and 35mm th.flush door shutters decorative type	UPVC Three track three panels sliding window with MS plate & bar for safety	
	TOILET BLOCK													
1	External steps	Kota stone flooring on platform and steps	Kota stone riser on platform an	Polished Kota wall cladding from top of plinth protection to window lintel level										
2	Toilet	395x395 mm and 7-8 mm th. non skid ceramic tiles over 20 mm th screed in cm (1:6)		600x300 Vitrified tiles upto ceiling level	15 mm th cement plaster in cm (1:6)	20 mm th cement plaster in two layers of 10 mm each with cm (1:4) applyig WPC	5 mm th cement plaster in cm (1:3	Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based putty above dado	Two coats of weather proof paint over a coat of primer on plastered surfaces	RCC roof with waterproofing and Ceiling painting with acrylic emulsion paint of interior grade over 1mm thick white cement based	Two coats of synthetic enamel paint over one coat of wood primer on exposed wooden	Wooden door frames and 35mm th.flush door shutters decorative type & FRP door in	UPVC Ventilator with fixed panel and provision for 300 dia exhaust fan	
	GD ROOM (101 AREA MAIN GATE)													
1	External steps	Kota stone flooring on platform and steps	Kota stone riser on platform an	Polished Kota wall cladding from top of plinth protection to window lintel level										
2	Detention roo	Double charged Vitrified tiles 600x600mm	Double Charged Vitrified tiles of 100 mm high		15 mm th cement plaster in cm (1:6)	20 mm th cement plaster in two layers of 10 mm each with cm (1:4) applyig WPC	5 mm th cement plaster in cm (1:3	Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based putty	Two coats of weather proof paint over a coat of primer on plastered surfaces	RCC roof with waterproofing and Ceiling painting with acrylic emulsion paint of interior grade over 1mm thick white cement based	Two coats of synthetic enamel paint over one coat of wood primer on exposed wooden	Wooden door frames and 35mm th.flush door shutters decorative type & FRP door in	UPVC Ventilator with fixed panel and provision for 300 dia exhaust fan	
3	Guard detenti	Double charged Vitrified tiles 600x600mm	Double Charged Vitrified tiles of 100 mm high		15 mm th cement plaster in cm (1:6)	20 mm th cement plaster in two layers of 10 mm each with cm (1:4) applyig WPC	5 mm th cement plaster in cm (1:3	Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based putty	Two coats of weather proof paint over a coat of primer on plastered surfaces	RCC roof with waterproofing and Ceiling painting with acrylic emulsion paint of interior grade over 1mm thick white cement based	Two coats of synthetic enamel paint over one coat of wood primer on exposed wooden	Wooden door frames and 35mm th.flush door shutters decorative type & FRP door in	UPVC Ventilator with fixed panel and provision for 300 dia exhaust fan	
4	Guard room	Double charged Vitrified tiles 600x600mm	Double Charged Vitrified tiles of 100 mm high and granite finish on counter top		15 mm th cement plaster in cm (1:6)	20 mm th cement plaster in two layers of 10 mm each with cm (1:4) applyig WPC	5 mm th cement plaster in cm (1:3	Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based putty	Two coats of weather proof paint over a coat of primer on plastered surfaces	RCC roof with waterproofing and Ceiling painting with acrylic emulsion paint of interior grade over 1mm thick white cement based	Two coats of synthetic enamel paint over one coat of wood primer on exposed wooden	Wooden door frames and 35mm th.flush door shutters decorative type & FRP door in	UPVC Ventilator with fixed panel and provision for 300 dia exhaust fan	
5	Toilet	395x395 mm and 7-8 mm th. non skid ceramic tiles over 20 mm th screed in cm (1:6)		600x300 Vitrified tiles upto ceiling level	15 mm th cement plaster in cm (1:6)	20 mm th cement plaster in two layers of 10 mm each with cm (1:4) applyig WPC	5 mm th cement plaster in cm (1:3	Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based putty above dado	Two coats of weather proof paint over a coat of primer on plastered surfaces	RCC roof with waterproofing and Ceiling painting with acrylic emulsion paint of interior grade over 1mm thick white cement based	Two coats of synthetic enamel paint over one coat of wood primer on exposed wooden	Wooden door frames and 35mm th.flush door shutters decorative type & FRP door in	UPVC Ventilator with fixed panel and provision for 300 dia exhaust fan	
	GD ROOM													
1	External steps	Kota stone flooring on platform and steps		Polished Kota wall cladding from top of plinth protection to window lintel level										
2	Guard room	Double charged Vitrified tiles 600x600mm	Double Charged Vitrified tiles of 100 mm high and granite finish on counter top		15 mm th cement plaster in cm (1:6)	20 mm th cement plaster in two layers of 10 mm each with cm (1:4) applyig WPC	5 mm th cement plaster in cm (1:3	Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based putty	Two coats of weather proof paint over a coat of primer on plastered surfaces	RCC sloping roof with waterproofing and Ceiling painting with acrylic emulsion paint of interior grade over 1mm thick white	Two coats of synthetic enamel paint over one coat of wood primer on exposed wooden	Wooden door frames and 35mm th.flush door shutters decorative type & FRP door in	UPVC Ventilator with fixed panel and provision for 300 dia exhaust fan	
3	Toilet	395x395 mm and 7-8 mm th. non skid ceramic tiles over 20 mm th screed in cm (1:6)			15 mm th cement plaster in cm (1:6)	20 mm th cement plaster in two layers of 10 mm each with cm (1:4) applyig WPC	5 mm th cement plaster in cm (1:3	Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based putty above dado	Two coats of weather proof paint over a coat of primer on plastered surfaces	RCC sloping roof with waterproofing and Ceiling painting with acrylic emulsion paint of interior grade over 1mm thick white	Two coats of synthetic enamel paint over one coat of wood primer on exposed wooden	Wooden door frames and 35mm th.flush door shutters decorative type & FRP door in	UPVC Ventilator with fixed panel and provision for 300 dia exhaust fan	

FINISHING SCHEDULE

MISCELLANEOUS BLOCKS

Sl No.	Location	Floor	Skirting 100mm	Dado	Internal wall Plaster	External wall Plaster	Ceiling Plaster	Internal Walls Finishes	Exrternal finishes	Ceiling finishes	Wooden/Steel	Doors	Windows	Railing
	STAFF ROOM													
1	External steps	Kota stone flooring on platform and steps		Polished Kota wall cladding from top of plinth protection to window lintel level										
2	6 ORS	Double charged Vitrified tiles 600x600mm	Double Charged Vitrified tiles of 100 mm high		15 mm th cement plaster in cm (1:6)	20 mm th cement plaster in two layers of 10 mm each with cm (1:4) applyig WPC	5 mm th cement plaster in cm (1:3	Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based putty	Two coats of weather proof paint over a coat of primer on plastered surfaces	RCC sloping roof with waterproofing and Ceiling painting with acrylic emulsion paint of interior grade over 1mm thick white	Two coats of synthetic enamel paint over one coat of wood primer on exposed wooden	Wooden door frames and 35mm th.flush door shutters decorative type & FRP door in	UPVC Ventilator with fixed panel and provision for 300 dia exhaust fan	
3	Store	Double charged Vitrified tiles 600x600mm	Double Charged Vitrified tiles of 100 mm high		15 mm th cement plaster in cm (1:6)	20 mm th cement plaster in two layers of 10 mm each with cm (1:4) applyig WPC	5 mm th cement plaster in cm (1:3	Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based putty	Two coats of weather proof paint over a coat of primer on plastered surfaces	RCC sloping roof with waterproofing and Ceiling painting with acrylic emulsion paint of interior grade over 1mm thick white	Two coats of synthetic enamel paint over one coat of wood primer on exposed wooden	Wooden door frames and 35mm th.flush door shutters decorative type & FRP door in	UPVC Ventilator with fixed panel and provision for 300 dia exhaust fan	
4	Toilet	395x395 mm and 7-8 mm th. non skid ceramic tiles over 20 mm th screed in cm (1:6)		600x300 Vitrified tiles upto ceiling level	15 mm th cement plaster in cm (1:6)	20 mm th cement plaster in two layers of 10 mm each with cm (1:4) applyig WPC	5 mm th cement plaster in cm (1:3	Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based putty above dado	Two coats of weather proof paint over a coat of primer on plastered surfaces	RCC sloping roof with waterproofing and Ceiling painting with acrylic emulsion paint of interior grade over 1mm thick white	Two coats of synthetic enamel paint over one coat of wood primer on exposed wooden	Wooden door frames and 35mm th.flush door shutters decorative type & FRP door in	UPVC Ventilator with fixed panel and provision for 300 dia exhaust fan	
	GARAGE													
1	Ramp	Plain cement concrete floor In prop 1:3:6 lald in												
2	Garage	Plain cement concrete floor In prop 1:3:6 lald in alternate bays			15 mm th cement plaster in cm (1:6)	20 mm th cement plaster in two layers of 10 mm each with cm (1:4) applyig WPC	5 mm th cement plaster in cm (1:3	Wall painting with premium acrylic emulsion paint of interior grade over 1mm thick white cement based putty	Two coats of weather proof paint over a coat of primer on plastered surfaces	Pre-coated galvanised iron profile sheets sloping roof MS Truss	Two coats of synthetic enamel paint over one coat of wood primer on exposed wooden			

NOTE

Internal Service Roads : The contractor shall construct the approaches/roads to proposed buildings in the Military Infrastructure in order to providing connectivity to the nearest existing road in defence campus

3 Electrical and Mechanical Works

3.1 Scope of work covers the following:

(i) All Electrical Works including IEI, aviation light, lightning arrestor, DG Sets etc.

(ii) Design, Supply, installation, testing and commissioning of power supply to the building which includes Dry type transformer, HT/LT Panels, bus trunking/cables to all LT Panels, Feeder Panels as per specifications given in Schedule D.

(iii) Supply, transportation, foundation, installation, testing and commissioning of Silent type DG Sets. All minor civil works including Foundation, electrical and other works associated with the testing, installation and commissioning of the sets shall be carried out by the tenderer as per specification. The tender should quote for complete job to be executed under the works contract. Diesel engines directly coupled with alternators mounted on a rigid fabricated base frame with resilient anti vibration mountings.

(iv) Cabling, P&F rising main, meter, panel etc. and connection to the main receiving station.

(v) Providing, Installation, Testing and Commissioning & putting into operation of lifts and escalators with all control equipment's & accessories for the required nos. of landings/openings and speed of lifts/escalators in accordance with NBC 2016 as amended up to the date. All electrical works including interconnections from TP& N Switch (including TP&N Switch) and loop earthing from the earth bar provided in the machine room. Provision of adequate lighting in the machine rooms, lift shafts and all landings. Provision of proper ventilation in machine rooms, lift wells and water proof lift pits including lighting. Provision of hoisting beam or hook above the lift well and trap door. Architrave work at lift entrance. Temporary barricades with caution boards at each landing to prevent accident during execution of work. Electric supply to individual lift shall be given from the dedicated lift panel.

(vi) UPS 3 nos. x 200 (minimum) KVA (2 Working +1 Standby) in parallel redundant mode with 30 min. battery back-up for following (Electrical room, Commercial Shops Elevators etc.). The complete system with all switches, cabling, safety devices, batteries, earthing including the UPS system of capacity so calculated shall be in the scope of work.

(vii) All testing of Electrical control rooms, displays and system etc. complete as per the direction of Authority's Engineer/Authority.

(viii) To monitor & supervise the entire area for security purpose, as well as record and inform officials on unwanted, untoward incidents. It is also essential to have recorded images to be stored at least for min 30 days of all critical area's to facilitate investigations of a reported incidents.

(ix) The hardware required for the system including Servers VMS & Recording, Workstations, Monitors, CAT-6 Patch Cable to connect the camera to nearest POE enabled LAN point, Cables, connectors, conduits, power supplies etc. will be in vendor's scope. Details of specification of IP back bone is given in the subhead of Local area network. Backbone upto core switch and rack in CCTV control room is taken in

the scope of LAN subhead. The complete LAN networking, for the CCTV should be separate and exclusive for CCTV system only and not mixed with other LAN system. The proposal and design to ensure it.

(x) Planning, designing, supplying, installation, testing & commissioning of LAN networking with 10G backbone with Wi-fi modem on all floors covering complete floor area. The requirement of LAN outlets as indicated in the Internal EI subhead shall be taken into account for the designing of the complete system. The system shallhave redundancy at the level of core switch as well for the backbone.

(xi) The wiring shall be in the scope of the work of the firm and shall be IP based LAN networking, as described in the Internal EI subhead. LAN networking shall be covered in the LAN subhead. The complete system has to be supplied, installed, tested and commissioned in complete manner to have a fully functional system, as required.

(xii) Building Management system shall be provided to monitor & Control all parameters of all Utilities. Building Automation System shall not only help in conserving energy by making it possible to plan and execute various energy conservation control schemes but also help in reducing scarce trained man power requirement for operating and maintaining the building services without compromising on quality of services. It shall also act as a Management Information System (MIS) by keeping the management informed about the critical operation of various equipment and make available data required for analyzing the working of, and possibilities of conserving the energy. The system shall be based on Micro Processor Control System, using the various Energy Management Programmers' to save the energy with the latest techniques of controlling the environment.

(xiii) Supplying, installation, testing & commissioning of Automatic Intelligent Addressable Fire alarm system. It shall be as per CPWD specifications, NBC 2016 and Local bylaws and as per approval of Local Fire Service. The work shall also include planning, designing, preparing drawings and getting the drawings approved from the Engineer-in-Charge and its subsequent execution. Scope work also includes integration of Automatic Intelligent Addressable Fire alarm system provided among various buildings, among other equipment like AHUs, Ventilation system etc., as per NBC 2016, requirements to the main control room, located at the one of the maingate.

(xiv) Approvals / NOCs / clearances from local bodies and other statuary agencies etc.

3.2 The Military Infrastructure shall be adequately lit as per the minimum approximate illumination standards prescribed. During night time common areas and facilities should be sufficiently illuminated to ensure visibility and safety to users. High mast lighting shall be provided to lit up the Military Infrastructure area.

3.3 The Contractor shall provide signage with customer focussed approach following the below mentioned guidelines:

3.3.1 Adequate number of traffic signs (informatory, cautionary and warning) and signage shall be provided in the Military Infrastructure for convenience to crew and users.

3.3.2 Insofar as possible, architectural elements, landscaping, and other design features shall identify entrances, exits, etc.

3.3.3 Signs shall be located for maximum visibility at or before all decision points within facilities.

3.3.4 Signs shall be placed at frequent enough intervals so that the infrequent or new usercan readily find his or her way without assistance.

3.3.5 All signage should comply with relevant standards and codes and include items relating to regulatory enforcement (e.g. no smoking, no parking here, etc.).

3.4 Specification of Elevator

Sr. No.	Description of item	Unit	Qty
1	Supply, Installation, testing and commissioning of 8 passengers lift, PM Gearless (Located above shaft) speed 1.0 mps, lift with single speed motor 415 volts, 3 phase, AC, 50 Hz, suply confirming to IS-14665, suitable to serve LG+G+2 upper floors with AC Variable Voltage & Variable Frequency drive (VVVF drive) complete with all standards accessories, simplex automatic and manual dual controlled operationwith/without attendant, centre opening doors with door drive (electric motor driven mechanism) sliding stainless steel doors, automatic rescue device (ARD) system, 3D infra-red sensor in full height of door & built in announcing system without hand set (04 Nos, one each in car, Machine room & near Ground Floor landing door) complete all as specified and directed as under :-	No.	2

	ELEVATORS :-		
	[i] Type and capacity of lift 08 passengers – 544 Kgs.		
	[ii] Speed 1.0 m/sec with single speed motor.		
	[iii] Type of drive – AC Variable Voltage and Variable Frequency.		
	[iv] Machine Room – Located above the hoist way.		
	[v] Travel – 22.40 Metres (Approx)		
	[vi] Serving – Ground to 6th floor (Floor designation will be 0, 1.....).		
	[vii] Nos of Stop – 9.		
	[viii] Hoist way dimension 1900mm(w) x 1800mm (D).		
	[ix] Power Supply – 415 Volts, 3 phase, AC, 50 Hz.		
	[x] Auxiliary – AC, single phase, 220 volts, 50 Hz.		
	[xi] Car size (inside) – 1300mm (L) x 1100mm (W) x 2200mm (H).		
	[xii] Pit depth – 1600mm.		
	[xiii] Head room – 4200 mm.		
	[xiv] Car Enclosures – Car ceiling & panel – SS hairline finish, panelling of standard thickness with adequate LED lighting on ceiling covered with translucent acrylic cover fitted with powder coated aluminium frame and concealed fan (CT002) with powder coated aluminium grill.		

Sr. No.	Description of item	Unit	Qty
2	Supply, Installation, testing and commissioning of 13 passengers lift, PM Gearless (Located above shaft) speed 1.0 mps, lift with single speed motor 415 volts, 3 phase, AC, 50 Hz, suply confirming to IS-14665, suitable to serve G+2 upper floors with AC Variable Voltage & Variable Frequency drive (VVVF drive) complete with all standards accessories, simplex automatic and manual dual controlled operationwith/without attendant, centre opening doors with door drive (electric motor driven mechanism) sliding stainless steel doors, automatic rescue device (ARD) system, 3D infra-red sensor in full height of door & built in announcing system without hand set (04 Nos, one each in car, Machine room & near Ground Floor landing door) complete all as specified and directed as under :-	No.	1

Sr. No.	Description of item	Unit	Qty
3	Supply, Installation, testing and commissioning of Goods lift 1.5 Ton, PM Gearless (Located above shaft) speed 1.0 mps, lift with single speed motor 415 volts, 3 phase, AC, 50 Hz, suply confirming to IS-14665, suitable to serve G+2 upper floors with AC Variable Voltage & Variable Frequency drive (VVVF drive) complete with all standards accessories, simplex automatic and manual dual controlled operationwith/without attendant, centre opening doors with door drive (electric motor driven mechanism) sliding stainless steel doors, automatic rescue device (ARD) system, 3D infra-red sensor in full height of door & built in announcing system without hand set (04 Nos, one each in car, Machine room & near Ground Floor landing door) complete all as specified and directed as under :-	No.	1

3.5 EXTERNAL ELELCTRIC SUPPLY& STANDBY POWER SUPPLY (DG SET)

Ser No	Description of item	Unit	Qty
1	Incoming HT Cable from Existing Tapping point to Transformer along with four pole Structure, GOD, Lightning Aresstor, and connected accessories including platform of transformer, Earthing of machinery and size of cable not less than 95 Sqmm 3 core.	Each	As Required
2	Transformer 11:0.433 KV 3 phase copper wound, outdoor type complete in all respect with standard accessories and fitments capacity not less than 315 KVA	Each	As Required
3	Stand by DG Set with AMF panel complete with acoustic enclosure all asper CPCB guidlines capacity including foundation not less than 62.5 KVA (100 % load of Lifts, water supply pump and Fire Fighting System)	Each	As Required
4	LT Panels with essential supply and non-essential supply and bus couplers	Each	As Required
5	LT Cables from Transformer / DG Set to main LT Panels		
6.	LT cables from Main LT panels to other panels / Feeder Pillar Boxes to equipments and Buildings		
7.	Earthing of Machinery/Equipment set of using 32x6 Cu strip electrodealong with Copper /Chemical Bore earthing	Each	As required
8.	Perimeter Lighting of proposed building with LT pole and LED Lighting of suitable wattage.		

The electric requirement of 315 KVA worked out for the proposed Building will be met through 11KV supply from existing source

4 Plumbing and Firefighting

4.1 The Contractor shall provide adequate number of Water Storage and Supply Structures in the form of Over Head Water Storage and Under Ground Water Storage Tanks. Water storage capacity of adequate capacity shall be designed and built as per relevant NBC standards. Apart from meeting the user requirements, water storage shall be maintained for meeting the contingency requirements in case of fire or similar incidents.

4.2 All pumps, valves, piping, cabling, protection and safety devices, electrical control panels with BMS compatibility, earthing etc. as required for the building for all the water based services to collect the water in the underground/ on ground/ overhead tanks and to pump them to the required tanks, as required to ensure the availability of the water for different type of utilities. This will include the water being received from local body, borewell, STP treated water etc. besides others if any as applicable.

4.3 The Contractor shall also provide pump chamber along with the requisite mechanical, electrical equipment and other accessories installed in a proper enclosure as per relevant standards in a suitable area.

4.4 Supply and installation of Construction of the fire detection and firefighting systems etc. as required.

4.5 Complete internal and external water-supply system / grid including supply and Installation of Pumps., over Head Tanks,UG Tanks, Water supply Lines, drainage pipes, Vitreous Chinaware, CP Fittings etc.

4.6 Completion of sewerage system/ grid

4.7 Completion of Drainage system

Restricted Area

All work lies in **RESTRICTED AREA.** The restriction for entry to work site conditions of working in restricted area shall be as under:-

(a) The contractor / his agents / representatives / workmen etc. and his material carts, trucks or other means of transport etc. will be allowed to enter through and leave from such gate or gates and at such times as the authorities in charge of restricted area may at their sole discretion permit to be used. Contractor‘s authorized representative is required to be present at the places of entry and exit for the purpose of identify his carts, trucks etc. to the personnel in-charge of the restricted area.

(b) Identity of workmen: Every workman shall be in possession of an identity card. The identity cards shall be issued after a thorough investigation of the antecedents of the laborers by the contractor and attested by officer in charge of the units concerned in accordance with the standing rules and regulations of the unit. Contractor shall be responsible for conduct of his workmen, agent or representatives.

(c) Identity cards or passes: The contractor, his agents and representatives are required individually to be in possession of an identity card or pass which will be examined by the security staff at the time of entry into or exit from the restricted area at any time or number of times inside restricted area.

(d) Search:

Thorough search of all persons and transport shall be carried out at each gate and for as many times gate is used for entry or exit and may also be carried out any number of times at the site within the restricted area.

(e) Working hours: The units controlling restricted area usually work during six days in a week and remain closed on the seventh day. The working hours available to the contractor‘s

labour staff gets reduced because of the time of entry and exit during working hours. The exact working hours, working days and non- working days observed for these restricted area (s) where works are to be carried out shall be deemed to have been ascertained by contractor before submitting his tender. The trenderer's attention is invited to the fact that numbers of working hours for a unit are prescribed in regulations and that they cannot be increased by the GE or authorities controlling the restricted area.. However following working hours shall be available to the contractor's labour inside the unit area:-

(i) Working hours 0830 hours to 1630 hours
(ii) Half day 830 hours to 1400 hours

(f) Fire Precautions

(i) The contractor, his agents, representatives, workmen etc. shall strictly observe theorders pertaining to fire precaution prevailing within the restricted area.

(ii) Motor transport vehicles, if allowed by the authorities to enter the restricted area must be fitted with the serviceable fire extinguisher and spark arrestor.

(g) Female searcher If the contractor desires to employ female labour on works to carry out inside the area of factory, depot, park etc. and a female searcher is not borne on the authorized strength of the factory, depot, park etc. at the time of submission of tender, he shall be deemed to have allowed in his tender for pay and allowances etc. for a female searcher (class IV servant) calculated for the period female labourer(s) employed by him inside the area. If more than one contractor employ female labourer(s) during any month and female searcher(s) has/have to be employed in addition to the authorised strength of the factory, depot, park etc. the salary and allowances paid to the additional female searcher(s) shall be distributed on equitable basis between the contractors employing female labour taking into consideration the values and period of completion of their contracts. The AE's decision in respect of the amount recoverable on this account from any contractor shall befinal and binding.

5 List of Specialized Works (Civil)

The following work are the specialized works for which contractor has to associate specialized agencies to execute the work based on eligibility:

- Water Proofing.
- Structural Glazing.
- Aluminium work
- Sanitary Installation & Water Supply.
- Termite Treatment work.
- Wooden Flooring.
- Stone Cladding Work.
- Texture Paint.
- UPVC-Windows.
- Fire Checked Doors
- False Ceiling

- Façade Cleaning
- Expansion Joint

Other services as per MES works manual declared specialized.

The contractor shall engage specialized agencies or experience firm to execute the work as per requirement of the Authority's Engineer.

6 Site Office

Scope of work includes construction/providing of site office (pre-fabricated structure or equivalent) with modern outlook for use by Engineer-in-charge and his staff consisting of 3 rooms (total area not less than 100 Sqm with 2 toilet and one conference Room with toilet having area not less than 40 Sqm for NHIDCL officers & staff. The location and plan shall begot approved from Authority's Engineer. Specification for the site office shall be suitable and matching for running an office which shall be got approved from Authority's Engineer. The Contractor shall provide a typical plan of site office & conference room (having light fixtures,wiring &, AC etc.) with specification within 15 days of award of work and shall construct after approval of Authority's Engineer. All running cost & charges shall be borne by the Authority.

6.1. Site Barricading

The EPC Contractor shall have to use properly designed barricading system of MS Framework with pre coated Galvanised sheets to barricade the entire plot premises and the cost of same deemed to be inclusive in the overall contract cost. The height of such barricading system shall be 6.0M and confirm to the latest CPCB/SPCB/NGT/IGBC Guidelines. The Contractor shall demonstrate the strength of this system through calculation and drawings. Such barricading shall only be removed from the premises after completion of the work. Precoated galvanised iron profile sheets (size, shape and pitch of corrugation as approved by Engineer-in-charge) shall be 0.63 mm (+ 0.05 %) total coated thickness with zinc coating 120 grams per sqm as per IS: 277, in 240 mpa steel grade, 5-7 microns epoxy primer on both side of the sheet and polyester top coat 15-18 microns. Sheet should have protective guard film of 25 microns minimum to avoid scratches during transportation and should be supplied in single length upto 12 metre or as desired by Engineer-in-charge. The sheet shall be fixed using self drilling /self tapping screws of size (5.5x 55 mm) with EPDM seal, complete upto any pitch in horizontal/ vertical or curved surfaces, excluding the cost of purlins, rafters and trusses and including cutting to size and shape wherever required.

7 QUANTITY OF WORK EXECUTION

The minimum quantity of work to be executed for Road, External water supply, External sewage system, External storm water Drainage System and Electrical work is tabulated below:

Sl No.	FACILITIES	DESIGNATED PLINTH AREA (SQM)
1.	Two Storey (02 Storey) family accommodation Block (08 houses) (Two Blocks of 4 houses each) for Army Officers of Major Rank at DM Lines, East Khasi Hills District, Meghalaya.	Attached as Annexure I(a)
2.	Four Storey (04 Storey) Single Officers Accommodation Block Basment+Ground+2) (18 Single Offrs Accn and car parking at Basement) for Army Officers at Officers Mess 101 Area, East Khasi Hills District, Meghalaya.	Attached as Annexure I(a)
3.	Three Storey (Lower Ground Floor + Ground Floor + First Floor) O R Line at M H Lower Block, East Khasi Hills District, Meghalaya.	Attached as Annexure I(a)
4.	Three Storey CSD Building at Annexe (Old EME Wksp), East Khasi Hills District, Meghalaya.	Attached as Annexure I(a)
5.	Two Storey (02 Storey) Club House at RTC, East Khasi Hills District, Meghalaya.	Attached as Annexure I(a)
6	Block of Guest Rooms Three Storey G+2 (8 Guest Rooms at Each Floor) total 24 Nos at ECSAG & GE, Shillong East Khasi Hills District, Meghalaya.	Attached as Annexure I(a)
7.	Block of Office GE Shillong, Three Storey G+2 at ECSAG & GE Shillong, Shillong East Khasi Hills District, Meghalaya.	Attached as Annexure I(a)
8.	Block of APS School building, Two Storey G+1 at GTC , Shillong East Khasi Hills District, Meghalaya.	Attached as Annexure I(a)
9.	Car Parking shed for 5 cars at Officers Mess 101 Area-2 Nos , Shillong East Khasi Hills District, Meghalaya.	Attached as Annexure I(a)
10.	Ancillary Buildings at MH Upper & Lower Block , Shillong East Khasi Hills District, Meghalaya.	Attached as Annexure I(a)
a)	Single Storey (01 Story) Toilet Block at MH Upper Block	Attached as Annexure I(a)
b)	Single Storey (01 Story) Sentry Post at MH Upper Block	Attached as Annexure I(a)
c)	Single Storey (01 Story) Sentry Post at MH Upper Block	Attached as Annexure I(a)
d)	Single Storey (01 Story) Toilet Block at MH Lower Block	Attached as Annexure I(a)
11	**Ancillary Buildings at** 101 Area main gate, TA Coy Gate & 144 TA , Shillong East Khasi Hills District, Meghalaya.	Attached as Annexure I(a)
a)	Single Story (01 Story) Guard room 101 Area main gate	Attached as Annexure I(a)

b)	Single Storey (01 Story) Guard room TA Coy Gate	Attached as Annexure I(a)
c)	Single Story (01 Story) Toilet Block at 144 TA	Attached as Annexure I(a)
12.	**Ancillary Buildings at** Annexe (Old EME Wksp), Shillong East Khasi Hills District, Meghalaya.	Attached as Annexure I(a)
a)	**Garrage for 3 cars at Annexe (Old EME Wksp).**	Attached as Annexure I(a)
b)	Car Parking shed for 10 cars at Annexe (Old EME Wksp)	Attached as Annexure I(a)
c)	**Car Parking shed for 10 cars at Annexe (Old EME Wksp)**	Attached as Annexure I(a)
d)	Single Story (01 Story) Toilet Block at Annexe (Old EME Wksp.	Attached as Annexure I(a)
e)	Single Story (01 Story) Guard Room at Annexe (Old EME Wksp.	Attached as Annexure I(a)
13.	Single Story (01 Story) Staff Room at RTC , Shillong East Khasi Hills District, Meghalaya.	Attached as Annexure I(a)
14.	**Ancillary Buildings at** Old Rhino CSD, Shillong East Khasi Hills District, Meghalaya.	Attached as Annexure I(a)
a)	Single Story (01 Story) Guard room at Old Rhino CSD.	Attached as Annexure I(a)
b)	Single Story (01 Story) Sentry Post at Old Rhino CSD.	Attached as Annexure I(a)

8 Change of Scope

All the scope not above in this Schedule shall be dealt on pro-rata basis and in accordance with Schedule H and Article13 of CA if covered in Schedule H. Contractor while designing the Military Infrastructure should follow the above area provisions only. In the interest of work 5% deviation in consultation with authority is permissible and the cost shall be deemed to have been included in Schedule 'H'.

9 CONSTRUCTION

The Contractor shall comply with the Specifications and Standards set forth in Annexures of this Schedule-D for construction of the Military Infrastructure.

SN	Items	Annexures
1.	General Guidelines for Design-Civil Works	Annexure-I
2.	Particular Specification and condition for E&M Works	Annexure-II
3.	List of Applicable Codes	Annexure-III
4.	Specifications for Solar Works	Annexure-IV
5.	Landscaping and Horticulture works	Annexure-V
6.	Architectural Finishing Schedule	Annexure-VI
7.	Signage	Annexure-VII
8.	Parking Management and Passenger Information Display System	Annexure-VIII

10 Design Standards

The Military Infrastructure Project including Project Facilities shall conform to design requirements set out in the following documents/ codes:

(i) National Building code 2016 India enclosed with the bid.
(ii) IRC Manual for Rigid pavement
(iii) Code for Practice of Road Signs IRC 67:2001.
(iv) MES standard Schedule of Rates (Part-I) (2009) Specifications and (Part-II) (2020) Rates including amendments.
(v) General Conditions of Contracts (IAFW-2249) (1989 Print).
(vi) **IS-1200 (latest)** and other relevant BIS standard

Note: All the specifications mentioned under Contract Agreement is only for guidance. EPC Contractor has to follow the latest specifications and Standards as per Applicable Laws/Norms.

ANNEXURE -I

General Guidelines for Design - Civil Works

1 General

1.1 The work in general shall be carried out in accordance with the MES standard Schedule of Rates (Part-I) (2009) Specifications and (Part-II) (2020) Rates including amendments hereinafter referred as MES Specifications.

1.2 For internal roads, Manual of Standards and Specifications for Two Laning of Highways (IRC : SP: 73 – 2007) published by the Indian Roads Congress and MORTH Specifications for Road and Bridge Works shall be used.

1.3 The other codes and standards applicable for the Project are as follows:

(i) Meghalaya Building Bye laws 2011 including all the amendments thereafter
(ii) Indian Road Congress (IRC) Codes and Standards
(iii) Bureau of Indian Standards (BIS)
(iv) National Building Codes 2016 and revisions. (NBC);
(v) latest BIS codes, super ECBC norms as per ECBC-2017
(vi) Local fire regulations
(vii) MNRE guidelines for rooftop solar water heater
(viii) Energy Conservation Building Code 2017 and
(ix) Approved zoning plan of the site.

1.4 Where the specification for a work is not given, Good Industry Practice shall be adopted to the satisfaction of the Authority's Engineer.

1.5 The Contractor shall use indigenous products, wherever feasible and shall provide a list of imported products to the Authority with sufficient details.

1.6 Statutory fees required to be deposited by the contractor for processing the case, shall be reimbursed by the department.

1.7 Approvals / NOCs / clearances from local bodies and other statutory authorities shall be responsibility of Contractor for design, execution and operation of the project or part thereof. All statutory fees / charges required for obtaining approvals / NOCs / clearances shall be paid by the Contractor.

1.8 All equipment shall be delivered with

(i) Manufacturer's test certificate,
(ii) Manufacturer's technical catalogues, and installation / instruction (O&M) manuals.

2 Sound Engineering Practice as per Directions of the Authority‘s Engineer

2.1 Before commencement of any item of work, the contractor shall correlate all the relevant architectural and structural drawings, and specifications etc. and satisfy himself that the information available is complete and unambiguous. The contractor alone shall be responsible for any loss or damage occurring by the commencement of work based on any erroneous and or incomplete information and no claim whatsoever shall be entertained on this account.

2.2 Contractor shall provide permanent bench marks, flag tops and other reference points for the proper execution of work and these shall be preserved till the end of the work. All such reference points shall be in relation to the levels and locations, given in the Architectural and plumbing drawings. On completion of work, the Contractor(s) shall submit six prints of ―as built drawings to the Authority‘s Engineer (Hard & soft copy both).

2.3 The Contractor should engage approved, licensed plumbers for the work and get the materials (fixtures/fittings) tested as per Applicable Laws at its own cost.

2.4 The contractor shall give performance test of the entire installation(s) as per the specifications in the presence of the Authority‘s Engineer or his authorized representative before the work is finally accepted and nothing extra what-so-ever shall be payable to the contractor for the test.

2.5 The contractor shall conduct his work, so as to minimize the interfere with or hinder the progress or completion of the work being performed by other contractor(s) or by the Authority‘s Engineer.

2.6 Sample of building materials, fittings and other articles required for execution of work shall be got approved from the Authority‘s Engineer before use in the work. The quality of samples brought by the contractor shall be judged by standards laid down in the relevant CPWD/ BIS specifications. All materials and articles brought by the Contractor to the site for use shall conform to the samples approved by the Authority‘s Engineer which shall be preserved till the completion of the work.

2.7 BIS marked materials except otherwise specified shall be subjected to quality test at the discretion of the besides testing of other materials as per the specifications described for the item/material.

2.8 The contractor shall procure the required materials in advance so that there is sufficient time to testing of the materials and clearance of the same before use in the work. The contractor shall provide at his own cost suitable weighing and measuring arrangements at site for checking the weight / dimensions as may be necessary for execution of work.

2.9 Regarding testing of civil & electrical materials, the testing of materials shall be conducted in Govt. Laboratory/ Govt. colleges/ IITs/NITs or from the laboratory approved by Authority‘s Engineer. The charges of testing of materials in approved laboratory shall be borne by the contractor.

3 Approved Make for Civil Works:

3.1 Specification / brands names of materials to be used as per the scope of work are listed here. The Contractor should also consider the availability of spares parts/components for maintenance purposes while proposing any brand/manufacturer. The materials of any other brand/manufacturer may be proposed for use by the contractor in case the brands specified below are not available in the market and/or contractor intends to use some other brand better than the brands mentioned in this list. The alternate brand can be used only after the approval of Authority's Engineer. The list of approved make for Civil Works is given below:

STRUCTURAL AND CIVIL

SN	Material	Preferred Makes/ Brands/ Manufacturer
1	Ordinary Portland Cement/ Portland Pozzolana Cement	ACC/ULTRATECH/ AMBUJA/NUVOCO / JKCEMENT
2	White Cement	BIRLACEMENT/J. KWHITE TRAVANCORE
3	Reinforcement Steel	SAIL/ TATA STEEL LTD./ RINL/JINDAL STEEL& POWER LTD / JSW / OR AS APPROVED BY THE AUTHORITY'S ENGINEER FROM TIME TO TIME AS PRIMARY PRODUCER
4	Parallel Threaded Couplers	DEXTRA / G-TECH
5	Re-barring Chemical	HILTI / 3M INDIA
6	Structural Steel	TATA/ JSW STEEL LTD/ SAIL/ JINDAL STEEL & POWER LTD./ RINL
7	Plasticizer, Super Plasticizer Admixtures, Other construction Chemicals	M.C. BAUCHEMIE / FOSROC /SIKA BASF
8	AAC Block	AEROCON/BILTECH/JKLaxmi/ MAGICRETE
9	AAC Block Adhesive	ULTRATECH / FERROUS CRETE / BAL ENDURA / AEROCON / J K Laxmi
10	Polymer modified grout Cementitious	BAL ENDURA/ WEBBER/ MYK LATICRETE
11	List of RMC producers	ULTRATECH/ NUVOCO / ACC / READY MIX INDIA PVT. LTD OR as Approved by the Authority's Engineer from time to time
12	Curing Compound	FOSROC / SIKA / PIDILITE / STP / CICO / BASF
13	Expansion Joint- modular	HERCULES / Z-Tech / SANFIELD
14	Colour coated sheet roofing	INDUSTRIAL FOAMS PVT.LTD/JINDAL/LLOYD
15	Puff panel	INDUSTRIAL FOAMS PVT.LTD/JINDAL/ LLOYD
WATERPOOFING		
1	Waterproofing Self Adhesive (HDPE)Membrane	GRACE / FOSROC / MYK SCHOMBURG

SN	Material	Preferred Makes/ Brands/ Manufacturer
2	Single Component Liquid PU Elastomeric Membrane (spray applied) for Deck Waterproofing	BASF/SIKA/FOSROC/MYK SCHOMBURG/GRACE
3	Waterproofing Compound (Crystalline) and Swellable Bar	XYPEX / KRYTON / PENETRON / BASF / SIKA / FOSROC / MYK SCHOMBURG / GRACE
4	Polymeric Cementitious Coating	BASF / FOSROC / GRACE / STP / PIDILITE
5	Elastomeric Acrylic UV resistant liquid applied coating	BASF/ FOSROC / SIKA / GRACE
DOOR, WINDOWS & WOODWORK		
1	Laminated Particle Board / Particle board / Laminates / Plywood	MERINO / GREENLAM / CENTURY / DECOLAM/ NOVAPAN / ARCHIDPLY / KITLAM
2	Veneered Particle Board	MERINO/DURO/GREENLAM/ KITPLY
3	SS Mesh	GKD / WMW
4	Flush door shutters	GREENPLY/ ARCHIDPLY / DURO / MERINO / KUTTY / JAYNA / CENTURY / KITPLY
5	Glass wool Insulation	UP TWIGA / POLY GLASS / LLOYDS/ OWENSCORNING
6	Rock Wool Insulation	LLOYDS / ROXUL ROCKWOOL
7	Polycarbonate Sheet	GE LEXAN / DANPALON/ GALLINA
8	Decking Steel sheet	TATA STEEL / LLOYDS / JSW
9	Natural wood veneer	SONEAR / GREEN PLY / TRUWOOD / ARCHID
10	Anti-static high-pressure Laminate	FORMICA/BAKELITEHYLAM/ DECOLAM MERINO /KITMICA
11	Fire Sealant	HILTI / 3M INDIA / FISCHER
12	Extruded Polystyrene Board	STP / SUPREME / OWNESCORNING, SHALIMAR
13	Wooden / Metal / Glaze-fire rated Door Shutters & Acoustic	NAVAIR / KUTTY / GODREJ/ SUKRI / SHAKTIMET
14	UPVC Doors & Windows	ALUPLAST/ENCRAFT/REHAU/ FENESTA / LG-HAUSYS
15	Fire rated glass (2 hours fire rating)	GLAVERBEL/SAINTGOBAIN/ PILKINGTON/PYROGUARD/SCHOTT
FINISHING		
1	Melamine Polish	ASIAN PAINTS/ PIDILITE INDUSTRIES/ DULUX/ BERGER/
2	Polyester Powder Coating Shades	NEROLAC / BERGER / AKZONOBEL
3	Wall Putty	BIRLA WHITE / JK WHITE / FERROUSCRETE / BERGER / SAINT GOBAIN
4	Oil Bound Washable Distemper	ASIAN PAINTS / BERGER / NEROLAC / ICI / AKZONOBEL DULUX
5	Acrylic Distemper	BERGER / ASIAN / DULUX / NEROLAC
6	Cement Primer	BP WHITE (BERGER) / DECOPRIME WT (ASIAN) / NEROLAC / AKZONOBEL (DULUX)

SN	Material	Preferred Makes/ Brands/ Manufacturer
7	Steel / Wood Primer	AKZONOBEL (DULUX) / NEROLAC / BERGER / ASIAN PAINT / JENSON & NICHOLSON
8	Adhesives	ANCHOR/DUNLOP/PIDILITE- FEVICOL
9	Premium Acrylic Emulsion paints	DULUX AKZONOBEL / NEROLAC / ASIAN PAINTS / BERGER
10	Textured Exterior Finish	ASIAN (ULTIMA) / BERGER (WEATHER COAT ALL GUARD) / DULUX AKZONOBEL (ULTRA CLEAN) / NEROLAC (EXCEL TOTAL)
11	Synthetic Enamel Paint	ASIAN/BERGER/NEROLAC/ AKZONOBEL(DULUX)
12	Epoxy Paint	AKZONOBEL (DULUX) / NEROLAC / ASIAN PAINTS / FOSROC / BERGER
13	Fire Paint	ASIANPAINT/BERGERPAINTS/ SHALIMAR / JOTUN / AKZONOBEL
14	Gypsum Plaster	FERROUSCRETE/ ULTRATECH / INDIA GYPSUM / ELITE (90) OF GYPROC
15	Cement based Ready Mix Plaster	FERROUSCRETE / ULTRATECH / SAINT GOBAIN
16	Pre-Cast GRC Jali	UNISTONE / KERAKROME GRC
17	Polysulphide sealant	FOSROC / SIKA / TUFFSEAL / PIDILITE / WACKER/ DOW CORNING / GE/ STP
18	Silicone / Weather Sealant	WACKER / DOW CORNING / GE
STEEL & ALUMINIUM WORKS		
1	Stainless Steel	SALEM STEEL / JINDAL ALLOYS / SAIL
2	Welding Electrodes	ADVANI-OERLIKON / MODI
3	Dash / Anchoring Fasteners	HILTI / FISHER / BOSCH / AXEL
4	AnodisedAluminiumHardware (HeavyDuty)	HARDIMA/ALUALPHA/PULSE OF LGF SYSMAC / HINDALCO /EVERITE
5	Aluminium Structural Members – Windows, Glazing and Partitions	JINDAL/HINDALCO/NALCO/ INDALCO
6	Stainless Steel Railing, Accessories etc (Grade SS 316)	OZONE / GEZE / KICH / DORMA / JINDAL STAINLESS STEEL
7	G. I Steel door frame	SYNERGYTHRISLINGTON/ SHAKTIMET /NAVAIR
CEILINGS		
1	False ceiling Grid system	GYPROC/GRIDLINE/RK/ GRIDSYSTEM
2	False Ceiling – Gypsum	SAINT GOBAIN GYPROC / AMF / BORAL / LAFARGE / INDIA GYPSUM / HUNTER DOUGLAS
3	Metallic False Ceiling	ARMSTRONG / DURLUM / HUNTER DOUGLAS / SAINT GOBAIN
4	Acoustical Tile False ceiling	DIAMOND CEILING/ARMSTRONG/SAINTGOBAIN/ ECOPHON/ DEXUNE/ANUTONE

SN	Material	Preferred Makes/ Brands/ Manufacturer
5	Calcium silicate ceiling tiles/ Board	GYPROC / AEROLITE / BORAL / HILUX / ARMSTRONG(MYLAR) / EVEREST/ NCL
6	Aluminium Composite Panel	ALUCOBOND / ALPOLIC / ALUDECOR / REYNOBOND
7	Acrylic Solid Surfaces	HANEX / L.G-HIMAC / DUPONT
FLOORINGS/ WALL TILES		
1	Glass Mosaic Tiles	BISAZZA, MRIDUL, OPIO, PALLADIO, ITALIA GLASS
2	Floor & Wall Tiles: Ceramic / Vitrified tiles / Antiskid / Matt / Glazed	KAJARIA / H&R JOHNSON / SOMANY/ ASIAN(AGL) / ORIENTBELL / VARMORA
3	PVC Flooring	ARMSTRONG / TARKETT / LG HAUSYS
4	Laminated flooring	ACTION / TESA / PERGO
5	Engineered stone - Marble / Quartz	ASIAN/JOHNSON/KALINGA/ QUTONE
6	Chequered Tiles, Paver Block & Kerb Stone (of Non-Recycled C&D Waste)	OVILITE / UNISTONE / HINDUSTAN / KK / ULTRA / DALAL TILES/ NITCO
7	Tile / Stone Adhesive / Tile Grout	PIDILITE/FERROUSCRETE/BALLENDURA / MYKLATICRETE
8	Floor hardener	PIDITOP 333 BY PIDILITE / FOSROC / SIKA / IRONITE / FERROK / HARDONITE
9	Epoxy Flooring	FOSROC / SIKA / CICO / LATICRETE / BASF
10	Heat Resistant Tiles	THERMATEK/ NATIONAL/ THERMAX
11	Floor Trap	JAYNA / CHILLI / NIRALI
GLAZINGS		
1	Glazing Structural / Suspended / Skylight/ clear/ float/ frosted/ mirror	SAINTGOBAIN/PILKINGTON/ GLAVERBELL
2	Clear / Float / Frosted Glass /Mirror	AIS / GLAVERBELL / MODIGUARD / PILKINGTON / SAINT GOBAIN/ ATUL
3	Glass Spider Fittings	DORMA / HAFELE / OZONE
4	Toughened Glass / Hermetically sealed performance glass	SAINT GOBAIN / GUARDIAN GLASS / PILKINGTON / MODIGUARD
HARDWARE		
1	Nuts / Bolts & Screws	GKW / HILTI / ATUL
2	Clampsystemfordrystone cladding	HILTI / FISCHER / BOSCH / AXEL
3	Hinges & Brassware	EARL BIHARI / KICH / INDO-BRASS / ASSA-ABLOY/ HAFELE/ GEZE/DORMA
4	MDF Board	NUWOOD/ DURATUFF
5	Vitreous Chinaware	HINDWARE/JOHNSON/CERA/ PARRYWARE

SN	Material	Preferred Makes/ Brands/ Manufacturer
6	All type of hardware and fitting for all type of glazing / doors/ windows etc. including mortise latch & lock, tower bolt, ball bearing butt hinges, friction stay hinges, sliding door bolts, lever handle, magic eye door closer etc.	DORMA / KICH / HAFELE / GEZE / GODREJ / ASSA-ABLOY / HARDWYN / IPSA / DORSET / INGERSOLL RAND / OZONE / HETTICH / EVERITE / LGF SYSMAC
7	Toilet Cubicles	MERINO / GREENLAM / DORMA
8	Hardware for Fire Check Door/ panic bar/ panic trim/ door closer/ hinges/ mortise lock	INGERSOLL RAND / DORMA / GEZE / HAFELE / ASSA-ABLOY / KICH
9	EPDM Gasket	HANU / ANAND / OSAKA
Plumbing & Sanitary		
1	GI Pipes	JINDAL(HISAR)/TATA/SURYA PRAKASH
2	GI Fittings	UNIK / ZOLOTO / SURYA
3	SS Pipes & fittings	JINDAL / VIEGA / J-PRESS
4	HDPE Pipes	RELIANCE / JAIN IRRIGATION / KISAN/ ORIPLAST / SUPREME
5	DI Pipes	ELECTROSTEEL (VEDANTA) / JINDAL / TATA DUCTURA
6	DI Fittings	ELECTROSTEEL(VEDANTA)/ KALINGA / TATADUCTURA
7	CI Double flanged sluice valve	KIRLOSKAR / SONDHI / KEJRIWAL
8	Float Valve	LEADER / ZOLOTO / KSB
9	Centrifugally Cast (Spun) Iron Pipes &Fittings	JAYSWAL NECO / RIF / SKF
10	Centrifugally Cast (Spun) Iron (Class LA)Pipes	JAYSWAL NECO / ELECTRO STEEL / TATA
11	CI Manhole covers, Frames & GI Gratings	JAYASAWAL NECO / RIF / SKF
12	SFRC Manhole Covers & Gratings	KK / OCR / PARGATI / T-CON
13	Stoneware Pipes and Gully Traps	PERFECT / PARRY / BURN / ANAND / RK / HIND
14	RCC Manhole covers & Frames	KK MANHOLE / GRATING CO. (P) LTD
15	Gun Metal Valves, Globes	ZOLOTO / CASTLE / KARTAR
16	Sanitary CP Fittings & Accessories	ORIENTALSERIESlofMARCorequivalent series of: JAQUAR / PARRYWARE / GROHE / KOHLER / CERA / JOHNSON
17	Water Meter	PRIMA / ZOLOTO / LEADER / CAPSTAN
18	Brass Stop & Bib Cock	ZOLOTO / SANT / L&K / LEADER / ASTRAL
19	UPVC/ CPVC Pipe & Fittings	AKG / ASTRAL/ SUPREME / FINOLEX /

SN	Material	Preferred Makes/ Brands/ Manufacturer
20	Non-Return Valve (Check valve) and other kind of Valves	ZOLOTO / SANT / LEADER
21	Brass Ferrules	DHAWAN SANITARY UDYOG / KALSI / ANNAPURNA
22	Insulation for hot water pipes	KAIFLEX / ARMAFLEX / CAREFLEX / LLOYD
23	Insulation for external / exposed hot water pipes	KAIFLEX / ARMAFLEX / CAREFLEX
24	Pipe protection for external water supply pipes	PYPKOTE/ARMAFLEX/ MAKPOLYKOTE
25	Stainless Steel Sink	NEELKANTH / NIRALI / CERA / JAYNA
26	RCC Pipes	LAKSHMI / SOOD & SOOD / JAIN &CO./ PRAGATI CONCRETE
27	Dash/ Stud/ Anchor Fasteners	HILTI / CANON / BOSCH / FISCHER
Electrical works		
1	FRLS PVC insulated copper wire /Telephone cable / copper conductorcontrol cable	L&T / Havells / Polycab/ Finolex /RR
2	HT/LT XLPE aluminum cable	Havells/ Polycab/ KEI/ RR
3	Co-axial TV cable	L&T/ Havells / Polycab/ Finolex
4	Steel Conduit	RM CON/ AKG / BEC ISI Marked
5	Conduit fittings	ISI marked
6	PVC Conduit	AKG / Polycab / Prince / Norpak (ISIMarked)
7	L. T. Panel / Meter Board	AdlecMundka/ Control and Switchgears Pvt. Ltd/ Tricolite / SPC Electrotech Ltd/ Ambit Switchgear Pvt Ltd/ Neptune India/Milestone
8	MCB/MCB DB and sheet steel Metalenclosed industrial socket, plug top and Isolators	Legrand/ Siemens/ L&T/ ABB / Schneider
9	Modular type switch/Socket, Telephonesocket, cable TV Antena socket, Electronic fan regulator and GIBoxes	Legrand (Myrius/ Havells (Piccadilly)/ Honeywell (citric) / North West(nova)
10	LED fitting	Philips/ Crompton/ Wipro/ GE/ Zumpobel /Trilux
11	Tube / Vane Axial Flow Fan	Kruger/ Nicotra/ Greenheck/ Airflow/Humidin/ Flaktwood
12	Ceiling Fan / Exhaust fan (BEE-5 Star)	Crompton Greaves/ Usha/ GEC/ Orient
13	Octagonal steel pole	Bajaj/ Valmont/ Utkarsh
14	Conical / Decorative Poles / Bollards	Bajaj/ Philips / Wipro /Valmont/ Utkarsh
15	Air Circuit Breaker	L&T-U Power/ Siemens-3WL/ ABB-Emax/Schneider-Master pact-NW
16	MCCB	L&T- Dsine/ Schneider- Compact NSX/ABB- Tmax/ Legrand- DPX3/ Siemens

SN	Material	Preferred Makes/ Brands/ Manufacturer
17	Digital Voltmeter/ Ammeter/ Multi-function meter	Schenider- conzerv/ Ducati/ Secure/AE
18	Capacitor	Epcos / L&T/ Schneider/ Siemens /Crompton Greaves.
19	APFC Relay	Epcos/ L&T/ Siemens/ Schneider/ Enercon
20	Power Contactor – AC 3 rating / capacitor duty contactor/ starter / Thyrister module /Harmonic reactors.	Siemens/ L&T/ ABB/ Schneider
21	11 KV HT(VCB) panel OEM	Siemens/ Schneider/ ABB/ CromptonGreaves
22	Distribution Transformer (dry type castresin type)	Crompton Greaves/ ABB/ Schneider/Siemens/ Bharat-Bijlee
23	Distribution transformer (oil type) is-1180, part2	Crompton Greaves/ ABB/ Schneider/Siemens/ Bharat-Bijlee
24	Package Type Substation	ABB/ Schneider/ Crompton Greaves
25	Solar street light fitting	Philips/ Bajaj/ Wipro/ Crompton Greaves
26	Rising mains / duct	Legrand/ Schneider/ C&S/ GE
27	Fire Extinguishers	Safex/ Minimex / Superex / Ceasfire
28	Diesel operated Power Generating Engine	Cummins India/ Caterpillar- Perkins
29	AMF Panel	OEM/ OEA of DG Set
30	Alternator	Stamford/ Leroy Somer/ Caterpillar
31	HDPE / DWC pipe	AKG/ Duraline / Rex
32	GI / M. S. Pipe	Jindal (Hissar) / TATA / BST
33	Standard M.S. Fittings & GI Fittings	Jainsons Industries / INDUS
34	Ball Valve / Sluice Valve / Check Valve /Pot /Y Strainer / Butterfly Valve	Audco / Kirloskar/ Zoloto/ Advance
35	Pressure Switch	System Sensor / Indfoss / Denfoss
36	LIFTS	M/s OTIS M/s Kone M/s Mitsubishi M/s Schindler M/s Johnson Lifts Pvt. Ltd. Chennai The contractor has to give at least three options out of the make mentioned above for lift and the department will be free to select any one of them.
37	BMS Operator Work Station	HP/ Dell / Lenovo /Acer
38	BMS Controller and Power Supply /Software	Siemens / Honeywell EBI / Sauter / TAC(Schneider) / ALC
39	BMS Controller Housing	Enclotek / Rittal
40	Temperature Sensor & Humidity Sensor /Enthalpy Sensor / Lux Sensor / COSensor	Siemens / Invensys / Honeywell / Sontay /Greystone / Sauter / Kele / TAC

SN	Material	Preferred Makes/ Brands/ Manufacturer
41	Pressure Transmitters / Air Velocity Meter	Siemens/ Invensys/ Kele/ Honeywell /Sontay/ Greystone/ Sauter/ TAC
42	Flow Meter	Forbes Marshal/ Kele/ Sontay/ Greystone/Siemens/ TAC/ Honeywell/ Schenitech
43	Differential Pressure Switch	Siemens / Invensys / Honeywell / Sontay /Greystone / Kele / Sauter
44	Ph Sensor / Conductivity / TDS	Forbes Marshal / Endres Hauser / Kele /Sontay / Greystone
45	Flow Switch / Level Switch / LevelIndicator	Siemens / Elektronik / Invensys / Honeywell/ Sontay / Greystone / TAC
46	Current Transducer / Voltage Transducer /Power Factor Transducer / Frequency Transducer	ABB / Southem Transducer / Veris / SETO / Sontay / Greystone
47	Personal Computer	Dell / IBM / HP / Compaq
48	Laser jet Printer	HP / Canon
49	Fire / Sprinkler Main Pump / JockeyPump	Mather & Platt India Limited / Grundfos /Kirloskar / KSB
50	Diesel Engine	Cummins / Kirloskar / Catepillar
51	Motor	ABB/ Siemens/ Kirloskar / CromptonGreaves
52	Anti-Vibration Mounting	Kanwal Industrial Corporation/ Resistoflex /Ewren
53	Starter	L&T/ Siemens / Crompton/ GE / ABB /BCH
54	Current Transformer (Cast Resin)	AE/ L&T/ Kappa
55	Anti-Vibration Pad	Cori/ Dunlop / Diamond Pipe Support/ EasyflexFlexionics / Resistoflex / Emerald
56	Factory fabricated duct	Waves/ Zeco /Ductofab/ GP Spira
57	Perforated with powder coating M.S. /Hot dipped G.I. cable trays	Vinous/ Indiana/ steelway / Slotco / Pilco
58	Addressable Multicriteria Smoke Detectors With base / Addressable Duct Type Smoke Detectors With base/ Fault Isolator with base/ Addressable Heat Detectors with base/ Addressable Manual Call points / Addressable Control Module/ Addressable Monitor Module / Sounder/ Hooter cum Strobe/ Fire Alarm Control Panel/ PA System Panel/ Telephone Jack / Hand Set/ Software/ Speaker	Notifier / Siemens / Bosch / Edward.
59	Conventional Fire Detection and Alarm SystemDetector PanelsManual Call Points Hooters	Daksh/Agni/ System Sensor/ Ravel

SN	Material	Preferred Makes/ Brands/ Manufacturer
60	Fire Survival Cable	Fusion Polymer/ Havells/ Bonton/ Rallison/Batra Henlay
61	Thermo plastic (Textilereinforced) Hose Reel ISI Mark	Mitra/ Kesra / Padmini
62	Stainless Steel Brach Pipe	Safex/ Padmini / GETech / New Age
63	Fireman Axe/ Installation Control Valve	Safex/ Padmini / GeTech
64	2-way/4-way FBC	Safex/ NewAge (Mumbai) / GeTech
65	Sprinkler Heads	Tyco/ HD/ omax UL listed
66	Pipe Protection Pypcoat (AW4) Wrapping	IWL/Taxa/ Mac- poly coat
67	Rubber Bellow	Kanwal Industrial Corporation / Resistroflex/ AIP Valves
68	Window Sprinkler	Tyco / HD
69	Deluge Valve	Safex/ Tyco / HD
70	Air release valve	Superex/ GeTech / NewAge / Safex
71	Welding Rods	Ador/ Esab / Essar/ Advani
72	Fastner	Hilti/ Fisher
73	Hose Box(External) (GI Powder Coated)	SPC Electrotech Ltd/ AdlecMundka/Ambit Switchgear Pvt Ltd/ Milestone/ Tricolite
74	Flexible Drop (UL Approved)	Safex / HD / Kofulso (Easy flex)
75	Galvanized Sheet Steel	Tata/ Jindal/ Sail
76	IP Based CCTV system CCTV CamerasBullet, Dome, PTZ Camera Network Video Recorder	Honeywell/ Panasonic /Sony
77	LED TV	Sony/ Panasonic/ Samsung
78	Data Networking System Information Outlet (I/O)Patch Panel, Patch Cords SFP	Legrand/ Molex/ Amp
79	Cat-6 /6A Cable	Legrand/ D-link / Ploycab
80	Managed Switch for Data Network,CCTV system	Cisco/ Hewlett Packard
81	Data Racks	i Ball/ D-link/ President/ Legrand
82	EPABX	Panasonic/ Alcatel/ Sansung
83	Telephone Handsets	Beetel/ Binatone/ Panasonic
84	MDF and Telephone Tag Blocks	Krone
85	Boom Barriers	Kaba/ Magnetic/ SEAA/ Makim/ FAAC
86	Solar PV Modules	Vikram/ Tata Solar/ Waaree/ Enkay Solar
87	Inverter (for solar power system)	Kaco/ Delta/ Schneider / SMA
88	Cables for solar power (XLPO/XLPE)	Lapp/ Havells/ Universal/ Polycab
89	String Combiner Box	Hensel/ Schneider
90	0.2 Class ABT Compliant Net Meter	Secure/ L&T/ Schneider

SN	Material	Preferred Makes/ Brands/ Manufacturer
91	Weather Monitoring Station	SMA/ ABB
HVAC		
1	Chilled Water Machine	Daikin / Carrier/ York /Dunham Bush
2	Pumps (primary, Secondary & Condenser)	Armstrong / Grundfos / ITT/Willo
3	Cooling Tower	Nihon Spindle/ Baltimore / Evapco/PAHARPUR
4	Air Handling Unit (AHU)	VTS / System Air / Flaktwood/ZECO
5	Cooling Coil	VTS / System Air / Flaktwood/ZECO
6	Hydronic cassette unit	Carrier/ Bhutoria / Midea
7	UVGI system	Ruks / Trimed / Rydair
8	EC Fan &Plug Fan for AHU	System Air / VTS / Kruger/NIKOTRA
9	Air filter	Mechmaark / Pyramid / Thermodyne
10	Electrostatic Filter	Cleair / Kleanwaves / ZecoPureair/HONEYWELL
11	Variable Frequency Drive (VFD)	Danfoss / Siemens / LG/ABB
12	Exhaust Fan Section	Kruger / System Air / Greenheck
13	Ventilation Fan (Centrifugal / Axial)	Kruger / System Air / Greenheck
14	Inline Fan	Sphere / Kruger / Pineair
15	Propeller Fan	Marathon / Khaitan / GEC
16	MS Pipe	TATA / SAIL / Jindal (Hissar)
17	GI Pipe	TATA / SAIL / Jindal (Hissar)
18	PUF Pipe Support	Malanpur / Lloyd / Best Puf
19	Pressurized Expansion Tank & Air Separator	Grundfos / ITT /Anergy/EMRAID
20	Butterfly Valve	Advance / Audco/ Honeywell
21	Balancing Valve	Advance / Audco/ Honeywell/ Castle
22	Check Valve	Advance / Audco/ Honeywell
23	Y – Strainer	Rapidcool / Emerald /Castle/
24	Pot Strainer	Sant / Rapidcool / Emerald/
25	PIBC Control Valve with Actuator, Motor & Thermostat	Danfoss / Siemens / Oventrop/ Honey well
26	Motorized Butterfly Valve	Advance / Danfoss / Zoloto
27	Ball valve with & without Strainer	Audco / Castle / Betaflo/ Honeywell
28	Thermometer / Pressure Gauge	Emerald / H-Guru / Anergy
29	Test Point	Anergy / Rapidcool / Emerald
30	Flow Switch	Siemens / Anergy / Honeywell
31	Flexible Pipe Connection	Resitoflex / Dunlop / Easyflex
32	Auto Air Vent with Stop Valve	Anergy / Rapidcool / Emerald
33	Factory Fabricated Duct	ZecoAircon / Ductofab / Rolastar
34	Flexible Duct	Sphere / ATCO / U.P.Twiga
35	G.I. Sheet	Jindal / TATA / Nippon / SAIL
36	Demand Ventilation Equipment	Conaire / Greenheck / Cynor
37	CO Sensor / CO_2 Sensor	Gas Alarm / Honeywell / Seimens / MSR

SN	Material	Preferred Makes/ Brands/ Manufacturer
38	Modulating Motor / Valve	Danfoss / Honeywell / Siemens / Oventrop
39	Fire Damper	System Air / Ruskin / Trox
40	Volume Control Damper, Fresh / Exhaust air louver	Pineair / System Air / Conaire/ Caryaire
41	Grilles/ Diffusers	Pineair / Conaire / Servex / Caryaire
42	Actuator for Fire Damper	Siemens / Honeywell / Danfoss
43	Nitrile rubber insulation	Armacell / Aflex / Supreme
44	Acoustic Insulation for Duct	UP Twiga/Owens conning
45	Fastener	Hilti /Wurth / Fisher
46	Electrical Panel	Tricolite / / Adlec/ KEPL/ System Power Control/ SPC Electrotech/
47	Motor for AHU Fan	Siemens / ABB / Crompton
48	Motor for Ventilation Fan	Siemens / ABB / Crompton
49	Starter	Siemens / Schneider
50	Single Phase Preventer	Minilec / EAP, Bangalore
51	Current Transformer (Cast Resin)	AE / L&T / Kappa
52	Switch / Fuse Unit / HRC Fuse	L&T / Siemens / ABB
53	MCCB	ABB(T-Max) / Siemens (Sentron-VL) / Merlin Gerin (Compact) / L&T (DNX Series) / Legrand (DPX)
54	MCB	Legrand (Lexic) / L&T (Hager) / Siemens (Betagard) / Schneider (Multi9) / ABB (S 270)
55	ACB (with microprocessor release)	Schneider-MVS / Siemens-3WL / L&T-U-power Omega / ABB-Emax
56	Ammeter / Voltmeter (Digital Type)	AE / L&T / Crompton Greaves/Siemens/Conserve
57	LED Indicating Lamp / Push Button	Siemens / GE power / ABB / L&T / Schneider Electric
58	Selector Switch	AE / L&T / Kaycee
59	Relay / Timer / Contactor/Starter/ Push Button	Siemens / L&T / Schneider Electric / ABB / BIL
60	Power Cable /CONTROL CABLE	Worldcab / Skytone / Polycab/ RR Kabel/ RHINO
61	Termination Kit	Raychem / Densons / Xicon / ABB
62	Perforated Cable Tray	B.E.C. / Apex / Indiana/ Steelway / OBO
63	Cable Gland	Commet / Gripwel / Dowell / Raychem
64	Solder less Lug	Dowell / Schneider Electric / Jainsons, Mumbai
65	Hot Water Generator	Rapidcool/ Emrald / KEPL
SOLAR EQUIPMENT		
1	SPV Modules	Schneider/ Moser Baer/ Tata/ BPSolar CEL/ BEL/ Reliance/ GE Solar/ Sanyo PCI/ PANASONIC
2	Power Control Unit(PCU)String PCU	EMERSON/ MITSHUBISHI/ SCHNEIDER/ DELTA
MEDIUM VOLTAGE EQUIPMENT		
1	Power Distribution Panel	As mentioned in the sub-station sub head

SN	Material	Preferred Makes/ Brands/ Manufacturer
2	Moulded Case Circuit Breaker (MCCB) 3&4 Pole With rotary operating mechanism	Schneider Electric (Compact NX) ABB (T-Max)/ Larsen & Toubro (D-Sine) Siemens (Sentron-VL)/ GE Power Controls (Record Plus)
3	Miniature Circuit Breaker (MCB)	Schneider Electric (MG)-Multi-9 ABB GE Power Controls/ Hager (L& T) Legrand Siemen
4	Residual Circuit Breaker (RCCB/ RCBO's)	Schneider Electric (MG)-Multi-9 ABB/ GE Power Controls Hager (L& T) Legrand/ Seimens
5	Lamps LED type,Push Button	Vaishno Electricals/ Larsen & Toubro (Esbee)/ Siemens/ Schneider Electri(MG)
6	Power/ Aux. Contractor 3 /4 Pole	Schneider Electric(Telemechanique)/ ABB/ GE Power Controls/ Larsen & Toubro/ Siemens
7	Lamps LED type,Push Button	Schneider Electric(MG)/ Vaishno Electricals/ Larsen & Toubro (ESBEE)/ Siemens
8	Electronic Digital Meters (A/V/PF/HZ/KW/KWII) Conzerv (Networkable) L &T	Schneider Electric Secure
9	XLPE insulated PVC sheathed copper conductor Armoured power cable of 1.1KVgrade Polycab	KEI/ HAVELLS/ GRANDLEY
10	LT JointingKit/Termination	Raychem MSeal
11	Cable Glands Double Compression with Earthing Links	Comet, Cosmos
12	Bimetallic/ Copper/ AluminiumCable Lug	Comet/ Dowell's (Biller India Pvt. Ltd.)/ Hax Brass (Copper Alloy India Ltd.)
13	PVC insulated copper conductor stranded flexible Finoles FRLS wire (Pretwisted) KEI	Polycab
14	Polycarbonate Junction Boxes	Hensel/ Clipsal/ Sintex
15	Selector Switch, Toggle Switch	Salzer (L & T)/ Siemens/ Kaycee
16	Timer	Siemens/ L & T/ Schneider Electric-TE
17	Material for Structure	TATA/JINDAL/SAIL
MISCELLANEOUS		
1	Irrigation Equipment	JAIN IRRIGATION, KISAN, FINOLEX, PLASSON
2	PVC water tank	SINTEX / POLYCON

3.2 Only material bearing ISI/BIS certifications ECBC/BEE mark shall be used in the work. Where articles of different designs/ makes bearing ISI/BIS certifications are available.

3.3 Where material bearing ISI/BIS certifications marks are not available, material conforming to relevant BIS/ISI shall be used with prior approval of Authority's Engineer. The decision of Authority's Engineer about the design/ make to be used in the work shall be final & binding on the contractor.

3.4 If the specifications of any item are not available, then the decision of the Authority's Engineer regarding quality shall be final & binding on the contractor.

3.5 All materials to be used at site shall be got approved from Authority's Engineer before using at site.

Annexure -II

PARTICULAR SPECIFICATION AND CONDITION FOR E&M WORKS

1 Scope

The equipment and work shall be confirmed to

(i) ECBC-2017;
(ii) IS: 732-2019
(iii) BIS 15884;
(iv) IS: 374 - 2019;
(v) Central Electricity Authority regulations 2010;
(vi) IS 14665: 2000; Electric Traction Lifts
(vii) IS 4289 Specification for Flexible Cables for Lifts and Other Flexible Connection;
(viii) Selection, Installation and Maintenance of Automatic Fire Detection and Alarm System Code of Practice- IS 2189-2008;
(ix) All amended up to last date of submission of tender, relevant IE rules, relevant IS and as per directions of Authority's Engineer.
(x) All the materials used in the work as far as applicable shall comply with the relevant Indian Standard Specifications with all upto date amendments.
(xi) The contractor shall produce test certificates for their conforming to relevant I.S. specifications.
(xii) The materials having I.S.I. mark shall have precedence over the ones conforming to I.S. specifications.

2 Climatic Conditions

The equipment supplied shall be suitable for satisfactory performance on its rated capacity at all weather conditions i.e. summer, monsoon and winter.

3 Sub Work - Internal & External Electrical Installation of E&M Works

The work shall be carried out in accordance with tender specifications and the following specifications / rules:

(i) ECBC - 2017.
(ii) IS 4289 Specification for Flexible Cables for Lifts and Other Flexible Connections Part 1: 1984 Elastomer Insulation Cables
Part 2: 2000 PVC insulated Circular Cables
(iii) The Indian Electricity Act, 2003.
(iv) National Electrical Code.
(v) Indian Electricity Rules 1956 amended up to date.

3.1 General

The specifications given below pertain to the internal and external electrical installation work to be carried.

3.2 Wiring

(i) The wires used for the point wiring and power wiring shall be of 650 / 1100 Volts grade FRLS PVC insulated multi stranded copper conductor single core confirming to IS:694:1990.

(ii) All mounting boxes for plate type accessories shall be of metallic construction and of the same make as that of the plate type switches and accessories.

(iii) The connections, inter-connections, earthing and inter earthing shall be done by the contractor wherever required for energizing of the installation and nothing extra shall be paid on this account.

(iv) The rupturing capacity of the MCB"s shall be 10 KA. The MCB"s shall be ISI marked.

(v) The make of MCB, RCCB etc. shall be the same as that of MCB DB.

(vi) Three phase MCB DBs shall be provided with three independent neutral bars for per phase isolation in addition to main neutral link if provided in schedule of quantity.

(vii) Number of inspection boxes for conduit should be barest minimum, rather these should be avoided.

(viii) Cutting of brick walls shall be with chase cutting machine only. All repairs and patch works shall be neatly carried out to match the original finish and to the entire satisfaction of the Engineer in Charge.

(ix) All the sub main and circuit wiring includes loose wire for connections inside switch boxes and MCB DB s. No payment for these loose wires shall be made.

(x) The connection between incoming switch / isolator shall be made with suitable size of thimble and cable at no extra cost.

(xi) Copper conductor of insulated cables of size 1.5 Sq.mm and above shall be stranded and terminals provided with crimped lugs.

(xii) All hardware items such as screws, thimbles, GI wire etc. which are essentially required for completing an item as per specifications will be deemed to be included inthe item even when the same have not been specifically mentioned.

(xiii) All hardware items such as nuts/ bolts/ screws/ washers etc. to be used in work shall be aluminum alloy / cadmium plated iron.

(xiv) Any conduit which is not be wired by the contractor shall be provided with GI fish wire for wiring by some other agency subsequently. Nothing extra shall be paid for the same.

(xv) The make of the materials have been indicated in the list of acceptable makes. Alternate makes are not acceptable. The materials to be used in the work shall be got approved by the Engineer in Charge / his representative before its use at site. The E- in-C shall reserve the right to instruct the contractor to remove the material which, in his opinion, is not acceptable.

(xvi) Modular boxes, switches, sockets, regulators etc. shall be of only one make.

(xvii) Wherever light fittings are proposed to be provided on the false ceiling, the respective light / fan point wiring will have to be brought up to the terminal of the light fittings / fans by the contractor. Flexible conduits shall be used for drawing wires from MS conduits on ceiling to fittings on false ceiling and nothing extra shall be paid to the contractor for the same.

(xviii) G.I. pipes shall be medium class as per ISI specification and shall be of single piece without any joints.

(xix) All the light and fans points should be properly earthed with 1.5 sq mm, FRLS PVC insulated copper wire.

(xx) Termination of wiring inside the DB's and main board should be done by crimped Copper lugs connections, for which no extra payment will be made.

(xxi) All metallic parts must be properly bonded to the earth. Earthing lugs shall beprovided to all copper earth wires and shall be fixed whenever required by means of anodized bolts and nuts.

ANNEXURE -III

LIST OF APPLICABLE CODES

1.1 The Contractor shall use the latest edition of relevant Standards & Specifications for Design and Execution of this project/work. The list of Standards & Specifications provided hereunder is not exhaustive and any other Standard & Specification which are not mentioned in this section are also applicable if required for the completion of work as per the Scope of Work shall be used in consultation with Authority.

1.2 Some of the relevant codes and standards are compiled below:

(i) FOR STRUCTURAL WORKS

S. No.	CODE	NAME
1	IS: 1893 – 2002	Criteria for Earthquake resistant deign of Structures
2	IS: 13920	Ductile detailing of Reinforced Concrete Structures Subjected to Seismic forces.
3	IS: 4326 – 1993	Earthquake resistant Design and construction of Buildings
4	IS: 875 – 1987 (Part I to III & Part V)	Code and Practice for Design Loads (Other than earthquake) for Building and Structures like Dead, Imposed, Wind and other Loads
5	IS: 456 – 2000	Plain and Reinforced Concrete (Code of practice)
6	SP: 16	Design aids for Reinforced Concrete Structure.
7	SP: 34	Handbook on Concrete Reinforcement and Detailing
8	IS: 3370 Part I, Part II and Part IV	Code of practice for Concrete structures for the storage of liquids.
9	IS: 1786	Specification for High Strength Deformed Steel bars and wires for concrete reinforcement
10	IS: 1904	Code and Practice for design and Construction of Foundations in Soils
11	IS: 2950	Code and Practice for Design and Construction of Raft Foundations
12	IS: 800-1980	Code of Practice for general Construction in Steel.
13	IS: 1343-1980	Code of Practice for Pre stressed Concrete.
14	BS 8081:2015 & BSEN-1537-2013 & IS 10270-1982 & IS 14268 class11/ASTM-416	Code of Diaphragm.
15	BS 8110: 1997 class-2 for gravity load. BS 8110: 1997 class-3 for gravity load and lateral load.	Code of PT slab

(ii) FOR PLUMBING WORKS

SN	I.S. Code	Description / Title
1.	IS: 1729	Specification for sand cast iron spigot and socket soil, waste and ventilating pipes, fittings and accessories.
2.	IS:1536	Specification for centrifugally cast (spun) iron pressure pipes for water, gas and sewage.
3.	I.S: 1538 (Part-I to XXIII)	Specification for cast iron fittings for pressure for water, gas and sewage.
4.	I.S:3714	Code of practices for laying C.I pipes
5.	I.S:782	Specification for caulking lead
6.	I.S:1239 (Part-II)	Specification for mild steel tubes, tubular and other wrought steel filling.
7.	I.S:1879	Specification for malleable cast iron pipe fittings.
8.	I.S:4984	High-density polythene pipe for potable water supplies, sewage and Industrial effluents.
9.	I.S:783	Width and depth of trench for R.C.C pipes.
10.	I.S:4127	Width and depth of trench for S.W pipes.
11.	I.S: 780	Specification for sluice valve for water works purposes.
12.	I.S:651	Specification for salt glazed stoneware pipe and fittings
13.	I.S:7558	Code of practice for domestic hot water installation.
14.	I.S: 1742	Code of practice for building drainage
15.	I.S: 2064	Code of practice for selection, installation and Maintenance of Sanitary appliances
16.	I.S:2065	Code of practices for water supply in building
17.	I.S: 2183 (Part-I)	Code of practice for Plumbing in multiStorey buildings.
18.	I.S:1239	Specifications for mild steel tubes 104ubular and other wrought steel fittings. (Fifth Revision)
19.	I.S:778	Specifications for copper alloy gate, globe and check valves for water works purposes.
20.	I.S:5312 (Part-I)	Specifications for swing check type reflux (Non-return) valve
21.	I.S : 3114	Code of Practice for laying of C.I. pipes (2nd Rev.)
22.	I.S. : 456	Code of practice for plain and reinforced concrete (3rd Rev.) (Amendment 2)
23.	I.S. : 12820	Code of practice for dimensional requirements of rubber gaskets for mechanical joints and push on joints for use with cast iron pipes and fittings for carrying water, gas & sewage.
24.	I.S. : 1172	Code of basic requirements for water supply, drainage & sanitation (4th Rev.)

SN	I.S. Code	Description / Title
25.	I.S. : 1200 (Part-16)	Code of practice for methods or measurements of building and Civil Engineering works: Part 16 Laying of water and sewer lines including appurtenant items (3rd Rev.)
26.	I.S. : 1200(Part-19)	Code of practice for methods or measurements of building and Civil Engineering works: Part 19 Water supply, plumbing and drains (3rd Rev.)
27.	I.S : 3989	Centrifugally cast (spun) iron spigot and socket soil, waste and ventilating pipes, fittings and accessories (2nd rev.) (Amendment2)
28.	I.S : 13095	Butterfly valves for general purposes
29.	I.S : 458	Precast Concrete pipes (with or without reinforcement) (3rd rev.) (Amendment2)
30.	I.S : 1726	C.I. Manhole covers & frames (3rd rev.)
31.	I.S : 1916	Steel cylinder pipe with concrete lining and coating (1st rev.).
32.	I.S : 12592(part1)	Pre-cast concrete manhole covers and frames: Part 1 Covers (Amendment 3)
33.	I.S : 12592(part2)	Pre-cast concrete manhole covers and frames: Part 2 Frames
34.	I.S : 6392	Steel pipe flanges (Amendment 1)
35.	I.S : 6418	C.I and malleable C.I. flanges for general engineering purposes.
36.	I.S : 4985	Un plasticized PVC pipes for potable water supplies (2nd Rev) (Amendment 2)
37.	I.S : 7181	Horizontally cast double flanged pipes for water, gas and sewage.(1st Rev.) (Amendment 1)
38.	I.S : 210	Grey iron casting. (4th Rev.)
39.	BS EN 1057	Copper pipes
40.	BS EN 1254	Copper Fittings
41.	I.S : 4985	UPVC pipes
42.	I.S : 15778	CPVC pipes
43.	I.S : 8329	Ductile iron

List Codes and References mentioned below is not exhaustive and for reference purpose only. Contractor shall follow all the standards and codes mentioned in this schedule or adhere to relevant codes as per site requirement.

S. No.	CODE	NAME
1.	IS: 1893 – 2016	Criteria for Earthquake resistant deign of Structures
2.	IS: 13920-2016	Ductile detailing of Reinforced Concrete Structures subjected to Seismic forces.
3.	IS: 4326 – 1993	Earthquake resistant Design and construction of Buildings
4.	IS: 875 – 2015 (Part I to III & P a r t V)	Code and Practice for Design Loads (Other than earthquake) for Building and Structures like Dead, Imposed, Wind and other Loads
5.	IS: 456 – 2000	Plain and Reinforced Concrete (Code of practice)
6.	SP: 16	Design aids for Reinforced concrete Structure.
7.	SP: 34	Handbook on Concrete Reinforcement and Detailing
8.	IS: 3370 Part I, Part II and Part IV	Code of practice for Concrete structures for the storage of liquids.
9.	IS: 1786	Specification for High Strength Deformed Steel bars and wires for concrete reinforcement
10.	IS: 1904	Code and Practice for design and Construction of Foundations in Soils
11.	IS: 2950	Code and Practice for Design and Construction of Raft Foundations
12.	IS: 800-2007	Code of Practice for general Construction in Steel.
13.	IS: 1343-1980	Code of Practice for Pre stressed Concrete.
14.	IRC 5 : 1998	Standard specifications and code of practice for road bridges.
15.	IRC 6 : 2014	Standard specifications and code of practice for road bridges.
16.	IRC 24-2010	Standard specifications and code of practice for road bridges.

(iii) FOR FIRE FIGHTING WORKS

SN	I.S. Code	Description / Title
1.	I.S:1239	Specifications for mild steel tubes 106 tubular and other wroughtsteel fittings. (Fifth Revision)
2.	I.S:778	Specifications for copper alloy gate, globe and check valves forwater works purposes.
3.	I.S:5312 (Part-I)	Specifications for swing check type reflux (Non-return) valve
4.	I.S:908	Specifications for fire hydrant (2nd Revision)
5.	I.S:5290	Specifications for landing valve
6.	I.S:901	Specifications for coupling double male and female instantaneous pattern for firefighting (3rd revision)
7.	I.S:884	Specifications for first aid hose reel for firefighting (1st Revision)
8.	I.S:903	Specifications for fire hose delivery couplings branch pipe, nozzles and nozzles spanner (3rd revisions)
9.	I.S:933	Specifications for portable chemical from fire extinguisher
10.	I.S:15683	Specifications for fire extinguisher carbon dioxide type.

SN	I.S. Code	Description / Title
11.	I.S:2878	Specifications for fire extinguisher carbon dioxide type.
12.	I.S:9972	Specification for sprinkler
13.	I.S:3844	Code of practice for installation and Maintenance of internal fire hydrants and hose reels on promises.
14	I.S : 3114	Code of Practice for laying of C.I. pipes (2nd Rev.)
15.	I.S. : 456	Code of practice for plain and reinforced concrete (3rd Rev.) (Amendment 2)

(iv) (A) FOR HVAC WORKS

SN	I. S. Code	Description / Title
1.	I.S.3615	Glossary of Terms Used in Refrigeration & Air Conditioning.
2.	I.S.325	Three phase Induction Motors
3.	I.S. 1822	Motor Starters of voltage Not Exceeding 1000 volts
4.	I.S.3624	Bourden Tube Pressure and Vacuum Gauges
5.	I.S.2372	Timber for cooling towers
6.	I.S.7403	code of practice for selection of standard worm and helical gear boxes
7.	I.S.1620	Horizontal centrifugal pumps for clear, cold, fresh water
8.	I.S.996	Single phase small A.C. and Universal motors
9.	I.S.1239	Mild steel tubes, tubulars and other wrought steel fittings
10.	I.S.3589	Electrically welded steel pipes for water, gas and sewage
11.	I.S.6392	Steel pipe flanges
12.	I.S.778	Gun metal gate. globe and check valves for general purpose
13.	I.S.2592	Recommendation for methods of measurement of fluid flow by means plates and nozzles
14.	I.S. 277	Galvanised steel sheets
15.	I.S.737	Wrought aluminium and aluminium alloy sheet and strip for general purposes.
16.	I.S.655	Metal air ducts
17.	I.S. 732	Code of practice for electrical wiring and fittings for building.
18.	I.S.2516	A.C. circuit breakers
19.	I.S.900	Code of practice for installation and Maintenance of induction motors
20.	I.S. 1248	Direct acting electrical indicating installments
21.	I.S. 2516	A.C. circuit breakers for voltages not exceeding 1000 volts
22.	I.S.4047	Heavy duty air break switches and composite units of air break switches for voltage not exceeding 1000 volts.
23.	I.S.2208	HRC cartridge fuse links up to 650 volts
24.	I.S. 1554	PVC insulated (heavy duty) electric cables for working voltage up to and including (PART I) 1100 volts
25.	I.S.8183	Specification for bonded glass wool/ mineral wool
26.	I.S.4671	Specification for expanded polystyrene for thermal insulation purposes
27.	I.S.11561	Code of practice for testing of cooling towers
28.	I.S. 7896	Data for outside design conditions for air conditioning for summer months.
29.	I.S.8148	Packages air conditioners
30.	I.S.2370	Sectional cold rooms (walk-in type)

SN	I. S. Code	Description / Title
31.	I.S.5111	Testing of refrigerant compressors
32.	I.S.10594	Thermostatic Expansion Valve
33.	ASHRAE 62.1.2010	Ventilation for Acceptable Indoor Air Quality
34.	ECBC	Energy conservation Building Code
35.	NBC	National Bulging Code
36.	AHRI 550/590	Air-conditioning Heating and Refrigeration Institute
37.	ASME	American Society of Mechanical Engineers
38.	AMCA	Air Movement and Control Association
39.	UL	Underwriters Laboratories

(B) FOR I.S. SAFETY CODES

1.	I.S.660	Safety Code for Mechanical Refrigeration
2.	I.S.659	Safety Code for air conditioning
3.	I.S.3016	Code of Practice for precautions in welding and cutting operations
4.	I.S.818	Code of practice for safety and health requirements in electrical and gas welding and cutting operations
5.	I.S.5216	Code for safety procedure and practice in electrical works
6.	I.S.3696	Safety code for scaffolds and ladders

List of Main Bureau of Indian Standards Codes and Publications with latest revisions and amendments thereto be followed for analysis & Design.

SN	Code	Description
LOADS		
1.	IS-875 (Part-1)-1987	Code of practice for design loads (other than earthquake) for buildings and structures – Unit weights of buildings materials and stored materials.
2.	IS-875 (Part 2)- 1987	Code of practice for design loads (other than earthquake) for buildings and structures – imposed loads.
3	IS- 875 (part 3) -1987	Code of practice for design loads (other than earthquake)for buildings and structures – wind loads)
4.	IS-875 (Part5)–1987	Code of practice for design loads (other than earthquake) for buildings and structures – special loads and load combinations.
5.	IS:1893-2002	Criteria for design earthquake resistant design of structures (general provision and buildings).
CONCRETE		
1.	IS:456 – 2000	Code of practice for plain and reinforced concrete.
2.	IS:1786 – 2008	Specification of high strength deformed bars and wires for concrete reinforcement.
3.	IS: 432 (Part-2) –1982	Specification of high strength deformed bars and wires for concrete reinforcement.
4.	IS:13920 – 1993	Ductile detailing of reinforced concrete structures subjected to seismic forces – code of practice.
5.	IS : 269 – 1989	Specification for ordinary, rapid hardening and low heat Portland cement.
6.	IS: 1489 – 1991	Specification for Portland pozzolana cement
7.	IS: 383 – 1970	Specification for coarse and find aggregates from natural sources for concrete.

SN	Code	Description
8.	IS : 516 – 1959	Method of test for strength of concrete.
9.	IS: 2645 – 1975	Specification for integral cement water proofing compounds.
10.	IS:3370-2009 Part 1& 2	Liquid retaining structures.
STEEL		
1.	IS:2062 – 1999	Steel for general structural purposes, specification.
2.	IS: 1161 – 1998	Specification of steel tubes for structural purpose.
3.	IS: 800 – 2007	Code of practice for general construction in steel.
4.	IS 4923	Hollow steel section for structural purpose.
5.	IS 1367	Technical specification for Thread bolts
6.	IS 816 – 1969	Code of practice for use of metal ARC welding for general construction in mild steel

(v) List of Reference Standards for Construction Activities

SN	Standard Number	Title
1	SP : 6 (1)	Structural Steel Sections
2	IS : 27	Pig Lead
3	IS : 325	Three Phase Induction Motors
4	IS : 554	Dimensions for pipe threads where pressure tight joints are required on the threads.
5	IS : 694	PVC insulated cables for working voltages up to & including 1100V.
6	IS : 779	Specification for water meters (domestic type).
7	IS : 782	Specification for caulking load
8	IS : 800	Code of practice for general construction in steel
9	IS : 1068	Electroplated coatings of nickel plus chromium and copper plus nickel plus chromium.
10	IS : 1172	Code of Basic requirements for water supply drainage and sanitation.
11	IS : 1367 (Part 1)	Technical supply conditions for threaded steel fasteners:
12	IS : 1367 (Part 2)	Technical supply conditions for threaded steel fasteners: Part 2product grades and tolerances.
13	IS : 1554 (Part 1)	PVC insulated (heavy duty) electric cables: Part 1 for working voltages up to and including 1100 V.
14	IS : 1554 (Part 2)	PVC insulated (heavy duty) electric cables: Part 2 for working voltages from 33 KV up to and including 11 KV.
15	IS : 1726	Specification for cast iron manhole covers and frames.
16	IS : 1742	Code of practice for building drainage.
17	IS : 2064	Selection, installation and Maintenance of sanitary appliance code of practice.
18	IS : 2065	Code of practice for water supply in buildings.
19	IS : 2104	Specification for water meter for boxes (domestic type)
20	IS : 2373	Specification for eater meter (bulk type)
21	IS:2379	Colour code for identification for pipe lines
22	IS:2629	Recommended practice for hot dip galvanizing on iron and steel

SN	Standard Number	Title
23	IS : 3114	Code of practice for laying of cast iron pipes
24	IS : 4111 (Part 1)	Code of practice for ancillary structures in sewerage system: Part 1 manholes.
25	IS : 4127	Code of practice for laying glazed stoneware pipes.
26	IS : 4853	Recommended practice for radiographic inspection of fusion welded butt joints in steel pipes.
27	IS : 5329	Code of practice for sanitary pipe work above *ground for* buildings
28	IS : 5455	Cast iron *steps* for manholes.
29	IS : 6159	Recommended practice for design and fabrication of material, prior to galvanizing.
30	IS : 7558	Code of practice for domestic hot water installations.
31	IS : 8321	Glossary of terms applicable to plumbing work.
32	IS : 8419 (Part 1)	Requirements for water filtration equipment: Part 1 Filtration medium sand and gravel.
33	IS : 8419 (Part 2)	Requirements for water filtration equipment: Part 2 under drainage system.
34	IS : 9668	Code of practice for provision and Maintenance of water supplies and firefighting.
35	IS : 9842	Preformed fibrous pipe insulation.
36	IS : 9912	Coal tar-based coating materials and suitable primers for protecting iron and steel pipe lines.
37	IS : 10221	Code of practice for coating and wrapping of underground mild steel pipelines.
38	IS : 10446	Glossary of terms relating to water supply and sanitation.
39	IS: 11149	Rubber Gaskets
40	IS : 11790	Code of practice for preparation of butt-welding ends for pipes, valves, flanges and fittings.
41	IS : 12183 (Part 1)	Code of practice for plumbing in multiStorey buildings: Part I water supply.
42	IS : 12251	Code of practice for drainage of building basements.
43	IS : 5572	Code of practice for sanitary pipe work.
44	BS : 6700	Specification for design, installation, testing and Maintenance of services supplying water for domestic use within buildings and their cartilages.
45	BS : 8301	Code of practice for building drainage
46	BSEN : 274	Sanitary tapware, waste fitting for basins, bidets and baths. General technical specification.
Pipes and Fittings		

47	IS : 458	Specification for precast concrete pipes (with and without reinforcement)
48	IS : 651	Salat *glazed* stone ware pipes and fittings.
49	IS : 1239 (Part 1)	Mild steel, tubes, tubulars and other wrought steel fittings: Part I Mild Steel tubes.
SN	**Standard Number**	**Title**
50	IS : 1239 (Part 2)	Mild Steel tubes, tubulars and other wrought steel fittings: Part 2 Mild Steel tubulars and other wrought steel pipe fittings.
51	IS : 1536	Centrifugally cast (spun) iron pressure pipes for water, gas and sewage.
52	IS : 1537	Vertically cast iron pressure pipes for water, gas and sewage.
53	IS : 1538	Cast Iron fittings for pressure pipes for water, gas and sewage.
54	IS : 1729	Sand Cast iron spigot and socket soil, waste and ventilating pipes, fittings and accessories.
55	IS : 1879	Malleable cast iron pipe fittings.
56	IS : 1978	Line pipe
57	IS : 1979	High test line pipe.
58	IS : 2501	Copper tubes for general engineering purposes
59	IS : 2643 (Part 1)	Dimensions for pipe threads for fastening purposes: Part 1 Basic profile and dimensions.
60	IS : 2643 (Part 2)	Dimensions for pipe threads for fastening purposes: Part 2 Tolerances.
61	IS : 2643 (Part 3)	Dimensions for pipe threads for fastening purposes: Part 3 Limits of sizes.
62	IS : 3468	Pipe nuts.
63	IS : 3589	Seamless or electrically welded steel pipes for water, gas and sewage (168.3 mm to 2032 mm outside diameter).
64	IS : 3989	Centrifugally cast (sun) iron spigot and socket soil, waste and ventilating pipes, fittings and accessories.
65	IS : 4346	Specifications for washers for use with fittings for water services.
66	IS : 4711	Methods for sampling steel pipes, tubes and fittings.
67	IS : 6392	Steel pipe flanges
68	IS : 6418	Cast iron and malleable cast iron flanges for general engineering purposes.
69	IS : 7181	Specification for horizontally cast iron double flanged pipe for water, gas and sewage.
Valves		
70	IS : 778	Specification for copper alloy float gage globe and check valves for water works purposes.
71	IS: 7181	Specification for sluice valves for water works purposes (50 mm to 300 mm size)

72	IS: 1703	Specification copper alloy float valves (horizontal plunger type) for water supply fittings.
73	IS : 2906	Specification for sluice valves for water works purposes (350 mm to 1200 mm size)
74	IS : 3950	Specification for surface boxes for sluice valves.
75	IS : 5312 (Part 1)	Specification for swing check type reflux (non return) valves: part Multi door pattern.
76	IS : 5312 (Part 2)	Specification for swing check type reflux (non return) valves: part Multi door pattern.
77	IS : 12992 (Part 1)	Safety relief valves, spring loaded : Design
Sanitary Fittings		
SN	**Standard Number**	**Title**
78	IS : 13095	Butterfly valves for general purposes
79	IS : 771 (Part 1 to 3)	Specification for glazed fire clay sanitary appliances.
80	IS : 774	Specification for flushing cistern for water closets and mina's (other than plastic cistern)
81	IS : 775	Specification for cast iron brackets and supports for wash basins and sinks
82	IS: 781	Specification for cast copper alloy screw down bib taps and stop valves for water services.
83	IS : 1700	Specification for drinking fountains.
84	IS : 2548 (Part 2)	Specification for plastic seats and covers for water closets: Part-1 thermoset seats and covers.
85	IS : 2556 (Part 1)	Specification for vitreous sanitary appliances (Vitreous china):part 1 general requirement.
86	IS: 2556 (Part 2)	Specification for vitreous sanitary appliances (vitreous china) part 2 specific requirements of wash down water closets.
87	IS: 2556 (Part 3)	Specification for vitreous sanitary appliances (vitreous china) part 3 specific requirements of squatting pans.
88	IS: 2556 (Part 4)	Specification for vitreous sanitary appliances (vitreous china) part 4 specific requirements of wash basins.
89	IS: 2556 (Part 6 sec 2))	Specification for vitreous sanitary appliances (vitreous china) part 6 specific requirements of urinals, section 2 half stall urinals.
90	IS: 2556 (Part 6 sec 4)	Specification for vitreous sanitary appliances (vitreous china) part 6 specific requirements of urinals, section 4 partition slabs.
91	IS: 2556 (Part 6 sec 5)	Specification for vitreous sanitary appliances (vitreous china) part 6 specific requirements of urinals, section 5 waste fittings.

92	IS:2556(part 6 Sec 6)	Specification for vitreous sanitary appliances (vitreous china) part 6 specific requirements of urinals, section 6 water spreaders for half stall urinals.
93	IS:2557 (part 7)	Specification for vitreous sanitary appliances (vitreous china) part 7 specific requirements of half round channels.
94	IS 2556 (Part 8)	Specification for vitreous sanitary appliances (vitreous china): Part 8 Specific requirements of siphoning wash down water closets.
95	IS : 2556 (Part 11)	Specification for vitreous sanitary appliances (vitreous china): Part 11 Specific requirements for shower rose.
96	IS : 2556 (Part 12)	Specification for vitreous sanitary appliances (vitreous china): Part 12 Specific requirements of floor traps.
97	IS : 2556 (Part 15)	Specification for vitreous sanitary appliances (vitreous china): Part 15 Specific requirements of universal water closets.
98	IS:2692	Specification for ferrule for water services
99	*IS :* 2717	Glossary of terms relating to vitreous enamelware and ceramic metal Systems
100	IS : 2963	Specifications for waste plug and its accessories for sinks and wash basins.
101	IS : 3311	Specifications for waste plug and its accessories for sinks and wash basins.
SN	**Standard Number**	**Title**
102	IS : 5961	Specification for cast iron gratings for drainage purposes.
103	IS : 6249	Specification for gel-coated *glass* fibre reinforced polyester resin bath tubs.
104	IS : 6411	Specification for gel-coated glass fibre reinforced polyester resin bath tubes.
105	IS : 8931	Specification for copper alloy fancy single taps, combination tap assembly and stop valves for water services.
106	IS : 9758	Specification for flush valves and fitting for water closets and urinals.
Pumps & Vessels		
107	IS: 1520	Specification for horizontal centrifugal pumps for clear cold fresh water.
108	IS : 2002	Steel plates for pressure vessels for intermediate and high temperature service including boilers
109	IS : 2825	Code for unfired pressure vessels.
110	IS : 4648 (Part 1)	Code of practice for lining of vessels and equipment for chemical processes v Part 1 : Rubber lining
111	IS : 5600	Specification for sewage and drainage pumps
112	IS : 8034	Specification for submersible pump sets for clear, cold, fresh water

113	IS : 8418	Specification for horizontal centrifugal self-priming pumps.
114	IS : 374	Ceiling fans and regulators (3rd revision)
115	IS : 694	PVC insulated Electric cable for working voltage upto and including 1100 volts.
116	IS : 732	Code of practice for electrical wiring and installation
117	IS : 1255	Code of Practice for installation and Maintenance of Power Cables upto and including 33 KV rating (Second Revision).
118	IS : 1258	Bayonet tamp holders (Third revision)
119	IS : 1293	Three pin plugs and sockets outlets rated voltage upto and including 250 volts and rated current upto and including 160 amps.
120	IS : 1554 (Part - I)	PVC insulated (Heavy Duty) electric cables for working voltages upto and including 1100 volts.
121	IS : 1646	Electrical installation fire safety of buildings (general) Code of practice.
122	IS : 1885	Glossary of items for electrical cables and conductors
123	IS : 1913	General and safety requirements for fluorescent lamps luminaries Tubular
124	IS : 2071	Methods of high voltage testing
125	IS : 2309	Protection of building and allied structures against lightning
126	IS : 2551-	Danger notice plate.
127	IS : 3043	Code of practice for earthing.
128	IS : 3427	AC Metal enclosed switch gear and control gear for rated voltages above 1 KV and up to and including 52 KV.
129	IS : 3480	Flexible steel conduits for electrical wiring.
130	IS : 3837	Accessories for rigid steel conduit for electrical wiring.
131	IS : 4146	Application guide for voltage transformers
132	IS: 4615	Switch socket outlets.
SN	**Standard Number**	**Title**
133	IS : 5133 (Part -I)	Boxes for the enclosure of electrical accessories.
134	IS : 5216 (Part-1)	Guide for safety procedures and practices in electrical work.
135	IS : 5424	Rubber mats for electrical purposes.
136	IS : 5578 & 11353	Marking and arrangement of bus bar
137	IS : 7098 - (Part - II)	Cross linked polyethylene insulated PVC sheathed cables. Voltages from 3.3 KV up to and including 33 KV
138	IS : 8130	Conductors for insulated electric cables and flexible cords
139	IS : 8623 - (Part -D	Factory built assemblies of switchgear and control gear for voltages up to and including 1000 V AC and 1200 V D C.
140	IS : 8828	Miniature Circuit Breakers
141	IS : 9537	Rigid Steel Conduits for electrical wiring (Second Revisions)
142	15:10810	Methods of test for cables.
143	IS : 12640	Earth Leakage Circuit Breakers

144	IS : 13947	Degree of protection provided by enclosures for LV switchgear and control gear.
145	IS : 13947	General requirement for switchgear and control gear for voltage not exceeding 1000 Volts.
146	IS : 15652	Insulating mats for electrical purposes.
147	IS : 1651 & 1652	Stationary cells and batteries lead acid type.
148	IS : 2551-1982	Danger notice plate.
149	IS : 3043 – 1987	Code of practice for earthing.
150	IS : 4146 – 1983	Application guide for voltage transformers
151	1S : 5216 1982 (Part- I)	Guide for safety procedures and practices in electrical work.
152	IS 5:1994	Colours for ready mixed paint and enamels
153	IS 2705 (Part-1) : 1992(second revision)	Current transformers - Specification General requirements
154	IS 2705 (Part-2) : 1992 (Second Revision)	Current transformers – Specification Measuring Current Transformers
155	IS 2705 (Part-3) : (Second revision)	Current transformers – Specification Protective Current Transformers
156	IS:2705 (part 4) Second revision1992	Current transformers – Specification Protective Current Transformers for Special Purpose Applications
157	IS 3043 :1987	Code of practice for earthing
158	IE Rules, with amendments upto 1995 :1956	Indian Electricity Rules
159	IS : 2071 - 1974 – 76	Methods of high voltage testing
160	IS : 3427 :1997 IEC:60298,60694	AC Metal enclosed switchgear and control gear for rated voltage above lkv and upto and including 52kv.
161	IS : 12729 :1998	General requirement for switchgear and control gear for voltage exceeding 1000V

SN	Standard Number	Title
162	IS : 13118 :1991	Specification for high voltage alternating current circuit breaker
163	IS: 5578 & 11353-1985	Marking and arrangement of bus bars
164	IS: 3156	Potential transformer
165	IS: 9385	HV HRC Control Fuse
166	IS: 1248	For measuring instruments
167	IS : 2026 - 1977 to 81 (Part Ito IV)	Power Transformers
168	IS : 2551-1982	Danger notice plate.
169	IS : 3043 — 1987	Code of practice for earthing.
170	IS : 4146 — 1983	Application guide for voltage transformers
171	IS : 5216 — 1982 (Part-I)	Guide for safety procedures and practices in electrical work.
172	IS 5:1994	Colours for ready mixed paint and enamels
173	IS 2705 (Part-1) : 1992 (Second Revision)	Current transformers - Specification General requirements
174	IS 2705 (Part-2) 1992 (Second Revision)	Current transformers – Specification Measuring Current Transformers
175	IS 2705 (Part-3) : (Second Revision) 1992	Current transformers – Specification Protective Current Transformers
176	IS 2705 (Part-4) : (Second Revision)1992	Current transformers – Specification Protective Current Transformers for Special Purpose Applications
177	IS 3043 :1987	Code of practice for earthing
178	IE Rules, with amendments upto 1995 :1956	Indian Electricity Rules
179	1EC 44 -1 :1996	Instrument Transformer -P1 : Current Transformer
181	IS:10561 :1977	Power Transformers: General
182	IS 4146: 1983	Application guide for voltage transformers
183	1S:8478: 1978	Application guide for on-load tap changers
184	IS:10028 Part-1: 1985	Code of practice for selection, installation and Maintenance of power transformers: Selection
185	IS:10028 Part-2 1981	Code of practice for selection, installation and Maintenance of power transformers: Installation
186	IS:3639 : 1966	Fittings and accessories for power transformers
187	IS:4201: 1983	Application guide for current transformers
188	IS:4257 Partl : 1981	Dimensions for clamping arrangement for bushings 12kV to 36Kv
189	IS:8603 Parts lto3 : 1977	Dimensions of porcelain transformer bushings for use in heavily polluted atmosphere

SN	Standard Number	Title
190	IS: 554-1985 (Reaffirmed 1996)	Dimensions for pipe threads where pressure tight joints are required on the threads
191	IS: 665 – 1963 (Reaffirmed 1991)	Metal air ducts
192	IS: 659 – 1964	Air conditioning (Safety code)
193	IS: 660 – 1963	Mechanical Refrigeration (Safety code)
194	IS: 694 – 1990 (Reaffirmed 1994)	PVC insulated (HD) electric cables for working voltage upto and including 1100 volts
195	IS: 732-1989	Code of Practice for electrical wiring
196	IS: 780-1984	Sluice valves for water works purposes
197	IS: 822-1970 (Reaffirmed 1991)	Code of procedure for inspection of welds
198	IS: 1239 (Part-I) 1990	Mils steel tube
199	IS: 1239 (Part-II) 1992	Mild steel tubulars and other wrought steel pipe fittings
200	IS: 1255 – 1983	Code of practice for installation and Maintenance of Power Cables upto and including 33 KV rating (Second Revision)
201	IS: 1554 – 1988	PVC insulated (Heavy Duty) electric cables (part-I) for working voltages upto and including 1100 volts
202	IS: 1897 – 1983	Copper bus bar
203	IS: 2379 – 1990	Colour code for the identification of pipelines
204	IS: 2551 – 1982	Danger notice plate
205	IS: 3043 – 1987	Code of practice for earthing
206	IS: 3103 – 1975	Code of practice for Industrial Ventilation
207	IS: 3837 – 1976	Accessories for rigid steel conduit for electrical wiring
208	IS: 4736 – 1986	Hot-dip zinc coating on steel tubes
209	IS: 4894 – 1987	Centrifugal Fan
210	IS: 5133 – 1969	Boxes for the enclosure of electrical accessories
211	IS: 5216 – 1982 (Part-I)	Guide for safety procedure and practices in electrical work
212	IS: 5312 (Part-II) 1984 (Reaffirmed 1990)	Swing – check type reflux Non-return valves for water works
213	IS: 5421 – 1969	Rubber mats for electrical purposes
214	IS: 5578& 11353– 1985	Marking and arrangement of bus bars
215	IS: 6392 – 1971 Reaffirmed 1988)	Steel pipe flanges
216	IS: 8623 – 1977 (Part-I)	Factory bill assemblies of switchgear and control gear for voltages upto an including 1000 VAC and 1200 VDC
217	IS: 8623 – 1980 (Part-II)	Bus Bar trunking system
218	IS: 8828 – 1996 IEC 898 – 1995	Miniature Circuit Breakers

SN	Standard Number	Title
219	IS: 9537 – 1981	Rigid steel conduits for electrical wiring (Second Revisions)
220	IS: 10810 – 1988	Methods of test for cables
221	IS:13947(Part-II)– 1993	Air circuit breakers
222	IS:13947IEC 947 – 2–1989	Molded case circuit breakers
223	IS: 13947 – 1993	Degree of protection provided by enclosures for LV switchgear and control gear
224	IS: 13947 – 1993	General requirement for switchgear and control gear for voltage not exceeding 1000 volts
225	**ASHREA**	American society of Heating Refrigeration & Air-conditioning books HVAC Systems and Equipment 2008
		HVAC Application 2007
		Refrigeration 2006
		Fundamental 2005
		Indoor air quality 90.1.2007
226	IEC	Relevant Sections
227	ASME, Section VIII	Boiler and Pressure Vessel Code
National Fire Protection Association (NFPA) – USA		
228	No. 70 – 90 or 70 - 93	National Electric Code
229	No. 72 – 1993	National Fire Alarm Code
230	No. 101 – 91	Life Safety Code
231	No. 90A	Practice for Smoke Control System
232	No. 76	Telecommunication Facilities
233	No. 318	Clear Room Applications
Underwriters Laboratories Inc. (UL) – USA		
234	UL 50	Cabinets & Boxes
235	UL 268	Smoke detectors for Fire Protective Signaling Systems
236	UL 864	Control units for Fire Protective Signaling Systems
237	UL 268A	Smoke detectors for Duct Application
238	UL 521	Thermal detectors for Fire Protective Signaling Systems
239	UL 228	Door Closers – holders for Fire Protective Signaling Systems
240	UL 464	Audible signaling appliances
241	UL 38	Manually activated Signaling Boxes
242	UL 346	Water floor indicators for Fire Protective Signaling Systems
243	UL 1481	Power supplied for Fire Protective Signaling Systems
244	UL 1076	Proprietary burglar alarm units & systems
245	UL 1791	Visual notifications appliances

Road Works	
IRC 5	Standard Specifications and Code of Practice for Road Bridges,
	Section I – General Features of Design
IRC 6	Standard Specifications and Code of Practice for Road Bridges,
	Section II – Loads and Stresses
IRC 11	Recommended Practices for the Design of Layout of Cycle Tracks
IRC 19	Standard Specifications and Code of Practice for Water Bound Macadam
IRC 112	Standard Specifications and Code of Practice for Road Bridges
	Section III–Cement Concrete (Plain and Reinforced)
IRC 22	Standard Specifications and Code of Practice for Road Bridges,
	Section VI – Composite Construction
IRC 37	Guidelines for the Design of Flexible Pavement
IRC 48	Tentative Specifications for Bituminous Surface Dressing Using Pre-coated Aggregates
IRC:SP 11	Handbook of Quality Control for Construction of Roads and Runways
IRC:SP 11	Handbook of Quality Control for Construction of Roads and Runways
IRC:44-2017	Guidelines for Cement Concrete Mix Design for Pavements (Third Revision)

(vi) CONDUIT AND WIRE

Conduit	Conduit shall be in accordance with The National Electrical Code (NEC), local and state requirements. Cable must be separated from any open conductors of power, or Class 1 circuits, and shall not be placed in any conduit, junction box or raceway containing these conductors, per NEC Article 760-29.
Wire	All system wiring shall be new. Wiring shall be in accordance with local, state and national codes (e.g., NEC Article 760) and as recommended by the manufacturer of the fire alarm system. a. NFPA 72 Smoke Detector Sensitivity Test: The system shall provide an automatic smoke detector test function that meet the requirements of NFPA72. b. Smoke Control Modes: The system shall provide means to perform FSCS mode Smoke Control to meet NFPA-92A and 90B and HVAC mode to meet NFPA90A.

(vii) Lighting Protection

IEC 60598-1	Luminaires – Part 1: General requirements and tests
IEC 60598-2	Luminaires – Part 2: Particular requirements
IEC 60400	Lamp holders for tubular fluorescent lamps and starter- holder
NFPA	National Fire Protection Association

ANNEXURE -IV

(SOLAR)

NIL

ANNEXURE -V

(LANDSCAPING AND HORTICULTURE WORKS)

NIL

ANNEXURE -VI

(REFER Schedule-B FOR FINISHING SCHEDLE)

ANNEXURE -VII

(SIGNAGE)

NIL

ANNEXURE -VIII

PARKING

NIL

SCHEDULE-E: Maintenance and Standards

1 General

1.1 Maintenance for Project shall be 48 months from the date of successful handing over and issue of virtual completion certificate with requisite staff deployed at site in terms of the plan finalised with the Authority.

1.2 The contractor shall be responsible for minimum 5-year warranty on all the Equipment installed and 10 years on water proofing for the smooth operation of the project.

2 Maintenance Requirements

2.1 The Contractor shall, at all times maintain the Project in accordance with the provisions of this Agreement, Applicable Laws and Applicable Permits.

2.2 The Contractor shall repair or rectify any Defect or deficiency set forth in Paragraph 2 of this Schedule-E within the time limit specified therein and any failure in this behalf shall constitute non-fulfillment of the Maintenance obligations by the Contractor. Upon occurrence of any breach hereunder, the Authority shall be entitled to effect reduction in monthly lump sum payment as set forth in Clause 14.6 of this Agreement, without prejudice to the rights of the Authority under this Agreement, including Termination thereof.

2.3 All Materials, works and construction operations shall conform to the MORTH/ CPWD/ Meghalaya PWD Specifications for Building & Infrastructure Works, and the relevant IRC publications. Where the specifications for a work are not given, Good Industry Practice shall be adopted.

3 Repair/rectification of Defects and deficiencies

The obligations of the Contractor in respect of Maintenance Requirements shall include repair and rectification of the Defects and deficiencies specified in Annexure-I of this Schedule-E within the time limit set forth therein.

4 Other Defects and deficiencies

In respect of any Defect or deficiency not specified in Annex - I of this Schedule-E, the Authority's Engineer may, in conformity with Good Industry Practice, specify the permissible limit of deviation or deterioration with reference to the Specifications and Standards, and any deviation or deterioration beyond the permissible limit shall be repaired or rectified by the Contractor within the time limit specified by the Authority's Engineer.

5 Extension of time limit

Notwithstanding anything to the contrary specified in this Schedule-E, if the nature and extent of any Defect or deficiency justifies more time for its repair or rectification than the time

Specified herein, the Contractor shall be entitled to additional time in conformity with Good Industry Practice. Such additional time shall be determined by the Authority's Engineer and conveyed to the Contractor and the Authority with reasons thereof.

6 Emergency repairs/restoration

Notwithstanding anything to the contrary contained in this Schedule-E, if any Defect, deficiency or deterioration in the Project poses a hazard to safety or risk of damage to property, the Contractor shall promptly take all reasonable measures for eliminating or minimizing such danger.

7 Daily inspection by the Contractor

The Contractor shall, through its engineer, undertake a daily visual inspection of the Military Infrastructure and maintain a record thereof in a register to be kept in such form and manner as theAuthority's Engineer may specify. Such record shall be kept in safe custody of the Contractor and shall be open to inspection by the Authority and the Authority's Engineer at any time during office hours.

8 Pre-monsoon inspection / Post-monsoon inspection

The Contractor shall carry out a detailed pre-monsoon inspection of all the Military Infrastructure before [1stJune] every year. Report of this inspection together with details of proposed maintenance works as required on the basis of this inspection shall be sent to the Authority's Engineer before the [10th June] every year. The Contractor shall complete the required repairs before theonset of the monsoon and send to the Authority's Engineer a compliance report. Post monsoon inspection shall be done by the [30th September] and the inspection report together with details of any damages observed and proposed action to remedy the same shall be sent to the Authority's Engineer.

9 Repairs on account of natural calamities

All damages occurring to the Project on account of a Force Majeure Event or default or neglect of the Authority shall be undertaken by the Authority at its own cost. The Authority may instruct the Contractor to undertake the repairs at the rates agreed between the Parties.

REPAIR/RECTIFICATION OF DEFECTS AND DEFICIENCIES

The Contractor shall repair and rectify the Defects and deficiencies specified in this Annex-I of Schedule-E within the time limit set forth in the table below.

SN	Nature of Defect or Deficiency	Time limit for Repair/ Rectification
1	Gates	24hours
2	Security Block utilities	24 hours
3	Sign Boards	48 hours
4	RCC /masonry wall	7 days
5	Soil Sink	7 days
6	Plaster & Paints	7 days
7	Glazing & ACP	7 days
8	Door, Window & Gates	48 hours
9	Flooring	7 days
10	Any cracks in internal road surface	48 hours
11	All Utilities Works	48 hours
12	Cleaning of toilets	Every 4 hours
13	Defects in electrical, water and sanitary installations in the Terminal Block	24 hours
14	Obstruction by plants in a minimum head- room of 5 m above carriageway or obstruction in visibility of road signs	24 hours
15	Removal of fallen trees	4 hours
16	Deterioration in health of trees and Bushes	Timely watering and treatment
17	Trees and bushes requiring replacement	15 days
18	Removal of vegetation affecting sight line and road structures	15 days
19	Maintenance of Major Equipment	24 hours
20	Major faults / Breakdown	24 hours

Note:

- Where necessary, the Authority may modify the time limit for repair/rectification, or add to the nature of Defect or deficiency before issuing the bidding document, with the approval of the Authority Engineer.
- The Contractor shall submit a warranty for all equipment, material and accessories supplied by him against manufacturing defects, malfunctioning or under capacity functioning.
- The form of warranty shall be as approved by Authority Engineer.
- The warranty shall expressly include replacement of all defective or under capacity equipment/material. Authority Engineer may allow repair of certain equipment if the same is found to meet the requirement for efficient functioning of the system.
- The warranty includes replacement of any equipment found to have capacity lesser that the rated capacity as accepted in the contract. The replacement equipment shall be approved bythe Authority Engineer.

SCHEDULE-F: APPLICABLE PERMITS

1 Applicable Permits

1.1 The Contractor shall obtain, as required under the Applicable Laws, the following Applicable Permits:

Building Construction Permission	Local Authority / Municipal Corporation
Environment Clearance	Ministry Of Environment And Forests
Heritage Clearance	Permission from ASI/ relevant Authority
Water & Sewerage Connection	Concerned Authority
Shifting of Services and utilities	Directorate of State Transport Concerned Authority, Local Authority, PWD (B&R) Department
Traffic Management during operation	Traffic Police
Application for PAN, sales tax and other tax registrations etc.	Concerned departments of Government of Meghalaya and Government of India (GoI)
Electricity connection	Respective Electricity Board in Meghalaya
Clearance for employing labor- Primary Employer	Labour Commissioner
Clearance for blasting and use of explosives	Commissioner of Explosives and Police Department, Meghalaya
Employment of migrant labour	Labour Commissioner
Storage of sludge/silt	Meghalaya State Pollution Control Board
License for commercial activities	Concerned Authority
Realignment and channelization of Nallas	Concerned Authority, Meghalaya PWD (B&R)
Installation of Lifts	Concerned Authority
Fire safety equipment	Concerned Authority /Police Department
Drains and Sewers	Concerned Authority, Meghalaya PWD (B&R)
Diesel Generator	Meghalaya State Pollution Control Board
Labour Camps	District Health Officer
Working in Night Shifts	Concerned Authority, Police Department
Re-routing of vehicular traffic	Concerned Authority, Traffic Police
Completion Cum Occupancy Certificate Stage	
Completion certificate from local authority Approval from the Lift Inspector- Required for installing lift in the building Consent to operate from State Pollution Control Board NOC from Weight and measurement Department as per Legal Metrology Laws NOC from explosive department NOC from Industry department NOC from labour department	

1.2 The above list is indicative and not necessarily complete or accurate. The Contractor shall make his / her own assessment of the statutory clearances required and shall be responsible for obtaining all such clearances. The Contractor shall at all times, obtain and maintain all Applicable Permits which are required by Applicable Law to undertake the Project. Charges for all permits etc. shall be borne by the Contractor.

1.3 Applicable Permits, as required, relating to environmental protection and conservation shall have been procured by the Authority in accordance with the provisions of this Agreement.

SCHEDULE-G: Form of Bank Guarantee

ANNEXURE -I

(Schedule-G)

Performance Security

The ……
……..
……..
……

WHEREAS:

(A) _____[name and address of contractor] (hereinafter called the "**Contractor**") and [name and address of the authority], (hereinafter called the **"Authority"**) have entered into an agreement (hereinafter called the "**Agreement**") for the Development of Military Infrastructure at Shiliong in the State of Meghalaya on Engineering, Procurement and Construction (the "**EPC**") basis, subject to and in accordance with the provisions of the Agreement

(B) The Agreement requires the Contractor to furnish a Performance Security for due and faithful performance of its obligations, under and in accordance with the Agreement, during the {Construction Period/ Defects Liability Period and Maintenance Period} (as defined in the Agreement) in a sum of Rs….. cr. (Rupees ……..….. crore) (the "**Guarantee Amount**").

(C) We, …….. through our branch at.....(the "**Bank**") have agreed to furnish this bank guarantee (*hereinafter called the* **"Guarantee**") by wayof Performance Security.

NOW, THEREFORE, the Bank hereby, unconditionally and irrevocably, guarantees and affirms as follows:

1. The Bank hereby unconditionally and irrevocably guarantees the due and faithful performance of the Contractor's obligations during the {Construction Period/ Defects Liability Period and Maintenance Period} under and in accordance with the Agreement, and agrees and undertakes to pay to the Authority, upon its mere first written demand, and without any demur, reservation, recourse, contest or protest, and without any reference to the Contractor, such sum or sums up to an aggregate sum of the Guarantee Amount as the Authority shall claim, without the Authority being required to prove or to show grounds or reasons for its demand and/or for the sum specified therein.

2. A letter from the Authority, under the hand of an officer not below the rank of General Manager NHIDCL that the Contractor has committed default in the due and faithful performance of all or any of its obligations under and in accordance with the Agreement shall be conclusive, final and binding on the Bank. The Bank further agrees that the Authority shall be the sole judge as to whether the Contractor is in default in due and faithful performance of its obligations during and under the Agreement and its decision that

the Contractor is in default shall be final and binding on the Bank, notwithstanding any differences between the Authority and the Contractor, or any dispute between them pending before any court, tribunal, arbitrators or any other authority or body, or by the discharge of the Contractor for any reason whatsoever.

3. In order to give effect to this Guarantee, the Authority shall be entitled to act as if the Bank were the principal debtor and any change in the constitution of the Contractor and/or the Bank, whether by their absorption with any other body or corporation or otherwise, shall not in any way or manner affect the liability or obligation of the Bank under this Guarantee.

4. It shall not be necessary, and the Bank hereby waives any necessity, for the Authority to proceed against the Contractor before presenting to the Bank its demand under this Guarantee.

5. The Authority shall have the liberty, without affecting in any manner the liability of the Bank under this Guarantee, to vary at any time, the terms and conditions of the Agreementor to extend the time or period for the compliance with, fulfillment and/ or performance of all or any of the obligations of the Contractor contained in the Agreement or to postponefor any time, and from time to time, any of the rights and powers exercisable by the Authority against the Contractor, and either to enforce or forbear from enforcing any ofthe terms and conditions contained in the Agreement and/or the securities available to the Authority, and the Bank shall not be released from its liability and obligation under these presents by any exercise by the Authority of the liberty with reference to the matters aforesaid or by reason of time being given to the Contractor or any other forbearance, indulgence, act or omission on the part of the Authority or of any other matter or thing whatsoever which under any law relating to sureties and guarantors would but for this provision have the effect of releasing the Bank from its liability and obligation under this Guarantee and the Bank hereby waives all of its rights under any such law.

6. This Guarantee is in addition to and not in substitution of any other guarantee or security now or which may hereafter be held by the Authority in respect of or relating to the Agreement or for the fulfillment, compliance and/or performance of all or any of the obligations of the Contractor under the Agreement.

7. Notwithstanding anything contained hereinbefore, the liability of the Bank under this Guarantee is restricted to the Guarantee Amount and this Guarantee will remain in force for the period specified in paragraph 8 below and unless a demand or claim in writing is made by the Authority on the Bank under this Guarantee all rights of the Authority under this Guarantee shall be forfeited and the Bank shall be relieved from its liabilities hereunder.

8. The Guarantee shall cease to be in force and effect on ****$. Unless a demand or claim under this Guarantee is made in writing before expiry of the Guarantee, the Bank shallbe discharged from its liabilities hereunder.

9. The Bank undertakes not to revoke this Guarantee during its currency, except with the previous express consent of the Authority in writing, and declares and warrants that it has the power to issue this Guarantee and the undersigned has full powers to do so on behalf of the Bank.

10. Any notice by way of request, demand or otherwise hereunder may be sent by post addressed to the Bank at its above referred branch, which shall be deemed to have been duly authorised to receive such notice and to effect payment thereof forthwith, and if

sent by post it shall be deemed to have been given at the time when it ought to have been delivered in due course of post and in proving such notice, when given by post, it shall be sufficient to prove that the envelope containing the notice was posted and a certificate signed by an officer of the Authority that the envelope was so posted shall be conclusive.

11. This Guarantee shall come into force with immediate effect and shall remain in force and effect for up to the date specified in paragraph 8 above or until it is released earlier by the Authority pursuant to the provisions of the Agreement.

12. This Guarantee is subject to the Uniform Rules for Demand Guarantees (URDG) 2010 Revision, ICC Publication No. 758, except that the supporting statement under Article 15(a) is hereby excluded.

13. This guarantee shall also be operatable at our ..... Branch at New Delhi, from whom, confirmation regarding the issue of this guarantee or extension / renewal thereof shall be made available on demand. In the contingency of this guarantee being invoked and payment there under claimed, the said branch shall accept such invocation letter and make payment of amounts so demanded under the said invocation. 14. Bank Guarantee has been sent to authority's bank through SFMS gateway as per the details below:-

Sl. No	Particulars	Details
1	Name of the Beneficiary	National Highways and Infrastructure Development Corporation Limited
2	Beneficiary Bank Account No.	
3	Beneficiary Bank Branch	
4	Beneficiary Bank Branch Name	
5	Beneficiary Bank Address	

Signed and sealed this ……. day of ……., 20…… at ……..

SIGNED, SEALED AND DELIVERED

For and on behalf of the Bank by:

(Signature)

(Name)

(Designation)

(Code Number)

(Address)

ANNEXURE -II

(Schedule-G)

Form of Guarantee for Withdrawal of Retention Money

……..
……..
……..
……

WHEREAS:

(A) [name and address of contractor] (hereinafter called the "**Contractor**") has executed an agreement (hereinafter called the "Agreement") with the [name and address of the authority], (hereinafter called the "**Authority**") for the Development of Military Infrastructure at Shillong in the State of Meghalaya on Engineering, Procurement and Construction (the "**EPC**") basis, subject to and in accordance with the provisions of the Agreement.

(B) In accordance with Clause 7.5.3 of the Agreement, the Contractor may withdraw the retention money (hereinafter called the "**Retention Money**") after furnishing to the Authority a bank guarantee for an amount equal to the proposed withdrawal.

(C) We, …….. through our branch at.....(the "**Bank**") have agreed to furnish this bank guarantee (hereinafter called the "**Guarantee**") for the amount of Rs. --------- cr. (Rs ---------- crore) (the "**Guarantee Amount**").

NOW, THEREFORE, the Bank hereby unconditionally and irrevocably guarantees and affirms as follows:

1. The Bank hereby unconditionally and irrevocably undertakes to pay to the Authority, upon its mere first written demand, and without any demur, reservation, recourse, contest or protest, and without any reference to the Contractor, such sum or sums up to an aggregate sum of the Guarantee Amount as the Authority shall claim, without the Authority being required to prove or to show grounds or reasons for its demand and/or for the sum specified therein.

2. A letter from the Authority, under the hand of an officer not below the rank of General Manager NHIDCL, that the Contractor has committed default in the due and faithful performance of all or any of its obligations for under and in accordance with the Agreement shall be conclusive, final and binding on the Bank. The Bank further agrees that the Authority shall be the sole judge as to whether the Contractor is in default in due and faithful performance of its obligations during and under the Agreement and its decision that the Contractor is in default shall be final, and binding on the Bank, notwithstanding any differences between the Authority and the Contractor, or any dispute between them pending before any court, tribunal, arbitrators or any other authority or body, or by the discharge of the Contractor for any reason whatsoever.

3. In order to give effect to this Guarantee, the Authority shall be entitled to act as if the Bank were the principal debtor and any change in the constitution of the Contractor and/or the Bank, whether by their absorption with any other body or corporation or otherwise, shall not in any way or manner affect the liability or obligation of the Bank under this Guarantee.

4. It shall not be necessary, and the Bank hereby waives any necessity, for the Authority to proceed against the Contractor before presenting to the Bank its demand under this Guarantee.

5. The Authority shall have the liberty, without affecting in any manner the liability of the Bank under this Guarantee, to vary at any time, the terms and conditions of the Retention Money and any of the rights and powers exercisable by the Authority against the Contractor, and either to enforce or forbear from enforcing any of the terms and conditions contained in the Agreement and/or the securities available to the Authority, and the Bank shall not be released from its liability and obligation under these presents by any exercise by the Authority of the liberty with reference to the matters aforesaid or by reason of time being given to the Contractor or any other forbearance, indulgence, act or omission on the part of the Authority or of any other matter or thing whatsoever which under any law relating to sureties and guarantors would but for this provision have the effect of releasing the Bank from its liability and obligation under this Guarantee and the Bank hereby waives all of its rights under any such law.

6. This Guarantee is in addition to and not in substitution of any other guarantee or security now or which may hereafter be held by the Authority in respect of or relating to the Retention Money.

7. Notwithstanding anything contained hereinbefore, the liability of the Bank under this Guarantee is restricted to the Guarantee Amount and this Guarantee will remain in force for the period specified in paragraph 8 below and unless a demand or claim in writing is made by the Authority on the Bank under this Guarantee all rights of the Authority under this Guarantee shall be forfeited and the Bank shall be relieved from its liabilities hereunder.

8. The Guarantee shall cease to be in force and effect 90 (ninety) days after the date of the Completion Certificate specified in Clause 12.4 of the Agreement.

9. The Bank undertakes not to revoke this Guarantee during its currency, except with the previous express consent of the Authority in writing, and declares and warrants that it has the power to issue this Guarantee and the undersigned has full powers to do so on behalf of the Bank.

10. Any notice by way of request, demand or otherwise hereunder may be sent by post addressed to the Bank at its above referred branch, which shall be deemed to have been duly authorized to receive such notice and to effect payment thereof forthwith, and if sent by post it shall be deemed to have been given at the time when it ought to have been delivered in due course of post and in proving such notice, when given by post, it shall be sufficient to prove that the envelope containing the notice was posted and a certificate signed by an officer of the Authority that the envelope was so posted shall be conclusive.

11. This Guarantee shall come into force with immediate effect and shall remain in force and effect up to the date specified in paragraph 8 above or until it is released earlier by the Authority pursuant to the provisions of the Agreement.

12. This Guarantee is subject to the Uniform Rules for Demand Guarantees (URDG) 2010Revision, ICC Publication No. 758, except that the supporting statement under Article 15(a) ishereby excluded.

13. This guarantee shall also be operatable at our ..... Branch at New Delhi, from whom, confirmation regarding the issue of this guarantee or extension / renewal thereof shall

be made available on demand. In the contingency of this guarantee being invoked and payment there under claimed, the said branch shall accept such invocation letter and make payment of amounts so demanded under the said invocation. 14. Bank Guarantee has beensent to authority's bank through SFMS gateway as per the details below:-

Sl. No	Particulars	Details
1	Name of the Beneficiary	National Highways and Infrastructure Development Corporation Limited
2	Beneficiary Bank Account No.	
3	Beneficiary Bank Branch	
4	Beneficiary Bank Branch Name	
5	Beneficiary Bank Address	

SIGNED, SEALED AND DELIVERED

For and on behalf of the Bank by:

(Signature)

(Name)

(Designation)

(Code Number)

(Address)

ANNEXURE -III

(Schedule-G)

Form of Guarantee for Advance Payment

……..
……..
……..
……..

WHEREAS:

(A) [name and address of contractor] (hereinafter called the "**Contractor**") has executed an agreement (hereinafter called the "**Agreement**") with the [name and address of the authority], (hereinafter called the "**Authority**") for Development of Military Infrastructure at Shillong in the State of Meghalaya on Engineering, Procurement and Construction (the "**EPC**") basis, subject to and in accordance with the provisions of the Agreement

(B) In accordance with Clause 19.2 of the Agreement, the Authority shall make to the Contractor an interest free advance payment (herein after called "**Advance Payment**") equal to 10% (ten per cent) of the Contract Price; and that the Advance Payment shall be made in three installments subject to the Contractor furnishing an irrevocable and unconditional guarantee by a scheduled bank for an amount equivalent to 110% (one hundred and ten percent) of such installment to remain effective till the complete and full repayment of the installment of the Advance Payment as security for compliance with its obligations inaccordance with the Agreement. The amount of {first/second/third} installment of the Advance Payment is Rs. ------ cr. (Rupees crore) and the amount of this Guarantee is Rs. ------- cr. (Rupees crore) (the **"Guarantee Amount")**[$]

(C) We, …….. through our branch at..... (the "**Bank"**) have agreed to furnish this bank guarantee (*hereinafter called the* **"Guarantee"**) for the Guarantee Amount.

NOW, THEREFORE, the Bank hereby, unconditionally and irrevocably, guarantees and affirms as follows:

1. The Bank hereby unconditionally and irrevocably guarantees the due and faithful repayment on time of the aforesaid instalment of the Advance Payment under and in accordance with the Agreement, and agrees and undertakes to pay to the Authority, uponits mere first written demand, and

2. A letter from the Authority, under the hand of an officer not below the rank of General Manager NHIDCL, that the Contractor has committed default in the due and faithful performance of all or any of its obligations for the repayment of the

[$]The Guarantee Amount should be equivalent to 110% of the value of the applicable instalment. without any demur, reservation, recourse, contest or protest, and without any reference to the Contractor, such sum or sums up to an aggregate sum of the Guarantee Amount as the Authority shall claim, without the Authority being required to prove or to show grounds or reasons for its demand and/or for the sum specified therein.

instalment of the Advance Payment under and in accordance with the Agreement shall be conclusive, final and binding on the Bank. The Bank further agrees that the Authority shall be the sole judge as to whether the Contractor is in default in due and faithful performance of its obligations during and under the Agreement and its decision that the Contractor is in default shall be final and binding on the Bank, notwithstanding any differences between the Authority and the Contractor, or any dispute between them pending before any court, tribunal, arbitrators or any other authority or body, or by the discharge of the Contractor for any reason whatsoever.

3. In order to give effect to this Guarantee, the Authority shall be entitled to act as if the Bank were the principal debtor and any change in the constitution of the Contractor and/or the Bank, whether by their absorption with any other body or corporation or otherwise, shall not in any way or manner affect the liability or obligation of the Bank under this Guarantee.

4. It shall not be necessary, and the Bank hereby waives any necessity, for the Authority to proceed against the Contractor before presenting to the Bank its demand under this Guarantee.

5. The Authority shall have the liberty, without affecting in any manner the liability of the Bank under this Guarantee, to vary at any time, the terms and conditions of the Advance Payment or to extend the time or period of its repayment or to postpone for any time, and from time to time, any of the rights and powers exercisable by the Authority against the Contractor, and either to enforce or forbear from enforcing any of the terms and conditions contained in the Agreement and/or the securities available to the Authority, and the Bank shall not be released from its liability and obligation under these presents by any exercise by the Authority of the liberty with reference to the matters aforesaid or by reason of time being given to the Contractor or any other forbearance, indulgence, act or omission on the part of the Authority or of any other matter or thing whatsoever which under any law relating to sureties and guarantors would but for this provision have the effect of releasing the Bank from its liability and obligation under this Guarantee and the Bank hereby waives all of its rights under any suchlaw.

6. This Guarantee is in addition to and not in substitution of any other guarantee or security now or which may hereafter be held by the Authority in respect of or relating to the Advance Payment.

7. Notwithstanding anything contained hereinbefore, the liability of the Bank under this Guarantee is restricted to the Guarantee Amount and this Guarantee will remain in force for the period specified in paragraph 8 below and unless a demand or claim in writing is made by the Authority on the Bank under this Guarantee all rights of the Authority under this Guarantee shall be forfeited and the Bank shall be relieved from its liabilities hereunder.

8. The Guarantee shall cease to be in force and effect on ****.[$] Unless a demand or claim under this Guarantee is made in writing on or before the aforesaid date, the Bank shall be discharged from its liabilities hereunder.

9. The Bank undertakes not to revoke this Guarantee during its currency, except with the previous express consent of the Authority in writing, and declares and warrants that it has the power to issue this Guarantee and the undersigned has full powers to do so on behalf of the Bank.

10. Any notice by way of request, demand or otherwise hereunder may be sent by post addressed to the Bank at its above referred branch, which shall be deemed to have been duly authorized to receive such notice and to effect payment thereof forthwith, and ifsent by post it shall be deemed to have been given at the time when it ought to have been delivered in due course of post and in proving such notice, when given by post, it shall be sufficient to prove that the envelope containing the notice was posted and a certificate signed by an officer of the Authority that the envelope was so posted shall be conclusive.

11. This Guarantee shall come into force with immediate effect and shall remain in force and effect up to the date specified in paragraph 8 above or until it is released earlier by the Authority pursuant to the provisions of the Agreement.

12. This Guarantee is subject to the Uniform Rules for Demand Guarantees (URDG) 2010Revision, ICC Publication No. 758, except that the supporting statement under Article 15(a) ishereby excluded.

13. This guarantee shall also be operatable at our ..... Branch at New Delhi, from whom, confirmation regarding the issue of this guarantee or extension / renewal thereof shall be made available on demand. In the contingency of this guarantee being invoked and payment there under claimed, the said branch shall accept such invocation letter and make payment of amounts so demanded under the said invocation. 14. Bank Guarantee has beensent to authority's bank through SFMS gateway as per the details below:-

Sl. No	Particulars	Details
1	Name of the Beneficiary	National Highways and Infrastructure Development Corporation Limited
2	Beneficiary Bank Account No.	
3	Beneficiary Bank Branch	
4	Beneficiary Bank Branch Name	
5	Beneficiary Bank Address	

Signed and sealed this ……. day of ……., 20…… at ……..

SIGNED, SEALED AND DELIVERED

For and on behalf of the Bank by:

(Signature)

(Name)

(Designation)

(Code Number)

(Address)

SCHEDULE-H: Contract Price Weightages

1.1 The Contract Price for this Agreement is Rs ----------

1.2 PROPORTIONS OF THE CONTRACT PRICE FOR DIFFERENT STAGES OF CONSTRUCTION OF THE MILITARY INFRASTRUCTURE SHALL BE AS SPECIFIED BELOW:

Sl No.	FACILITIES	PERCENTAGE AS PER TOTAL PRICE
1.	Two Storey (02 Storey) family accommodation Block (08 houses) (Two Blocks of 4 houses each) for Army Officers of Major Rank at DM Lines, East Khasi Hills District, Meghalaya.	9.825*2=19.65
2.	Four Storey (04 Storey) Single Officers Accommodation Block Basment+Ground+2) (18 Single Officer Accommodation and car parking at Basement) for Army Officers at Officers Mess 101 Area, East Khasi Hills District, Meghalaya.	13.66
3.	Three Storey (Lower Ground Floor + Ground Floor + First Floor) O R Line at M H Lower Block, East Khasi Hills District, Meghalaya.	8.08
4.	Three Storey CSD Building at Annexe (Old EME Wksp), East Khasi Hills District, Meghalaya.	11.58
5.	Two Storey (02 Storey) Club House at RTC, East Khasi Hills District, Meghalaya.	9.55
6	Block of Guest Rooms Three Storey G+2 (8 Guest Rooms at Each Floor) total 24 Nos at ECSAG & GE, Shillong East Khasi Hills District, Meghalaya.	10.45
7.	Block of Office GE Shillong, Three Storey G+2 at ECSAG & GE Shillong, Shillong East Khasi Hills District, Meghalaya.	10.83
8.	Block of APS School building, Two Storey G+1 at GTC, Shillong East Khasi Hills District, Meghalaya.	6.13
9-	**Ancillary Buildings at** Officers Mess 101 Area , MH Upper & Lower Block , 101 Area main gate, TA Coy Gate & 144 TA ,Annexe (Old EME Wksp), RTC , Old Rhino CSD and Car Parking shed for 5 cars at Officers Mess 101 Area-2 Nos Shillong East Khasi Hills District, Meghalaya.	10.07
	TOTAL	100.00

DISTRIBUTION OF ITEMS INTO SUB WEIGHTAGE AND PAYMENT SCHEDULE

Sl No.	Stage for Payment Per Block	Weightage in percentage to the Contract Price
1	2	3
1)	TWO STOREY (02 STOREY) FAMILY ACCOMMODATION BLOCK (08 HOUSES) (TWO BLOCKS OF 4 HOUSES EACH) FOR ARMY OFFICERS OF MAJOR RANK AT DM LINES, EAST KHASI HILLS DISTRICT, MEGHALAYA.	
	Built up area of one block (G+1) = 799.59 sqm % of Total cost 9.825x2=19.65	
1	Investigation, planning, Designing of building including services for entire scope of work	2.00%
	SUB STRUCTURE (UPTO PLINTH LEVEL)	
2	Surface dressing Earth work in excavation , PCC in foundation, ATT, Returning filling in foundation, filling under floor, removal of earth, RCC, Form work and Reinforcement in Footings, columns and plinth beams, AAC/brick work in walls and sub base under floor upto Plinth Level.	12.00%
	SUPER STRUCTURE (ABOVE PLINTH)	
3	RCC , Form work and Reinforcement in Lintle, band, columns, chajjas, Fasica, Railings, Stairs & shelves and AAC Block/ brick work in walls from Plinth level upto First floor Level. (Ground floor)	9.00%
4	RCC , Form work and Reinforcement in beam and slab at First floor	6.00%
5	RCC , Form work and Reinforcement in Lintle, band, columns , chajjas, Fascia. Railings, Stairs &shelves and AAC Block/brick work in walls from first floor Level to roof level.(First floor)	8.5%
6	RCC , Form work and Reinforcement in beam and slab at roof	6.00%
7	MS Truss with pre-coated galvanised iron profile sheets/polycarbonate sheet roofing,	7.00%
	FINISHES	
8	Ceramic tile floor, Vitrified tile floor, Kota stone floor, Granite stone flooring, skirting, dado etc. complete.	10.00%
9	Internal and external plastering, ceiling plaster etc. complete.	5.00%
10	Door/windows of Aluminum, uPVC, FRP, wood and steel work complete with Guard bar, Railing staircase and balcony, Builders hard ware, etc. complete.	10.00%
11	Sanitary, Plumbing and internal water supply complete	3.00%
12	Paint Finishes internal and external complete.	1.50%
13	Pre-coated galvanised iron profile sheets/polycarbonate sheet roofing, false ceiling, Roof treatment complete.	5.00%
14	Internal Electric Installation	5.00%
	EXTERNAL	
15	External road & pathway work complete	4.00%
16	External WATER SUPPLY	1.5%
17	External Sewerage system	1.00%
18	External Storm water drain	0.50%
19	Misc items	3.00%
	Total	100.00%

	Stage for Payment Per Block	Weightage in percentage to the Contract Price
1	2	3
2)	**FOUR STOREY (04 STOREY) SINGLE OFFICERS ACCOMMODATION BLOCK (BASMENT+GROUND+2) 18 SINGLE OFFICER ACCOMMODATION AND CAR PARKING AT BASEMENT FOR ARMY OFFICERS AT OFFICERS MESS 101 AREA, EAST KHASI HILLS DISTRICT, MEGHALAYA.**	
	Built up area of one block (B+G+1) = 1433.78 sqm	**% of Total cost 13.66**
1	Investigation, planning, designing of building including services for entire scope of work	2.00%
	SUB STRUCTURE (UPTO PLINTH LEVEL)	
2	Surface dressing Earth work in excavation, PCC in foundation, ATT, Returning filling in foundation, filling under floor, removal of earth, RCC, Form work and Reinforcement in Footings, columns, retaining wall and plinth beams, AAC Block/ brick work in walls and sub base under floor upto Plinth Level.	10.00%
	SUPER STRUCTURE (ABOVE PLINTH)	
3	RCC, Form work and Reinforcement in Lintel, band, columns, retaining wall, chajjas, Fascia, Railings, Stairs & shelves and AAC Block/brick work in walls from Plinth level upto Ground floor Level. (Basment floor)	2.00%
4	RCC, Form work and Reinforcement in beam and slab at Ground floor(Basement roof)	3.00%
5	RCC, Form work and Reinforcement in Lintel, band, columns, chajjas, Fascia, Railings, Stairs & shelves and AAC Block/ brick work in walls from Plinth level upto First floor Level. (Ground floor)	5.00%
6	RCC , Form work and Reinforcement in beam and slab at First floor	4.00%
7	RCC , Form work and Reinforcement in lintel, band, columns ,chajjas, fascia, Railings, Stairs & shelves and AAC Block/ brick work in walls from first floor Level to second floor level.(First floor)	5.00%
8	RCC, Form work and Reinforcement in beam and slab at second floor	4.00%
9	RCC, Form work and Reinforcement in Lintle, band, columns, chajjas, Fasica, Railings, Stairs &shelves and AAC Block/ brick work in walls from second floor Level to roof level. (Second floor)	5.00%
10	RCC, Form work and Reinforcement in beam and slab at roof	4.00%
11	MS Truss with pre-coated galvanised iron profile sheets/ polycarbonate sheet roofing,	7.00%
	FINISHES	
12	Ceramic tile floor, Vitrified tile floor, Kota stone floor, Granite stone flooring, skirting, dado etc. complete.	10.00%
13	Internal and external plastering, ceiling plaster etc. complete.	5.00%
14	Door/windows of Aluminum, uPVC, FRP, wood and steel work complete with Guard bar, Railing staircase and balcony, Builders hard ware, etc. complete.	10.00%
15	Sanitary, Plumbing and internal water supply complete	3.00%

16	**Paint Finishes internal and external complete.**	**1.50%**
17	**Pre-coated galvanised iron profile sheets/polycarbonate sheet roofing, false ceiling, Roof treatment complete.**	**2.50%**
18	**Internal Electric Installation**	**5.00%**
	EXTERNAL	
19	External road & pathway work complete	**5.00%**
20	External WATER SUPPLY	**1.00%**
21	External Sewerage system	**1.00%**
22	External Storm water drain	**1.00%**
23	**Lift and Misc items**	**4.00%**
	Total	**100.00%**

	Stage for Payment Per Block	Weightage in percentage to the Contract Price
1	2	3
	3) THREE STOREY (LOWER GROUND FLOOR + GROUND FLOOR + FIRST FLOOR) O R LINE AT M H LOWER BLOCK, EAST KHASI HILLS DISTRICT, MEGHALAYA.	
	Built up area of one block (LGF+G+FF) = 815.50 sqm **% of Total cost 8.08**	
1	**Investigation, planning, designing of building including services for entire scope of work**	**2.00%**
	SUB STRUCTURE (UPTO PLINTH LEVEL)	
2	**Surface dressing Earth work in excavation, PCC in foundation, ATT, Returning filling in foundation, filling under floor, removal of earth, RCC, Form work and Reinforcement in Footings, columns, retaining wall and plinth beams, AAC Block/ brick work in walls and sub base under floor upto Plinth Level at Lower Ground Floor.**	**6.00%**
3	**Surface dressing Earth work in excavation, PCC in foundation, ATT, Returning filling in foundation, filling under floor, removal of earth, RCC, Form work and Reinforcement in Footings, columns, retaining wall and plinth beams, AAC Block/ brick work in walls and sub base under floor upto Plinth Level at Ground Floor.**	**6.00%**
	SUPER STRUCTURE (ABOVE PLINTH)	
4	**RCC, Form work and Reinforcement in Lintel, band, columns, retaining wall, chajjas, Fascia, Railings, Stairs & shelves and AAC Block/brick work in walls from Plinth level upto Ground floor Level. (Lower Ground floor)**	**3.00%**
5	**RCC, Form work and Reinforcement in beam and slab at Ground floor(Lower Ground floor roof)**	**3.00%**
6	**RCC, Form work and Reinforcement in Lintel, band, columns, chajjas, Fascia, Railings, Stairs & shelves and AAC Block/ brick work in walls from Plinth level/Ground level upto First floor Level. (Ground floor)**	**6.00%**
7	**RCC , Form work and Reinforcement in beam and slab at First floor.(Ground Floor Roof)**	**6.00%**

8	RCC , Form work and Reinforcement in lintel, band, columns ,chajjas, fascia, Railings, Stairs & shelves and AAC Block/ brick work in walls from first floor Level to roof.(First floor)	3.00%
9	RCC, Form work and Reinforcement in beam and slab at roof.	1.00%
10	MS Truss with 80mm thick insulated Puff panels on roof at First floor.	10.00
11	MS Truss with 80mm thick insulated Puff panels on roof at Roof level.	10.00
	FINISHES	
12	Ceramic tile floor, Vitrified tile floor, Kota stone floor, Granite stone flooring, skirting, dado etc. complete.	8.00%
13	Internal and external plastering, ceiling plaster etc. complete.	5.00%
14	Door/windows of Aluminum, uPVC, FRP, wood and steel work complete with Guard bar, Railing staircase and balcony, Builders hard ware, etc. complete.	8.00%
15	Sanitary, Plumbing and internal water supply complete	4.00%
16	Paint Finishes internal and external complete.	1.50%
17	Roof treatment complete.	1.50%
18	Internal Electric Installation including connection from main source.	5.00%
	EXTERNAL	
19	External road & pathway work complete	5.00%
20	External WATER SUPPLY	1.00%
21	External Sewerage system	1.00%
22	External Storm water drain	1.00%
23	Misc items	3.00%
	Total	100.00%

	Stage for Payment Per Block	Weightage in percentage to the Contract Price
1	2	3
4)	THREE STOREY CSD BUILDING AT ANNEXE (OLD EME WKSP), EAST KHASI HILLS DISTRICT, MEGHALAYA.	
	Built up area of one block (G+2) = 1460.22 sqm % of Total cost 11.58	
1	Investigation, planning, designing of building including services for entire scope of work	2.00%
	SUB STRUCTURE (UPTO PLINTH LEVEL)	
2	Surface dressing Earth work in excavation, PCC in foundation, ATT, Returning filling in foundation, filling under floor, removal of earth, RCC, Form work and Reinforcement in Footings, columns, retaining wall and plinth beams, AAC Block/ brick work in walls and sub base under floor upto Plinth Level .	12.00%
	SUPER STRUCTURE (ABOVE PLINTH)	
3	RCC, Form work and Reinforcement in Lintel, band, columns, retaining wall, chajjas, Fascia, Railings, Stairs & shelves and AAC Block/brick work in walls from Plinth level upto First floor Level. (Ground floor)	6.00%
4	RCC, Form work and Reinforcement in beam and slab at First	6.00%

	floor (Ground floor roof)	
5	**RCC, Form work and Reinforcement in Lintel, band, columns, chajjas, Fascia, Railings, Stairs & shelves and AAC Block/ brick work in walls at First floor level upto Second floor Level. (First Floor)**	**6.00%**
6	**RCC , Form work and Reinforcement in beam and slab at Second floor.(First Floor Roof)**	**6.00%**
7	**RCC , Form work and Reinforcement in lintel, band, columns ,chajjas, fascia, Railings, Stairs & shelves and AAC Block/ brick work in walls from Second floor Level to roof.(Second floor)**	**6.00%**
8	**RCC, Form work and Reinforcement in beam and slab at roof.**	**1.00%**
9	**MS Truss with 80mm thick insulated Puff panels on roof at First floor.**	**10.00**
	FINISHES	
10	**Ceramic tile floor, Vitrified tile floor, Kota stone floor, Granite stone flooring, skirting, dado etc. complete.**	**9.00%**
11	**Internal and external plastering, ceiling plaster etc. complete.**	**5.00%**
12	**Door/windows of Aluminum, uPVC, FRP, wood and steel work complete with Guard bar, Railing staircase and balcony, Builders hard ware, etc. complete.**	**8.00%**
13	**Sanitary, Plumbing and internal water supply complete**	**4.00%**
14	**Paint Finishes internal and external complete.**	**1.50%**
15	**Roof treatment complete.**	**1.50%**
16	**Internal Electric Installation**	**5.00%**
	EXTERNAL	
17	External road & pathway work complete	**3.00%**
18	External WATER SUPPLY	**1.00%**
19	External Sewerage system	**1.00%**
20	External Storm water drain	**1.00%**
21	**Lift and Misc Items**	**5.00%**
	Total	**100.00%**

Sl No.	Stage for Payment Per Block	Weightage in percentage to the Contract Price
1	**2**	**3**
	5) TWO STOREY (02 STOREY) CLUB HOUSE AT RTC, EAST KHASI HILLS DISTRICT, MEGHALAYA.	
	Built up area of one block (G+1) = 989.07 sqm % of Total cost 9.55	
1	**Investigation, planning, Designing of building including services for entire scope of work**	**2.00%**
	SUB STRUCTURE (UPTO PLINTH LEVEL)	
2	**Surface dressing Earth work in excavation , PCC in foundation, ATT, Returning filling in foundation, filling under floor, removal of earth, RCC, Form work and Reinforcement in Footings, columns and plinth beams, AAC/brick work in walls**	**12.00%**

	and sub base under floor upto Plinth Level.	
	SUPER STRUCTURE (ABOVE PLINTH)	
3	**RCC , Form work and Reinforcement in Lintle, band, columns, chajjas, Fasica, Railings, Stairs & shelves and AAC Block/ brick work in walls from Plinth level upto First floor Level. (Ground floor)**	**9.00%**
4	**RCC , Form work and Reinforcement in beam and slab at First floor**	**6.00%**
5	**RCC , Form work and Reinforcement in Lintle, band, columns , chajjas, Fascia. Railings, Stairs &shelves and AAC Block/brick work in walls from first floor Level to roof level.(First floor)**	**8.5%**
6	**RCC , Form work and Reinforcement in beam and slab at roof**	**2.00%**
7	**MS Truss with 80mm thick insulated Puff panels on roof at First floor.**	**11.00%**
	FINISHES	
8	**Ceramic tile floor, Vitrified tile floor, Kota stone floor, Granite stone flooring, skirting, dado etc. complete.**	**10.00%**
9	**Internal and external plastering, ceiling plaster etc. complete.**	**5.00%**
10	**Door/windows of Aluminum, uPVC, FRP, wood and steel work complete with Guard bar, Railing staircase and balcony, Builders hard ware, etc. complete.**	**10.00%**
11	**Sanitary, Plumbing and internal water supply complete**	**3.00%**
12	**Paint Finishes internal and external complete.**	**1.50%**
13	**Pre-coated galvanised iron profile sheets/polycarbonate sheet roofing, false ceiling, Roof treatment complete.**	**5.00%**
14	**Internal Electric Installation.**	**5.00%**
	EXTERNAL	
15	External road & pathway work complete.	**4.00%**
16	External WATER SUPPLY	**1.5%**
17	External Sewerage system	**1.00%**
18	External Storm water drain	**0.50%**
19	**Misc items**	**3.00%**
	Total	**100.00%**

	Stage for Payment Per Block	Weightage in percentage to the Contract Price
1	**2**	**3**
6)	**BLOCK OF GUEST ROOMS THREE STOREY G+2 (8 GUEST ROOMS AT EACH FLOOR) TOTAL 24 NOS AT ECSAG & GE, SHILLONG EAST KHASI HILLS DISTRICT, MEGHALAYA.**	
	Built up area of one block (G+2) = 1058.40 sqm	**% of Total cost 10.45**
1	**Investigation, planning, designing of building including services for entire scope of work**	**2.00%**
	SUB STRUCTURE (UPTO PLINTH LEVEL)	
2	**Surface dressing Earth work in excavation, PCC in foundation, ATT, returning filling in foundation, filling under floor,**	**12.00%**

	removal of earth, RCC, Form work and Reinforcement in Footings, columns, retaining wall and plinth beams, AAC Block/ brick work in walls and sub base under floor upto Plinth Level.	
	SUPER STRUCTURE (ABOVE PLINTH)	
3	**RCC, Form work and Reinforcement in Lintel, band, columns, retaining wall, chajjas, Fascia, Railings, Stairs & shelves and AAC Block/brick work in walls from Plinth level upto First floor Level. (Ground floor)**	**6.00%**
4	**RCC, Form work and Reinforcement in beam and slab at First floor (Ground floor roof)**	**5.00%**
5	**RCC, Form work and Reinforcement in Lintel, band, columns, chajjas, Fascia, Railings, Stairs & shelves and AAC Block/ brick work in walls at First floor level upto Second floor Level. (First Floor)**	**6.00%**
6	**RCC , Form work and Reinforcement in beam and slab at Second floor.(First Floor Roof)**	**5.00%**
7	**RCC , Form work and Reinforcement in lintel, band, columns ,chajjas, fascia, Railings, Stairs & shelves and AAC Block/ brick work in walls from Second floor Level to roof.(Second floor)**	**6.00%**
8	**RCC, Form work and Reinforcement in beam and slab at roof.**	**5.00%**
9	**MS Truss with pre-coated galvanised iron profile sheets/ polycarbonate sheet roofing,**	**8.00%**
	FINISHES	
10	**Ceramic tile floor, Vitrified tile floor, Kota stone floor, Granite stone flooring, skirting, dado etc. complete.**	**9.00%**
11	**Internal and external plastering, ceiling plaster etc. complete.**	**5.00%**
12	**Door/windows of Aluminum, uPVC, FRP, wood and steel work complete with Guard bar, Railing staircase and balcony, Builders hard ware, etc. complete.**	**8.00%**
13	**Sanitary, Plumbing and internal water supply complete**	**4.00%**
14	**Paint Finishes internal and external complete.**	**1.50%**
15	**Roof treatment complete.**	**1.50%**
16	**Internal Electric Installation**	**5.00%**
	EXTERNAL	
17	External road & pathway work complete	**3.00%**
18	External WATER SUPPLY	**1.00%**
19	External Sewerage system	**1.00%**
20	External Storm water drain	**1.00%**
21	**Lift and Misc items**	**5.00%**
	Total	**100.00%**

	Stage for Payment Per Block	Weightage in percentage to the Contract Price
1	**2**	**3**
7)	**BLOCK OF OFFICE GE SHILLONG, THREE STOREY G+2 AT ECSAG & GE SHILLONG, SHILLONG EAST KHASI HILLS DISTRICT, MEGHALAYA.**	
	Built up area of one block (G+2) = 1117.41sqm	

		% of Total cost 10.83
1	Investigation, planning, designing of building including services for entire scope of work	2.00%
	SUB STRUCTURE (UPTO PLINTH LEVEL)	
2	Surface dressing Earth work in excavation, PCC in foundation, ATT, Returning filling in foundation, filling under floor, removal of earth, RCC, Form work and Reinforcement in Footings, columns, retaining wall and plinth beams, AAC Block/ brick work in walls and sub base under floor upto Plinth Level .	12.00%
	SUPER STRUCTURE (ABOVE PLINTH)	
3	RCC, Form work and Reinforcement in Lintel, band, columns, retaining wall, chajjas, Fascia, Railings, Stairs & shelves and AAC Block/brick work in walls from Plinth level up to First floor Level. (Ground floor)	6.00%
4	RCC, Form work and Reinforcement in beam and slab at First floor (Ground floor roof)	6.00%
5	RCC, Form work and Reinforcement in Lintel, band, columns, chajjas, Fascia, Railings, Stairs & shelves and AAC Block/ brick work in walls at First floor level upto Second floor Level. (First Floor)	6.00%
6	RCC , Form work and Reinforcement in beam and slab at Second floor.(First Floor Roof)	6.00%
7	RCC , Form work and Reinforcement in lintel, band, columns ,chajjas, fascia, Railings, Stairs & shelves and AAC Block/ brick work in walls from Second floor Level to roof.(Second floor)	6.00%
8	RCC, Form work and Reinforcement in beam and slab at roof.	1.00%
9	MS Truss with 80mm thick insulated Puff panels on roof at First floor.	10.00
	FINISHES	
10	Ceramic tile floor, Vitrified tile floor, Kota stone floor, Granite stone flooring, skirting, dado etc. complete.	9.00%
11	Internal and external plastering, ceiling plaster etc. complete.	5.00%
12	Door/windows of Aluminum, uPVC, FRP, wood and steel work complete with Guard bar, Railing staircase and balcony, Builders hard ware, etc. complete.	8.00%
13	Sanitary, Plumbing and internal water supply complete	4.00%
14	Paint Finishes internal and external complete.	1.50%
15	Roof treatment complete.	1.50%
16	Internal Electric Installation	5.00%
	EXTERNAL	
17	External road & pathway work complete	5.00%
18	External WATER SUPPLY	1.00%
19	External Sewerage system	1.00%
20	External Storm water drain	1.00%
21	Misc items	3.00%
	Total	100.00%

Sl No.	Stage for Payment Per Block	Weightage in percentage to the Contract Price
1	2	3
8)	BLOCK OF APS SCHOOL BUILDING, TWO STOREY G+1 AT GTC , SHILLONG EAST KHASI HILLS DISTRICT, MEGHALAYA.	
	Built up area of one block (G+1) = 604.05 Sqm	% of Total cost 6.13
1	Investigation, planning, Designing of building including services for entire scope of work	2.00%
	SUB STRUCTURE (UPTO PLINTH LEVEL)	
2	Surface dressing Earth work in excavation , PCC in foundation, ATT, Returning filling in foundation, filling under floor, removal of earth, RCC, Form work and Reinforcement in Footings, columns and plinth beams, AAC/brick work in walls and sub base under floor upto Plinth Level.	12.00%
	SUPER STRUCTURE (ABOVE PLINTH)	
3	RCC , Form work and Reinforcement in Lintle, band, columns, chajjas, Fasica, Railings, Stairs & shelves and AAC Block/ brick work in walls from Plinth level upto First floor Level. (Ground floor)	9.00%
4	RCC , Form work and Reinforcement in beam and slab at First floor	6.00%
5	RCC , Form work and Reinforcement in Lintle, band, columns , chajjas, Fascia. Railings, Stairs &shelves and AAC Block/brick work in walls from first floor Level to roof level.(First floor)	8.5%
6	RCC , Form work and Reinforcement in beam and slab at roof	2.00%
7	MS Truss with 80mm thick insulated Puff panels on roof at First floor.	11.00%
	FINISHES	
8	Ceramic tile floor, Vitrified tile floor, Kota stone floor, Granite stone flooring, skirting, dado etc. complete.	10.00%
9	Internal and external plastering, ceiling plaster etc. complete.	5.00%
10	Door/windows of Aluminum, uPVC, FRP, wood and steel work complete with Guard bar, Railing staircase and balcony, Builders hard ware, etc. complete.	10.00%
11	Sanitary, Plumbing and internal water supply complete	3.00%
12	Paint Finishes internal and external complete.	1.50%
13	Pre-coated galvanised iron profile sheets/polycarbonate sheet roofing, false ceiling, Roof treatment complete.	5.00%
14	Internal Electric Installation.	5.00%
	EXTERNAL	
15	External road & pathway work complete.	4.00%
16	External WATER SUPPLY	1.5%
17	External Sewerage system	1.00%
18	External Storm water drain	0.50%
19	Misc items	3.00%
	Total	100.00%

Sl No.	Stage for Payment Per Block	Weightage in percentage to the Contract Price
1	2	3
	9-ANCILLARY BUILDINGS	
	Built up area of one block (G) = 967.96 Sqm % of Total cost 10.07	
1	Investigation, planning, Designing of building including services for entire scope of work	2.00%
	SUB STRUCTURE (UPTO PLINTH LEVEL)	
2	Surface dressing Earth work in excavation , PCC in foundation, ATT, Returning filling in foundation, filling under floor, removal of earth, RCC, Form work and Reinforcement in Footings, columns and plinth beams, AAC/brick work in walls and sub base under floor upto Plinth Level.	15.00%
	SUPER STRUCTURE (ABOVE PLINTH)	
3	RCC , Form work and Reinforcement in Lintle, band, columns, chajjas, Fasica, Railings, Stairs & shelves and AAC Block/ brick work in walls from Plinth level upto First floor Level. (Ground floor)	9.00%
4	RCC , Form work and Reinforcement in beam and slab at roof	5.00%
5	MS Truss with pre-coated galvanised iron profile sheets/ polycarbonate sheet roofing,	15.00%
	FINISHES	
6	Ceramic tile floor, Vitrified tile floor, Kota stone floor, Granite stone flooring, skirting, dado etc. complete.	12.00%
7	Internal and external plastering, ceiling plaster etc. complete.	5.00%
8	Door/windows of Aluminum, uPVC, FRP, wood and steel work complete with Guard bar, Railing staircase and balcony, Builders hard ware, etc. complete.	10.00%
9	Sanitary, Plumbing and internal water supply complete	5.50 %
10	Paint Finishes internal and external complete.	1.50%
11	Pre-coated galvanised iron profile sheets/polycarbonate sheet roofing, false ceiling, Roof treatment complete.	5.00%
12	Internal Electric Installation.	5.00%
	EXTERNAL	
13	External road & pathway work complete.	4.00%
14	External WATER SUPPLY	1.5%
15	External Sewerage system	1.00%
16	External Storm water drain	0.50%
17	Misc items	3.00%
	Total	100.00%

Note: The payment of items of work shall be computed on the basis of length, area and numbers as the case may be considered from approved GFC drawings, in respect of various items of works specified in Schedule-H and comprising the scope of the project. Further, the sum of payments to be computed in respect of all items of work shall not exceed the Contract Price, as may be adjusted in accordance with the provisions of this Contract Agreement.

SCHEDULE-I: ARCHITECTURAL DRAWINGS

ARCHITECTURE DRAWINGS

ENCLOSED DRAWING SHEETS FROM 1-61

1 Drawings

In compliance of the obligations set forth in Clause ….. of this Agreement, the Contractor shall furnish to the Authority's Engineer, free of cost, all Drawings listed in clause 3 of Schedule -B

2 Additional Drawings

If the Authority's Engineer determines that for discharging its duties and functions under this Agreement, it requires any drawings other than those listed in Annex-I, it may by notice require the Contractor to prepare and furnish such drawings forthwith. Upon receiving a requisition to this effect, the Contractor shall promptly prepare and furnish such drawings to the Authority's Engineer, as if such drawings formed part of clause 3 of Schedule –B.

LIST OF DRAWINGS

Note: The Authority shall describe in this **ANNEX-I**, all the Drawings that the Contractor is required to furnish under Clause …

Sl No.	FACILITIES	
1.	Two Storey (02 Storey) family accommodation Block (08 houses) (Two Blocks of 4 houses each) for Army Officers of Major Rank at DM Lines, East Khasi Hills District, Meghalaya.	Annex I (A)
2.	Four Storey (04 Storey) Single Officers Accommodation Block Basment+Ground+2) (18 Single Officer Accommodation and car parking at Basement) for Army Officers at Officers Mess 101 Area, East Khasi Hills District, Meghalaya.	Annex I (B)
3.	Three Storey (Lower Ground Floor + Ground Floor + First Floor) O R Line at M H Lower Block, East Khasi Hills District, Meghalaya.	Annex I (C)
4.	Three Storey CSD Building at Annexe (Old EME Wksp), East Khasi Hills District, Meghalaya.	Annex I (D)
5.	Two Storey (02 Storey) Club House at RTC, East Khasi Hills District, Meghalaya.	Annex I (E)
6	Block of Guest Rooms Three Storey G+2 (8 Guest Rooms at Each Floor) total 24 Nos at ECSAG & GE, Shillong East Khasi Hills District, Meghalaya.	Annex I (F)
7.	Block of Office GE Shillong, Three Storey G+2 at ECSAG & GE Shillong, Shillong East Khasi Hills District, Meghalaya.	Annex I (G)
8.	Block of APS School building, Two Storey G+1 at GTC, Shillong East Khasi Hills District, Meghalaya.	Annex I (H)
9.	**Ancillary Buildings at** Officers Mess 101 Area , MH Upper & Lower Block , 101 Area main gate, TA Coy Gate & 144 TA ,Annexe (Old EME Wksp), RTC , Old Rhino CSD and Car Parking shed for 5 cars at Officers Mess 101 Area-2 Nos Shillong East Khasi Hills District, Meghalaya.	Annex I (I)

ANNEXURE-I (A TO I)

NHIDCL, SHILLONG				
LIST OF ARCHITECTURE DRAWINGS (TOTAL 61)				
S.NO	**DRAWING NAME**	**SHEET SIZE**	**DRAWING NO.**	**REMARKS**
A	**8x MARRIED ACCN**			
1	MASTER PLAN		AR/MAP/MP/001	
2	SITE PLAN		AR/MAB/SP/100	
3	GROUND FLOOR PLAN		AR/MAB/GF/101	
4	FIRST FLOOR PLAN		AR/MAB/FF/102	
5	ROOF & MUMTY PLAN		AR/MAB/SF/103	
6	UNIT PLAN DETAIL		AR/MAB/UN/104	
7	BUILDING ELEVATIONS		AR/MAB/ELE/105	
8	BUILDING SECTIONS		AR/MAB/SEC/106	
B	**SINGLE OFFR ACCN**			
1	MASTER PLAN		AR/SOA/MP/001	
2	SITE PLAN		AR/SOA/SP/100	
3	STILT FLOOR PLAN		AR/SOA/SF/100A	
4	GROUND FLOOR PLAN		AR/SOA/GF/101	
5	FIRST FLOOR PLAN		AR/SOA/FF/102	
6	SECOND FLOOR PLAN		AR/SOA/SF/103	
7	ROOF & MUMTY PLAN		AR/SOA/RF/104	
8	UNIT PLAN DETAIL		AR/SOA/UN/105	
9	BUILDING ELEVATIONS		AR/SOA/ELE&SEC/106	
C	**OR LINES**			
1	MASTER PLAN		AR/ORB/MP/001	
2	SITE PLAN		AR/ORB/SP/100	
3	LOWER GROUND & GROUND FLOOR PLAN		AR/ORB/LGF&GF/101	
4	FIRST FLOOR & ROOF PLAN		AR/ORB/FF&RF/102	
5	BUILDING ELEVATIONS & SECTION		AR/ORB/ELE&SEC/103	
D	**CSD**			
1	MASTER PLAN		AR/CSD/MP/001	
2	SITE PLAN		AR/CSD/SP/100	
3	GROUND FLOOR PLAN		AR/CSD/GF/101	
4	FIRST FLOOR PLAN		AR/CSD/FF/102	
5	SECOND FLOOR PLAN		AR/CSD/SF/103	
6	ROOF PLAN		AR/CSD/RF/104	
7	BUILDING ELEVATIONS & SECTION		AR/CSD/ELE&SEC/105	
E	**CLUB HOUSE**			

1	MASTER PLAN		AR/CHB/MP/001	
2	SITE PLAN		AR/CHB/SP/100	
3	GROUND FLOOR PLAN		AR/CHB/GF/101	
4	FIRST FLOOR PLAN		AR/CHB/FF/102	
5	ROOF & MUMTY PLAN		AR/CHB/RF/103	
6	BUILDING ELEVATION & SECTION		AR/CHB/ELE&SEC/104	
F	**GUEST ROOMS**			
1	MASTER PLAN		AR/GRB/MP/001	
2	SITE PLAN		AR/GRB/SP/100	
3	GROUND FLOOR PLAN		AR/GRB/GF/101	
4	FIRST FLOOR PLAN		AR/GRB/FF/102	
5	SECOND FLOOR PLAN		AR/GRB/SF/103	
6	ROOF & MUMTY PLAN		AR/GRB/RF/104	
7	BUILDING ELEVATIONS & SECTION		AR/GRB/ELE&SEC/105	
G	**OFFICE**			
1	MASTER PLAN		AR/OFB/MP/001	
2	SITE PLAN		AR/OFB/SP/100	
3	GROUND FLOOR PLAN		AR/OFB/GF/101	
4	FIRST FLOOR PLAN		AR/OFB/FF/102	
5	SECOND FLOOR PLAN		AR/OFB/SF/103	
6	ROOF & MUMTY PLAN		AR/OFB/RF/104	
7	BUILDING ELEVATIONS & SECTION		AR/OFB/ELE&SEC/105	
H	**APS SCHOOL**			
1	MASTER PLAN		AR/APS/MP/001	
2	SITE PLAN		AR/APS/SP/100	
3	GROUND FLOOR PLAN		AR/APS/GF/101	
4	FIRST FLOOR PLAN		AR/APS/FF/102	
5	ROOF & MUMTY PLAN		AR/APS/RF/103	
6	BUILDING ELEVATION & SECTION		AR/APS/ELE&SEC/104	
I	**ANCILLARY BLOCKS**			
1	TOILET & SENTRY POST DETAIL		AR/ANB/DET/101	
2	GD ROOM & TOILET DETAIL		AR/ANB/DET/102	
3	GD ROOM, SENTRY POST & STAFF ROOM DETAIL		AR/ANB/DET/103	
4	2X PARKING AREA		AR/ANB/DET/104	
5	PARKING SHED & GARAGE DETAIL		AR/ANB/DET/105	
6	GD ROOM & TOILET DETAIL		AR/ANB/DET/106	

SCHEDULE-J: PROJECT COMPLETION SCHEDULE

1 Project Completion Schedule

During Construction period, the Contractor shall comply with the requirements set forth in this Schedule-J for each of the Project Milestones and the **Scheduled Completion Date**. Within 15 (fifteen) days of the date of each Project Milestone, the Contractor shall notify the Authority of such compliance along with necessary particulars thereof.

2 Project Milestone-I

2.1 Project Milestone-I shall occur on the date falling on the 256th (Two hundred and fifty sixth) day from the Appointed Date (the "**Project Milestone-I**").

2.2 Prior to the occurrence of Project Milestone-I, the Contractor shall have commenced construction of the Project and submitted to the Authority duly and validly prepared Stage Payment Statements for an amount not less than 10% (ten per cent) of the Contract Price.

3 Project Milestone-II

3.1 Project Milestone-II shall occur on the date falling on the 438th (Four hundred and thirty eight) day from the Appointed Date (the "**Project Milestone-II**").

3.2 Prior to the occurrence of Project Milestone-II, the Contractor shall have continued with construction of the Project and submitted to the Authority duly and validly prepared Stage Payment Statements for an amount not less than 30% (thirty per cent) of the Contract Price.

4 Project Milestone-III

4.1 Project Milestone-III shall occur on the date falling on the 621st (Six hundred and twenty first) day from the Appointed Date (the "**Project Milestone- III**").

4.2 Prior to the occurrence of Project Milestone-III, the Contractor shall have continued with construction of the Project and submitted to the Authority duly and validly prepared Stage Payment Statements for an amount not less than 60% (sixty per cent) of the Contract Price.

5 Scheduled Completion Date

5.1 The Scheduled Completion Date shall occur on the 730th (Seven Hundred and thirtieth) dayfrom the Appointed Date.

5.2 On or before the Scheduled Completion Date, the Contractor shall have completedconstruction in accordance with this Agreement.

6 Extension of time

Upon extension of any or all of the aforesaid Project Milestones or the Scheduled Completion Date, as the case may be, under and in accordance with the provisions of this Agreement, the Project Completion Schedule shall be deemed to have been amended accordingly.

SCHEDULE-K: TESTS ON COMPLETION

1 ScheduleforTests

1.1 The Contractor shall, no later than 30 (thirty) days prior to the likely completion of construction, notify the Authority's Engineer and the Authority of its intent to subject the Project to Tests, and no later than 10 (ten) days prior to the actual date of Tests, furnish tothe Authority's Engineer and the Authority detailed inventory and particulars of all works and equipment forming part of Works.

1.2 The Contractor shall notify the Authority's Engineer of its readiness to subject the Project to Tests at any time after 10 (ten) days from the date of such notice, and upon receipt of such notice, the Authority's Engineer shall, in consultation with the Contractor, determine the date and time for each Test and notify the same to the Authority who may designate its representative to witness the Tests. The Authority's Engineer shall thereupon conduct the Tests itself or cause any of the Tests to be conducted in accordance with Article 12 and this Schedule-K.

2 Tests

2.1 Other tests: The Authority's Engineer may require the Contractor to carry out or cause to be carried additional tests, in accordance with Good Industry Practice, for determining the compliance of the Project with Specifications and Standards.

2.2 Environmental audit: The Authority's Engineer shall carry out a check to determine conformity of the Project with the environmental requirements set forth in Applicable Laws and Applicable Permits.

2.3 Safety Audit: The Authority's Engineer shall carry out, or cause to be carried out, a safety audit to determine conformity of the Project with the safety requirements and Good Industry Practice.

3 Agency for conducting Tests

All Tests set forth in this Schedule-K shall be conducted by the Authority's Engineer orsuch other agency or person as it may specify in consultation with the Authority.

4 Completion Certificate

Upon successful completion of Tests, the Authority's Engineer shall issue theCompletion Certificate in accordance with the provisions of Article 12.

SCHEDULE-L: PROVISIONAL CERTIFICATE

1 I,..... (Name of the Authority's Engineer), acting as the Authority's Engineer, under and in accordance with the Agreement dated ..... (the **"Agreement"**), for Construction of Equal Value Assets viz. married residential accommodation for Army Officers, Junior Commissioned Officers and ORs at East Khasi Hills District at Shillong through …… (Name of Contractor), hereby certify that the Tests in accordance with Article 12 of the Agreement have been undertaken to determine compliance of the Project Highway with the provisions of the Agreement.

2 Works that are incomplete on account of Time Extension have been specified in the Punch List appended hereto, and the Contractor has agreed and accepted that it shall complete all such works in the time and manner set forth in the Agreement. In addition, certain minor works are incomplete and these are not likely to cause material inconvenience to the Users of the Project Building & Instructure work or affect their safety. The Contractor has agreed and accepted that as a condition of this Provisional Certificate, it shall complete such minor works within 30 (thirty) days hereof. These minor works have also been specifiedin the aforesaid Punch List.

3 In view of the foregoing, I am satisfied that the Project for Building & Infrastructure work can be safely and reliably placed in service of the Users thereof, and in terms of the Agreement, the Project Building & Instructure work is hereby provisionally declared fit for entry into operation on this the …… day of …….. 20…...

ACCEPTED, SIGNED, SEALED AND DELIVERED	SIGNED, SEALED AND DELIVERED
For and on behalf of	For and on behalf of
CONTRACTOR by:	AUTHORITY's ENGINEER by:
(Signature)	(Signature)

COMPLETION CERTIFICATE

1 I, ……. (Name of the Authority's Engineer), acting as the Authority's Engineer, under and in accordance with the Agreement dated ..... (the "**Agreement**"), for Construction of Equal Value Assets viz. married residential accommodation for Army Officers, Junior Commissioned Officers and ORs at East Khasi Hills District at Shillong through (Name of Contractor), hereby certify that the Tests in accordance with
Article 12 of the Agreement have been successfully undertaken to determine compliance of the Project Building & Instructure work with the provisions of the Agreement, and I am satisfied that the Project Building & Instructure work can be safely and reliably placed in service of the Users thereof.

2 It is certified that, in terms of the aforesaid Agreement, all works forming part of Project Highway have been completed, and the Project Highway is hereby declared fit for entry into operation on this the …… day of …… 20…..

SIGNED, SEALED AND DELIVERED

For and on behalf of the Authority's Engineer by:

(Signature)

(Name)

(Designation)

(Address)

SCHEDULE-M: PAYMENT REDUCTION FOR NON-COMPLIANCE

1 Payment reduction for non-compliance with the Maintenance Requirements

1.1 Monthly lump sum payments for maintenance shall be reduced in the case of non-compliance with the Maintenance Requirements set forth in Schedule-E.

1.2 Any deduction made on account of non-compliance with the Maintenance Requirements shall not be paid even after compliance subsequently. The deductions shall continue to be made every month until compliance is done.

1.3 The Authority's Engineer shall calculate the amount of payment reduction on the basis of weightage in percentage assigned to non-conforming items as given in Paragraph 2.

2 Percentage reductions in lump sum payments

2.1 The following percentages shall govern the payment reduction:

2.2 The amount to be deducted from monthly lump-sum payment for noncompliance of particular itemshall be calculated as under:

R=P/IOO x M x C1

Where
P = Percentage of particular item/ Defect/deficiency for deductionM = Monthly lump-sum payment in accordance with the Bid
C = its % in the Schedule H (of Contract Price)
R = Reduction (the amount to be deducted for non-compliance for a particular item/Defect/ deficiency

The total amount of reduction shall be arrived at by summation of reductions for such items/Defects/ deficiency or non-compliance.

SCHEDULE-N: Selection of Authority's Engineer

1 Selection of Authority's Engineer

1.1 The provisions of the Model Request for Proposal for Selection of Technical Consultants, issued by the Ministry of Finance in May 2009, or any substitute thereof shall apply for selection of an experienced firm to discharge the functions and duties of an Authority's Engineer.

1.2 In the event of termination of the Technical Consultants appointed in accordance with the provisions of Paragraph 1.1, the Authority shall appoint another firm of Technical Consultants forthwith and may engage a government-owned entity in accordance with the provisions of Paragraph 3 of this Schedule- N.

2 Terms of Reference

The Terms of Reference for the Authority's Engineer (the "**TOR**") shall substantiallyconform with Annex 1 to this Schedule N.

3 Appointment of Government entity as Authority's Engineer

Notwithstanding anything to the contrary contained in this Schedule, the Authority may in its discretion appoint a government-owned entity as the Authority's Engineer; provided that such entity shall be a body corporate having as one of its primary functions the provision of consulting, advisory and supervisory services for engineering projects; provided further that a government-owned entity which is owned or controlled by the Authority shall not be eligible for appointment as Authority's Engineer.

Annexure -I

(Schedule-N)

Terms of Reference for Authority's Engineer

1 Scope

1.1 These Terms of Reference (the "**TOR**") for the Authority's Engineer are being specified pursuant to the EPC Agreement dated.....(the "**Agreement**), which has been entered into between the [name and address of the Authority] (the "**Authority**") and.....(the "**Contractor**") for Development of multimodal logistic park, package-II on Engineering, Procurement, Construction (EPC) basis, and a copy of which is annexed hereto and marked asAnnex-A to form part of this TOR.

1.2 The TOR shall apply to construction and maintenance of the Project.

2 Definitions and interpretation

2.1 The words and expressions beginning with or in capital letters and not defined herein but defined in the Agreement shall have, unless repugnant to the context, the meaning respectively assigned to them in the Agreement.

2.2 References to Articles, Clauses and Schedules in this TOR shall, except where the context otherwise requires, be deemed to be references to the Articles, Clauses and Schedules of the Agreement, and references to Paragraphs shall be deemed to be references to Paragraphs of this TOR.

2.3 The rules of interpretation stated in Clauses 1.2, 1.3 and 1.4 of the Agreement shall apply, *mutatis mutandis*, to this TOR.

3 General

3.1 The Authority's Engineer shall discharge its duties in a fair, impartial and efficient manner, consistent with the highest standards of professional integrity and Good Industry Practice.

3.2 The Authority's Engineer shall perform the duties and exercise the authority in accordance with the provisions of this Agreement, but subject to obtaining prior written approval of the Authority before determining:

(i) any Time Extension;
(ii) any additional cost to be paid by the Authority to the Contractor;
(iii) the Termination Payment; or
(iv) any other matter which is not specified in (a), (b) or (c) above and which creates an obligation or liability on either Party for a sum exceeding Rs. 5,000,000 (Rs. fifty lakh).

3.3 The Authority's Engineer shall submit regular periodic reports, at least once every month, to the Authority in respect of its duties and functions under this Agreement. Such reports shallbe submitted by the Authority's Engineer within 10 (ten) days of the beginning of every month.

3.4 The Authority's Engineer shall inform the Contractor of any delegation of its duties and responsibilities to its suitably qualified and experienced personnel; provided, however, that it shall not delegate the authority to refer any matter for the Authority's prior approval in accordance with the provisions of Clause 18.2.

3.5 The Authority's Engineer shall aid and advise the Authority on any proposal for Change of Scope under Article 13.

3.6 In the event of any disagreement between the Parties regarding the meaning, scope and nature of Good Industry Practice, as set forth in any provision of the Agreement, the Authority's Engineer shall specify such meaning, scope and nature by issuing a reasoned written statement relying on good industry practice and authentic literature.

4 Construction Period

4.1 During the Construction Period, the Authority's Engineer shall review the Drawings furnished by the Contractor along with supporting data, including the geo-technical and hydrological investigations, characteristics of materials from borrow areas and quarry sites, topographical surveys, and the recommendations of the Safety Consultant in accordance with the provisions of Clause 10.1.6. The Authority's Engineer shall complete such review and send its observations to the Authority and the Contractor within 15 (fifteen) days of receiptof such Drawings; provided, however that in case of a Major Structure, the aforesaid periodof 15 (fifteen) days may be extended upto 30 (thirty) days. In particular, such comments shall specify the conformity or otherwise of such Drawings with the Scope of the Project and Specifications and Standards.

4.2 The Authority's Engineer shall review any revised Drawings sent to it by the Contractor and furnish its comments within 10 (ten) days of receiving such Drawings.

4.3 Authority's Engineer shall review the Quality Assurance Plan submitted by the Contractor and shall convey its comments to the Contractor within a period of 21 (twenty-one) days stating the modifications, if any, required thereto.

4.4 The Authority's Engineer shall complete the review of the methodology proposed to be adopted by the Contractor for executing the Works, and convey its comments to the Contractor within a period of 10 (ten) days from the date of receipt of the proposed methodology from the Contractor.

4.5 The Authority's Engineer shall grant written approval to the Contractor, where necessary, for interruption and diversion of the flow of traffic for purposes of maintenance during the Construction Period in accordance with the provisions of Clause 10.4.

4.6 The Authority's Engineer shall review the monthly progress report furnished by the Contractor and send its comments thereon to the Authority and the Contractor within 7 (seven) days of receipt of such report.

4.7 The Authority's Engineer shall inspect the Construction Works and the Project Building & Instructure work and shall submit a monthly Inspection Report bringing out the results of inspections and the remedial action taken by the Contractor in respect of Defects or deficiencies. In particular, the Authority's Engineer shall include in its Inspection Report, the compliance of the recommendations made by the Safety Consultant.

4.8 The Authority's Engineer shall conduct the pre-construction review of manufacturer's test reports and standard samples of manufactured Materials, and such other Materials as the Authority's Engineer may require.

4.9 For determining that the Works conform to Specifications and Standards, the Authority's Engineer shall require the Contractor to carry out, or cause to be carried out, tests at such time and frequency and in such manner as specified in the Agreement and in accordance with Good Industry Practice for quality assurance.

4.10 The Authority's Engineer shall test check at least 20 (twenty) percent of the quantity or number of tests prescribed for each category or type of test for quality control by the

Contractor.

4.11 Timing of tests referred to in Paragraph 4.9, and the criteria for acceptance/ rejection of their results shall be determined by the Authority's Engineer in accordance with the QualityControl Manuals. The tests shall be undertaken on a random sample basis and shall be in addition to, and independent of, the tests that may be carried out by the Contractor for its own quality assurance in accordance with Good Industry Practice.

4.12 In the event that results of any tests conducted under Clause 11.10 establish any Defects or deficiencies in the Works, the Authority's Engineer shall require the Contractor to carry out remedial measures.

4.13 The Authority's Engineer may instruct the Contractor to execute any work which is urgently required for the safety of the Project, whether because of an accident, unforeseeable eventor otherwise; provided that in case of any work required on account of a Force Majeure Event, the provisions of Clause 21.6 shall apply.

4.14 In the event that the Contractor fails to achieve any of the Project Milestones, the Authority's Engineer shall undertake a review of the progress of construction and identify potential delays, if any. If the Authority's Engineer shall determine that completion of the Project is not feasible within the time specified in the Agreement, it shall require the Contractor to indicate within 15 (fifteen) days the steps proposed to be taken to expedite progress, and the period within which the Project Completion Date shall be achieved. Upon receipt of a report fromthe Contractor, the Authority's Engineer shall review the same and send its comments to the Authority and the Contractor forthwith.

4.15 The Authority's Engineer shall obtain from the Contractor a copy of all the Contractor's quality control records and documents before the Completion Certificate is issued pursuantto Clause 12.4.

4.16 Authority's Engineer may recommend to the Authority suspension of the whole or part of the Works if the work threatens the safety of the Users and pedestrians. After the Contractor has carried out remedial measure, the Authority's Engineer shall inspect such remedial measures forthwith and make a report to the Authority recommending whether or not the suspension hereunder may be revoked.

4.17 In the event that the Contractor carries out any remedial measures to secure the safety of suspended works and Users, and requires the Authority's Engineer to inspect such works, the Authority's Engineer shall inspect the suspended works within 3 (three) days of receiving such notice, and make a report to the Authority forthwith, recommending whetheror not such suspension may be revoked by the Authority.

4.18 The Authority's Engineer shall carry out, or cause to be carried out, all the Tests specified in Schedule- K and issue a Completion Certificate or Provisional Certificate, as the case may be. For carrying out its functions under this Paragraph 4.18 and all matters incidental thereto, the Authority's Engineer shall act under and in accordance with the provisions of Article 12 and Schedule-K.

5 Maintenance Period

5.1 The Authority's Engineer shall aid and advise the Contractor in the preparation of its monthly Maintenance Programme and for this purpose carry out a joint monthly inspection with the Contractor.

5.2 The Authority's Engineer shall undertake regular inspections, at least once every month, to evaluate compliance with the Maintenance Requirements and submit a Maintenance Inspection Report to the Authority and the Contractor.

5.3 The Authority's Engineer shall specify the tests, if any, that the Contractor shall carry out, or cause to be carried out, for the purpose of determining that the Project is in conformity with the Maintenance Requirements. It shall monitor and review the results of such tests and the remedial measures, if any, taken by the Contractor in this behalf.

5.4 In respect of any defect or deficiency referred to in Paragraph 3 of Schedule- E, the Authority's Engineer shall, in conformity with Good Industry Practice, specify the permissible limit of deviation or deterioration with reference to the Specifications and Standards and shall also specify the time limit for repair or rectification of any deviation or deterioration beyond the permissible limit.

5.5 The Authority's Engineer shall examine the request of the Contractor for closure of the Project or part thereof for undertaking maintenance/repair thereof, and shall grant permission with such modifications, as it may deem necessary, within 5 (five) days of receiving a request from the Contractor. Upon expiry of the permitted period of closure, the Authority's Engineer shall monitor the reopening of such lane(s), and in case of delay, determine the Damages payable by the Contractor to the Authority under Clause 14.5.

6 Determination of costs and time

6.1 The Authority's Engineer shall determine the costs, and/or their reasonableness, that arerequired to be determined by it under the Agreement. The Authority's Engineer shall determine the period of Time Extension that is required to be determined by it under the Agreement.

6.2 The Authority's Engineer shall consult each Party in every case of determination inaccordance with the provisions of Clause 18.5.

7 Payments

7.1 The Authority's Engineer shall withhold payments for the affected works for which the Contractor fails to revise and resubmit the Drawings to the Authority's Engineer in accordance with the provisions of Clause 10.2.4 (d).

7.2 Authority's Engineer shall –

(i) within 10 (ten) days of receipt of the Stage Payment Statement from the Contractor pursuant to Clause 19.4, determine the amount due to the Contractor and recommend the release of 90 (ninety) percent of the amount so determined as part payment, pending issue of the Interim Payment Certificate; and

(ii) within 15 (fifteen) days of the receipt of the Stage Payment Statement referred to in Clause 19.4, deliver to the Authority and the Contractor an Interim Payment Certificate certifying the amount due and payable to the Contractor, after adjustments in accordance with the provisions of Clause 19.10.

7.3 The Authority's Engineer shall, within 15 (fifteen) days of receipt of the Monthly Maintenance Statement from the Contractor pursuant to Clause 19.6, verify the Contractor's

monthly statement and certify the amount to be paid to the Contractor in accordance with the provisions of the Agreement.

7.4 The Authority's Engineer shall certify final payment within 30 (thirty) days of the receipt of the final payment statement of Maintenance in accordance with the provisions of Clause 19.16.

8 Other duties and functions

The Authority's Engineer shall perform all other duties and functions as specified inthe Agreement.

9 Miscellaneous

9.1 A copy of all communications, comments, instructions, Drawings or Documents sent by the Authority's Engineer to the Contractor pursuant to this TOR, and a copy of all the test results with comments of the Authority's Engineer thereon, shall be furnished by the Authority's Engineer to the Authority forthwith.

9.2 The Authority's Engineer shall retain at least one copy each of all Drawings and Documents received by it, including 'as-built' Drawings, and keep them in its safe custody.

9.3 Within 90 (ninety) days of the Project Completion Date, the Authority's Engineer shall obtain a complete set of as-built Drawings, in 2 (two) hard copies and in micro film form or in such other medium as may be acceptable to the Authority, reflecting the Project as actually designed, engineered and constructed, including an as-built survey illustrating the layout of the Project and setback lines, if any, of the buildings and structures forming part of Project Facilities; and shall hand them over to the Authority against receipt thereof.

9.4 The Authority's Engineer, if called upon by the Authority or the Contractor or both, shall mediate and assist the Parties in arriving at an amicable settlement of any Dispute between the Parties.

9.5 The Authority's Engineer shall inform the Authority and the Contractor of any event of Contractor's Default within one week of its occurrence.

SCHEDULE-O: FORMS OF PAYMENT STATEMENTS

1 Stage Payment Statement for Works

The Stage Payment Statement for Works shall state:

(i) the estimated amount for the Works executed in accordance with Clause 19.3.1 subsequent to the last claim;
(ii) amounts reflecting adjustments in price for the aforesaid claim;
(iii) the estimated amount of each Change of Scope Order executed subsequent tothe last claim;

(iv) amounts reflecting adjustment in price, if any, for (iii) above in accordancewith the provisions of Clause 13.2.3 (a);
(v) total of (i), (ii), (iii) and (iv) above;
(vi) Deductions:
  (a) Any amount to be deducted in accordance with the provisions of the Agreement except taxes;
  (b) Any amount towards deduction of taxes; and
  (c) Total of (a) and (b) above.
(vii) Net claim: (v) – (vi) (c);
(viii) The amounts received by the Contractor upto the last claim:

  (a) For the Works executed (excluding Change of Scope orders);
  (b) For Change of Scope Orders, and
  (c) Taxes deduct

2 Monthly Maintenance Payment Statement

The monthly Statement for Maintenance Payment shall state:

(i) the monthly payment admissible in accordance with the provisions of theAgreement;
(ii) the deductions for maintenance work not done;
(iii) net payment for maintenance due, (i) minus (ii);
(iv) amounts reflecting adjustments in price under Clause 19.12; and
(v) amount towards deduction of taxes

3 Contractor's claim for Damages

Note: The Contractor shall submit its claims in a form acceptable to the Authority.

SCHEDULE-P: INSURANCE

1 Insurance during Construction Period

1.1 The Contractor shall effect and maintain at its own cost, from the Appointed Date till the date of issue of the Completion Certificate, the following insurances for any loss or damage occurring on account of Non Political Event of Force Majeure, malicious act, accidental damage, explosion, fire and terrorism:

(i) insurance of Works, Plant and Materials and an additional sum of [15 (fifteen)] per cent of such replacement cost to cover any additional costs of and incidental to the rectification of loss or damage including professional fees and the cost of demolishing ansd removing any part of the Works and of removing debris of whatsoever nature; and

(ii) insurance for the Contractor's equipment and Documents brought onto the Site by the Contractor, for a sum sufficient to provide for their replacement at the Site.

1.2 The insurance under paragraph 1.1 (i) and (ii) above shall cover the Authority and the Contractor against all loss or damage from any cause arising under paragraph 1.1 other than risks which are not insurable at commercial terms.

2 Insurance for Contractor's Defects Liability

The Contractor shall effect and maintain insurance cover for the Works from the date of issue of the Completion Certificate until the end of the Defects Liability Period for anyloss or damage for which the Contractor is liable and which arises from a cause occurring prior to the issue of the Completion Certificate. The Contractor shall also maintain other insurances for maximum sums as may be required under the Applicable Laws and in accordance with Good Industry Practice.

3 Insurance against injury to persons and damage to property

3.1 The Contractor shall insure against its liability for any loss, damage, death or bodily injury, or damage to any property (except things insured under Paragraphs 1 and 2 of this Schedule or to any person (except persons insured under Clause 20.9), which may arise out of the Contractor's performance of this Agreement. This insurance shall be for a limit per occurrence of not less than the amount stated below with no limit on the number of occurrences.

The insurance cover shall be not less than: Rs. [*****]

3.2 The insurance shall be extended to cover liability for all loss and damage to the Authority's property arising out of the Contractor’s performance of this Agreement excluding:

(i) the Authority's right to have the construction works executed on, over, under,in or through any land, and to occupy this land for the Works; and

(ii) damage which is an unavoidable result of the Contractor's obligations to execute the Works.

4 Insurance to be in joint names

The insurance under paragraphs 1 to 3 above shall be in the joint names of the Contractorand the Authority.

END OF THE DOCUMENT