

**PREFABRICATED PORTABLE CABIN SPECIFICATIONS (HARDUAGANJ)****1. PRINCIPAL DIMENSIONS:**

Overall length : 6000 mm

Overall length including skid : 6600 mm

Overall width : 2440 mm

Overall height with skid and lifting lug : 2890 mm

**Nominal Internal Dimensions:**

Length : 5750 mm

Width : 2190 mm

Height (Clear Head Room) : 2210 mm

Permissible Tolerance : +/- 10 mm

**2. GENERAL DESIGN AND CONSTRUCTION :****SHELL:**

The shell structure shall comprise of sidewalls, end walls and self draining roof.

**SKID:**

The Bunk House shall be mounted on a skid arrangement made of two build-up I sections (200x100x8 mm thick) having 3 Nos. cross members of formed C section (150x75x8mm thick). At the end of skid, suitable formed section made of steel conforming to IS: 2062 shall be connected.

Materials of structural steel members shall conform to IS: 2062 Grade A

**BASE FRAME / FLOOR SYSTEM:**

The main structural elements of the under frame shall be 125x50 formed C section from minimum 3.15 mm thick sheets conforming to IS: 1079 Grade O/ IS: 2062 Grade A.

This under frame shall support the floorboard of min. 35 mm thick MDF board ( weather & borer proof ) duly fixed by self-tapping screws to 16 G thick steel sheets welded to the base and steel runners. PVC Sheet tiles of 2 mm thickness of size 300x300 mm of reputed make shall be laid over the MDF board and Bitumen preservative paint is to be applied on the lower side of the board.

**SIDE & END WALLS:**

The sidewalls shall be made of wall posts, corrugated panels and top cant rails. The cladding panels shall be made of min. 1.6 mm thick steel sheet conforming to IS: 1079 Gr. O and be vertically corrugated by means of press forming, continuously welded to top side and base structure. The wall post shall be cold formed Z-section made out of min. 3.15 mm thick mild steel sheets conforming to IS: 1079 Grade O. The top cant rails shall be made of formed (C) section of size of 200x50x3.15(min.) mm thick, materials conforming to IS: 1079 Grade O/ IS: 2062 Grade A.

**ROOF:**

Self draining roof shall be made of 1.6 mm thick steel sheets conforming to IS: 1079 Grade O, adequately stiffened by roof bows of pressed channel sections of thickness 2.5/3.15 mm with same material specification. The roof shall be having a positive camber allowing water to drain away under static conditions..

**3. SURFACE TREATMENT AND PAINTING:**

The surface preparation of all fabricated steel components shall be done by manual grit blasting to achieve SA-2 quality finish, followed by one coat of zinc based primer and two coats of epoxy paint by air spray method. The under frame and skid shall be painted with bituminous / red lead paint of reputed make. Necessary marking/ logos shall be provided as per the instruction of BHEL

**4. INSULATION:**

Average 75 mm thick thermal insulation with resin bonded fiber glass wool having density of 16 kg/m<sup>3</sup> and conforming to IS: 8183 shall be provided on the side walls, end walls and roof, with proper fixing arrangement.

**5. INNER PANELLING:**

The paneling of side walls and end walls shall be of min. 1 mm thick resin bonded plastic decorative laminate sheets fixed on min. 8 mm thick commercial quality plywood. The roof panels shall be min. 4 mm thick commercial quality plywood of same specification covered with min. 1 mm thick resin bonded plastic decorative laminate of same quality and design as in the case of inner panels. All wall and roof panels shall be supported by suitable M.S. Frame work.

**6. DOORS:**

One steel door at the main entry of the bunk house shall be provided in the desired location. The overall dimension of the main entry door shall be 1981 x 800 mm (H x W). The steel doors shall comprise of a framework of min. 3.15 mm thickness( material conforming to IS: 1079 Grade O / IS: 2062 Grade A), on which outside cladding of 2mm thick steel sheets (conforming to IS 1079 Grade O)with two vertical corrugations are fixed. The door shall have 40 mm thick resin bonded fiber glass wool insulation.

The peripheral edges of the door shall be provided with rubber seal to prevent ingress of water and dust. The door panel shall be outward opening type with single leaf closing panel. The door shall be provided with manually operating type locking arrangements from both internal and external side. The door shall be provided with steel rain-shed made from 2 mm thick sheet ( IS:1079 Gr. O) from outside.

**7. WINDOWS:**

The windows shall be provided in the desired location. The windows shall be horizontal sliding type having overall dimensions 585x800 mm (H x W). The windows shall be decorated by anodized aluminum extruded section fitted with sliding shutter-proof safety glass sheets of clear vision and min. 4 mm thickness. Iron grills made of 20 mm M.S. flats shall also be provided in the windows for safety purpose. Stainless Steel fly-proof mesh in suitable framework shall also be provided in the windows. The windows shall be provided with steel rain-shed made from min. 2 mm thick sheet (IS:1079 Gr.O) from outside.

**8. STEPS/STAIRS:**

Fabricated steel steps of detachable type having three treads shall be provided in each bunk house for getting inside at main entry door. These shall be made of checkered plates and formed channel sections.

**9. ELECTRICALS:**

PVC insulated copper wire of ISI mark shall be used for the wiring. This wiring shall be done in PVC conduits. As a measure of safety, continuous copper earth wire shall be provided as necessary. For lighting circuits, 3/1.09 cable and for heavy-duty circuits, such as air conditioners, heating circuits, 7/1.22 cable shall be used. DOL switches of capacity 250V/15 Amps shall be provided for air conditioners. For connecting power supply to bunk houses, 3 pin input industrial socket of 32 Amps capacity shall be provided.

Concealed type (2x36) roof hanging florescent light shall be provided as per the layout arrangements. In addition, four nos. each of 15 Amps and 5 Amps 3 pin sockets shall be provided at suitable locations inside the bunk house.

All the lamps, fans, exhaust fans, plug points etc. shall have independent slash/piano type switches of required rating inside the bunkhouse. Ceiling fans shall be of Crompton, or equivalent of reputed make. All electrical points & switches shall be of Anchor or equivalent make. Necessary circuit breakers i.e. MCB & ELCB shall be provided. Supply to refrigerator and heating unit shall be through metal clad MCB of adequate rating.

Junction Box shall be provided out side on the bunk house for telephone connections with suitable connecting points inside the bunk house.

**10. HANDLING AND TRANSPORTATION:**

Necessary arrangement shall be provided at top four corners for safe and easy lifting and transportation of the bunkhouse.

**11. TARFELTING:**

The roof surface is to be painted with one coat of "Bitumen Primer" before laying Hessian based finished tar felt as per IS:1322, Type-3, Gr.-1 in two layers as basic waterproofing material. Blown Grade Bitumen 85/25 as per IS: 702 in three layers 1.5 Kg/M2 are to be used as the bonding materials. Fine sand is to be finally sprinkled over the last layer of bitumen.

**PREFABRICATED PORTABLE CABIN SPECIFICATIONS (DADRI)****1. PRINCIPAL DIMENSIONS:**

Overall length : 4580 mm

Overall length including skid : 5180 mm

Overall width : 2440 mm

Overall height with skid and lifting lug : 2890 mm

**Nominal Internal Dimensions:**

Length : 4330 mm

Width : 2190 mm

Height (Clear Head Room) : 2210 mm

Permissible Tolerance : +/- 10 mm

**2. GENERAL DESIGN AND CONSTRUCTION:****SHELL:**

The shell structure shall comprise of sidewalls, end walls and self-draining roof.

**SKID:**

The Bunk House shall be mounted on a skid arrangement made of two build-up I sections (200x100x8 mm thick) having 3 Nos. cross members of formed C section (150x75x8mm thick). At the end of skid, suitable formed section made of steel conforming to IS: 2062 shall be connected.

Materials of structural steel members shall conform to IS: 2062 Grade A

**BASE FRAME / FLOOR SYSTEM:**

The main structural elements of the under frame shall be 125x50 formed C section from minimum 3.15 mm thick sheets conforming to IS: 1079 Grade O/ IS: 2062 Grade A.

This under frame shall support the floorboard of min. 35 mm thick MDF board ( weather & borer proof ) duly fixed by self-tapping screws to 16 G thick steel sheets welded to the base and steel runners. PVC Sheet tiles of 2 mm thickness of size 300x300 mm of reputed make shall be laid over the MDF board and Bitumen preservative paint is to be applied on the lower side of the board.

**SIDE & END WALLS:**

The sidewalls shall be made of wall posts, corrugated panels and top cant rails. The cladding panels shall be made of min. 1.6 mm thick steel sheet conforming to IS: 1079 Gr. O and be vertically corrugated by means of press forming, continuously welded to top side and base structure. The wall post shall be cold formed Z-section made out of min. 3.15 mm thick mild steel sheets conforming to IS: 1079 Grade O. The top cant rails shall be made of formed (C) section of size of 200x50x3.15(min.) mm thick, materials conforming to IS: 1079 Grade O/ IS: 2062 Grade A.

**ROOF:**

Self draining roof shall be made of 1.6 mm thick steel sheets conforming to IS: 1079 Grade O, adequately stiffened by roof bows of pressed channel sections of thickness 2.5/3.15 mm with same material specification. The roof shall be having a positive camber allowing water to drain away under static conditions..

**3. SURFACE TREATMENT AND PAINTING:**

The surface preparation of all fabricated steel components shall be done by manual grit blasting to achieve SA-2 quality finish, followed by one coat of zinc based primer and two coats of epoxy paint by air spray method. The under frame and skid shall be painted with bituminous / red lead paint of reputed make. Necessary marking/ logos shall be provided as per the instruction of BHEL

**4. INSULATION:**

Average 75 mm thick thermal insulation with resin bonded fiber glass wool having density of 16 kg/m<sup>3</sup> and conforming to IS: 8183 shall be provided on the side walls, end walls and roof, with proper fixing arrangement.

**5. INNER PANELLING:**

The paneling of side walls and end walls shall be of min. 1 mm thick resin bonded plastic decorative laminate sheets fixed on min. 8 mm thick commercial quality plywood. The roof panels shall be min. 4 mm thick commercial quality plywood of same specification covered with min. 1 mm thick resin bonded plastic decorative laminate of same quality and design as in the case of inner panels. All wall and roof panels shall be supported by suitable M.S. Frame work.

**6. DOORS:**

One steel door at the main entry of the bunk house shall be provided in the desired location. The overall dimension of the main entry door shall be 1981 x 800 mm (H x W). The steel doors shall comprise of a framework of min. 3.15 mm thickness( material conforming to IS: 1079 Grade O / IS: 2062 Grade A), on which outside cladding of 2mm thick steel sheets (conforming to IS 1079 Grade O)with two vertical corrugations are fixed. The door shall have 40 mm thick resin bonded fiber glass wool insulation.

The peripheral edges of the door shall be provided with rubber seal to prevent ingress of water and dust. The door panel shall be outward opening type with single leaf closing panel. The door shall be provided with manually operating type locking arrangements from both internal and external side. The door shall be provided with steel rain-shed made from 2 mm thick sheet ( IS:1079 Gr. O) from outside.

**7. WINDOWS:**

The windows shall be provided in the desired location. The windows shall be horizontal sliding type having overall dimensions 585x800 mm (H x W). The windows shall be decorated by anodized aluminum extruded section fitted with sliding shutter-proof safety glass sheets of clear vision and min. 4 mm thickness. Iron grills made of 20 mm M.S. flats shall also be provided in the windows for safety purpose. Stainless Steel fly-proof mesh in suitable framework shall also be provided in the windows. The windows shall be provided with steel rain-shed made from min. 2 mm thick sheet (IS:1079 Gr.O) from outside.

**8. STEPS/STAIRS:**

Fabricated steel steps of detachable type having three treads shall be provided in each bunk house for getting inside at main entry door. These shall be made of checkered plates and formed channel sections.

**9. ELECTRICALS:**

PVC insulated copper wire of ISI mark shall be used for the wiring. This wiring shall be done in PVC conduits. As a measure of safety, continuous copper earth wire shall be provided as necessary. For lighting circuits, 3/1.09 cable and for heavy-duty circuits, such as air conditioners, heating circuits, 7/1.22 cable shall be used. DOL switches of capacity 250V/15 Amps shall be provided for air conditioners. For connecting power supply to bunk houses, 3 pin input industrial socket of 32 Amps capacity shall be provided.

Concealed type (2x36) roof hanging florescent light shall be provided as per the layout arrangements. In addition, four nos. each of 15 Amps and 5 Amps 3 pin sockets shall be provided at suitable locations inside the bunk house.

All the lamps, fans, exhaust fans, plug points etc. shall have independent slash/piano type switches of required rating inside the bunkhouse. Ceiling fans shall be of Crompton, or equivalent of reputed make. All electrical points & switches shall be of Anchor or equivalent make. Necessary circuit breakers i.e. MCB & ELCB shall be provided. Supply to refrigerator and heating unit shall be through metal clad MCB of adequate rating.

Junction Box shall be provided out side on the bunk house for telephone connections with suitable connecting points inside the bunk house.

**10. HANDLING AND TRANSPORTATION:**

Necessary arrangement shall be provided at top four corners for safe and easy lifting and transportation of the bunkhouse.

**11. TARFELTING:**

The roof surface is to be painted with one coat of "Bitumen Primer" before laying Hessian based finished tar felt as per IS:1322, Type-3, Gr.-1 in two layers as basic waterproofing material. Blown Grade Bitumen 85/25 as per IS: 702 in three layers 1.5 Kg/M2 are to be used as the bonding materials. Fine sand is to be finally sprinkled over the last layer of bitumen.