राष्ट्रीय अंटार्कटिक एवं
समुद्री अनुसंधान केन्द्र
पृथ्वी विज्ञान मंत्रालय
भारत सरकार)
हेड लैण्ड सडा, वास्को डा गामा
गोवा- ४०३ ८०४ भारत

NATIONAL CENTRE FOR
ANTARCTIC & OCEAN RESEARCH
Ministry of Earth Sciences
Government of India)
Headland Sada, Vasco da Gama
Goa - 403 804 - INDIA

**Telefax NO.: +91 832 2525573**
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**PROCUREMENT SECTION**

**INDIGENOUS ENQUIRY**

**M/s.**

| | |
|---|---|
| **Ref. No.:** | **HSS-061** |
| **Date:** | **08.10.2015** |
| **Due Date:** | **02.11.2015** |

Dear Sir,

You are requested to send your offer for the following items as per the terms and conditions mentioned below.

| SL. NO. | DESCRIPTION | Quantity |
|---|---|---|
| 1. | Steel Dry Cargo Container 40' x 8' x 8.6"<br>(Detailed specifications as per Annexures) | One AC & One Non AC |

**Your offer should contain the following information:**

1. Submit your quotation on FOR destination basis. However quotation should contain item-wise prices including total ex-works price and cost of packing forwarding, approx. charges for delivery up to NCAOR, Goa, India.
2. Delivery Period:
3. Validity of quotation:
4. Quantity/Trade discounts, if any. :
5. Guarantee/Warranty of the product:
6. Taxes applicable (VAT if any):
7. Enclose brochure/leaflet – Specification:
8. **No advance payment** will be made. Payment will be made within 30 days after supply of the container at NCAOR. The payment will be authorized after submission of a Bank Guarantee for 10% value of the order towards warranty guarantee. The **performance Bank Guarantee** should be furnished within 15 days from the date of placement of order from a reputed bank (scheduled bank in India **or** foreign bank operating in India) valid till 60 days after the warranty period.
9. Overwriting and corrections should be attested properly. The quotation should be complete in all respects and should be duly signed. **Incomplete and unsigned quotation will not be considered at all. Quotation should be submitted as per NCAOR terms and conditions.**

10. All relevant technical literature pertain to items quoted **with full specifications** (Drawing, if any), information about the products quoted, including brochures if any should accompany the quotation.
11. A list of **reputed clients** to be furnished along-with the quotation.
12. Quotation should be **valid for a period of 90 days** and the period of delivery required should also be clearly indicated. If the supplier fails to deliver the goods within the time to be agreed upon, for delayed deliveries and for delays in installation (wherever applicable) NCAOR reserves the right to **levy liquidated damages** at the rate of 0.5% per week or part their of upto maximum of 5%.
13. Warranty shall commence from the date of acceptance of the complete equipment supplied under the Purchase Order / Contract. The **warranty period** should be indicated.
14. Please **specify the Make/Brand** and Name of the Manufacturer with address, country of origin and currency in which rates are quoted.
15. A technical Committee constituted by the Director will assess the product supplied/installed for their quality and their conformity to the specifications provided by the firm in their quotations. Any item(s) identified by the Committee to be not as per the specifications or are found to be of inferior quality will be rejected, and the bills towards the supply will not be processed for payment till proper replacements are provided.

Please enclose documentary proof such as latest purchase order copies etc., to substantiate the reasonability of price.

**Director, NCAOR reserves the right to reject any quotation received without assigning any reasons.**

**Yours faithfully**

**Sd/-**
**Executive (Procurement)**
**For and on behalf of Director, NCAOR**

**TENDER ACCEPTANCE UNDERTAKING**

To

The Director,
**NCAOR, Headland Sada,**
Vasco – Goa.

Having examined the tender document for **SUPPLY OF STEEL DRY CARGO CONTAINER**, we the undersigned hereby offer to supply the equipment in conformity with all specifications and conditions set out in the tender document.

We enclosed all the relevant documents as per the tender.

We understand that you are not bound to accept the lowest or any tender received.

**Date :**

**(Signature of Bidder)**

**Name :**

**Designation :**

Seal

**Annexure-I**

**TECHNICAL SPECIFICATION FOR STEEL DRY CARGO CONTAINER**
**40'x 8'x8'6" ISO TYPE**

## *1. General*

***1.1 Scope:*** This specification will cover the design, construction, materials, testing and inspection performances of 40'x8'x8'6" ISO. type steel dry cargo containers. These containers specified herein will be manufactured under strict quality control and be approved by the classification society or agency.

***1.2 Operational environment:*** The container will be designed and constructed for carriage of general cargo by marine (on or below deck), road and rail throughout the world. All materials used in the construction will be to withstand extremes of temperature range from -40°(-40°) to +70°(+158°) without effect on the strength of the basic structure and water tightness.

***1.3 Standards and Regulations:*** The container will satisfy the following requirements and regulations, unless otherwise mentioned in this specification.

*1.3.1. ISO Container Standards (1CC type)*

*1.3.2. Classification society:* All the containers will be certified for design type and individually inspected by classification society, BV, ABS, LR, GL or CCS.

***Handling:*** The container will be constructed to be capable of being handled without any permanent deformation under the following conditions:

*1.3.3.* Lifting, full or empty, at top corner fittings vertically by means of spreaders fitted with hooks, shackles or twist locks.

*1.3.4.* Lifting, full or empty, at bottom corner fittings using slings with terminal fittings at any angles between vertical and 45 degrees to the horizontal.

***1.4 Transportation:*** The container will be constructed to be suitable for transportation in the following modes:

*1.4.1.* Road: On flat bed or skeletal chassis, secured by twist locks or equivalent at the bottom corner fittings.

*1.4.2.* Rail: On flat cars or special container cars secured by twist locks or equivalent at the bottom corner fittings

## *2-Dimensions and Ratings*

### *1.5 External Dimensions*

Length 12,100 + 0mm - 6mm
Width 2,438 + 0mm - 5mm
Height 2,591 + 0mm - 5mm

1) No part of the container will protrude beyond the external dimensions mentioned above.
2) Maximum allowable differences between two diagonals on anyone of the following surfaces will be as follows:

Roof, bottom and side diagonals: 13 mm
Front and rear diagonals: 10 mm

### *1.6 Internal Dimensions (nominal)*

Length 11,796 mm
Width 2,350 mm
Height 2,390 mm

### *1.7 Door opening Dimensions (nominal)*

Width 2,343 mm

## *2. Materials*

***2.1 General:*** The following materials will be used in the construction of containers:

### *2.2 Part specification:*

*Parts Materials by JIS*

*2.2.1.* All steel except screws, rivets, Anti-corrosive steel. SPA-H bolts/nuts, door hardwares or equivalent and other shown on drawings Y.P. : 35 kg/mm2 and specification T.S. : 49 kg/mm2

*2.2.2.* Rear corner posts (inner) Rolled high tensile steel. SM50A
Y.P. : 33 kg/mm2
T.S. : 50 kg/mm2

*2.2.3.* Door hinges S25C
Y.P. : 27 kg/mm2
T.S. : 45 kg/mm2

*2.2.4.* Door locking bars Structural steel round pipe. STK41
Y.P. : 24 kg/mm2
T.S. : 41 kg/mm2

*2.2.5.* Corner fittings Casted weldable steel. SCW49
Y.P. : 28 kg/mm2
T.S. : 49 kg/mm2

*2.2.6.* Locking gear cams and keepers S20C
Y.P. : 25 kg/mm2
T.S. : 41 kg/mm2

*2.2.7.* Door hinge pins Stainless steel. SUS304 Gasket retainers

*2.2.8.* Door gasket EPDM

*2.2.9.* Floor board 19-ply Hardwood plywood.

*2.2.10.* Ventilator ABS resin labyrinth type

* Note: Y.P. - Yielding Point

T.S. - Tensile Strength

## *3. Construction*

### *3.1 General*

*3.1.1.* The container will be constructed with steel frames, fully vertical-corrugated steel sides and front wall, horizontal-corrugated steel double doors at rear end, die-stamped steel roof , wooden flooring, corrugated double hinged doors and ISO corner fittings at eight corners.

*3.1.2.* All exterior welding including the base frames will be continuous welding using CO2 gas to give perfect watertight properties.

*3.1.3.* Interior welds - when needed - will be stitched with a minimum bead length of 25 mm.

*3.1.4.* Gaps between adjacent components to be welded will not exceed 3 mm or the thickness of the parts being welded.

*3.1.5.* Chloroprene sealant is to be applied at periphery of floor surface and inside unwelded seams, butyl sealant is used to caulk at invisible seam of floor joint area and between door gasket and frame.

*3.1.6.* The internal bend radii of pressed sections of steel will be not less than 1.5 time the thickness of the materials being pressed.

*3.1.7.* The wooden floor will be fixed to the base frames by zinc plated self-tapping screws.

### *3.2 Protrusion*

*3.2.1.* The plane formed by the lower faces of all transverse members shall be positioned by 12.5 mm +5/-1.5 mm above the plane formed by the lower faces of the bottom corner fittings.

*3.2.2.* The top corner fittings are to protrude a minimum of 6 mm above the highest point of the roof.

*3.2.3.* The outside faces of the corner fittings will protrude from the outside faces of the corner posts by nominal 4 mm for the front and nominal 3 mm for the rear.

*3.2.4.* The outside faces of the corner fittings will protrude from the outside faces of the sides and front wall by nominal 8 mm.

*3.2.5.* Under maximum payload, no part of the container will protrude below the plane formed by the lower faces of the bottom corner fittings at the time of maximum deflection.

*3.2.6.* Under 1.8 x maximum gross weight, no part of the container will protrude more than 6.0 mm below the plane formed by the lower faces of the bottom corner fittings at the time of maximum deflection.

***3.3 Corner fittings:*** The corner fittings will be designed in accordance with ISO 1161 and manufactured at the works approved by classification society.

***3.4 Base frame structure:*** Base frame will be composed of two bottom side rails, eighteen cross members, and a forklift pockets

*3.4.1. Bottom side rail:* Each bottom side rail is built of a 50x158x30x4.5 mm thick cold formed channel section steel made in one piece. The floor guide rails of 3.0 mm thick pressed angle section steel are provided to the bottom side rails by staggered stitch welding. The lower flange of the bottom side rail is outward so as to facilitate easy removal of the cross members during repair and of less susceptible corrosion. Reinforcement plates to be made of 4.5 mm thick "L" type steel is welded to the bottom surface of both side rails around the bottom corner fitting.

*3.4.2. Cross member:* The cross members are made of pressed channel section steel with a dimension of 45x122x45x4.0 mm for the normal areas and 75x122x45x4.0 mm for the floor butt joints. The large one is reinforced by three 4.0 mm thick gussets. The cross members are placed fully to withstand floor strength and welded to each bottom side rail.

***3.5 Flooring****:* The floor will consist of six pieces plywood boards, floor center rail, and self- tapping screws.

*3.5.1. Floor:* The wooden floor to be constructed with 28 mm thick 19-ply hardwood plywood boards are laid longitudinally on the transverse members between the 4.0 mm thick flat bar floor center rail and the 3.0 mm thick pressed angle section steel floor guide rails stitched welded to the bottom side rails. The floor boards are tightly secured to each transverse member by self-tapping screws, and all butt joint areas and peripheries of the floor boards are caulked with sealant.

1) Wood species: Apitong or Keruing.
2) Glue: Phenol-formaldehyde resin.
3) Treatment:
    a) Preservative: Meganium or Equivalent. In accordance with Australian
    Health Department Regulations.
    b) Average moisture content will be 14% before installation.

*3.5.2.* *Self-tapping screw:* Each floor board is fixed to the transverse members by zinc plated self-tapping screws that are 8.0 mm dia. shank x 16 mm dia. head x 45 mm length, and fastened by five screws per cross member but six screws at joint areas. Screw heads are to be countersunk with about 2 mm below the floor top surface.

***3.6 Rear frame structure:*** The rear frame will be composed of one door sill, two corner posts, one door header and four corner fittings, which will be welded together to make the door- way.

*3.6.1.* *Door sill:* The door sill to be made of a 4.5 mm thick pressed open section steel is reinforced by four internal gussets at the back of each locking cam keeper location. The upper face of the door sill has a 10 mm slope for better drainage. There is cut out at each end of the door sill and reinforced by a 200 x 75 mm channel steel as a protection against handling equipment damages.

*3.6.2.* *Rear corner post:* Each rear corner post of hollow section is fabricated with 4.5 mm thick pressed steel outer part and 40x113x12 mm thick hot rolled channel section steel inner part, which are welded continuously together to ensure a maximum width of the door opening and to give a sufficient strength against stacking and racking forces. Four (4) sets of hinge pin lugs are welded to each rear corner post.

*3.6.3.* *Door header:* The door header is constructed with a 4.0 mm thick pressed "U" section steel lower part having four internal gussets at the back of each locking cam keeper location and a 3.0 mm thick pressed steel upper part, which are formed into box section by continuous continuous welding.

***3.7 Door***

*3.7.1.* Each container will have double wing doors as per the drawing, and each door will be capable of swinging approximately 270 degrees.

*3.7.2.* Each door is constructed with two 3.0 mm thick pressed channel section steel horizontal frames for the top and bottom, 100x50x2.3 mm and 100x50x3.2 mm thick rectangular hollow section vertical frames for the post side and center side of door respectively, 2.0 mm thick horizontally corrugated steel

door panel, which are continuously welded within frames. The main door to be provided with chajja.

*3.7.3.* Two sets of galvanized "BE2566MN" bolt on model locking assemblies with forged steel handles are fitted to each door using zinc plated steel bolts and Huck bolts according to TIR requirements. Locking bar retainers are fitted with nylon bushings at the top, bottom and intermediate bracket. Locking gears should be assembled after painting of container. The shims are to be provided between locking brackets and door panel.

*3.7.4.* The left hand door can not be opened without opening the right hand door when the container is sealed in accordance with TIR requirements

*3.7.5.* Each door is suspended by four hinges being provided with stainless steel pins, self- lubricating nylon bushings and the brass washers, which are placed at the hinge lugs of the rear corner posts.

*3.7.6.* The door gasket to be made of an extruded J&C-type EPDM rubber is installed to the door peripheral frames with stainless steel gasket retainers which must be caulked with butyl sealant before installation of gasket, and fastened by stainless steel rivets at a pitch of 150 mm.

***3.8 Roof structure:*** The roof will be constructed with five-corrugated (die-stamped) steel panels and corner protection plates.

*3.8.1. Roof panel:* The roof panel is constructed with 1.2 mm thick die-stamped steel sheets having about 5.0 mm upward smooth camber, which are welded together to form one panel and continuously welded to the top side rails and top end rails. All overlapped joints of inside unwelded seams are caulked with chloroprene sealant

*3.8.2. Protection plate:* Each corner of the roof in the vicinity of top corner fitting is reinforced by 2.0 mm thick rectangular steel plate to prevent the damage caused by the mishandling of lifting equipment.

***3.9 Top side rail:*** Each top side rail is made of a 60x60x3.0 mm thick square hollow section steel.

***3.10 Side wall:*** The trapezium section side wall is constructed with 1.2 mm thick fully vertically continuous-corrugated steel outer panels near the each post and 1.2 mm thick intermediate inner panels, which are butt welded together to form one panel and continuously welded to the side rails and corner posts. All overlapped joints of inside are caulked with chloroprene sealant.

***3.11 Front structure:*** Front end structure will be composed of one bottom end rail, two corner posts, one top end rail, four corner fittings and an end wall, which are welded together.

*3.11.1. Bottom end rail:* The bottom end rail to be made of a 2.0 mm thick pressed open section steel is reinforced by four internal gussets. There is cut out at each end of the bottom end rail and reinforced by a 200x75 mm channel steel as a protection against handling equipment damages.

*3.11.2. Front corner post:* Each corner post is made of 4.0 mm thick pressed open section steel in a single piece, and designed to give a sufficient strength against stacking and racking forces.

*3.11.3. Top end rail:* The top end rail is constructed with 60x60x3.0 mm thick square hollow section steel at lower part and 3.0 mm thick flat steel plate at upper part.

*3.11.4. Front wall:* The trapezium section front wall is constructed with 2.0 mm thick vertically corrugated steel panels, butt welded together to form one panel, and continuously welded to front end rails and corner posts. All overlapped joints of inside are caulked with chloroprene sealant.

### *3.12 Special feature*

*3.12.1. Ventilator:* Each container will have two labyrinth type small plastic ventilators. Each ventilator is fixed to the right hand upper part of each side wall by three 5.0 mm dia. stainless steel rivets in accordance with TIR requirements after drying of top coating, and caulked with silicone sealant around the entire periphery except underside to prevent the leakage of water.

## *4. Surface preservation*

### *4.1 Surface preparation*

*4.1.1.* All steel surfaces - prior to forming or after - will be fully abrasive shot blasted conforming to Swedish Standard SA 2 1/2 to remove all rust, dirt, mill scale and all other foreign materials. The shot blasted surface profile shall be have a maximum peak to valley height not exceeding 50 microns and average peak to valley height of about 25 microns.

*4.1.2.* All door hardwires will be hot-dipping zinc galvanized with approximately 75 microns thickness.

*4.1.3.* All fasteners such as self-tapping screws and bolts, nuts, hinges, cam keepers and lashing fittings will be electro-galvanized with approximately 13 microns thickness.

### *4.2 Coating*

*4.2.1. Prior to assembly:* All steel surfaces will be coated with 10 microns thick two-pack polyamide cured zinc rich epoxy primer immediately after shot blasting, and then dried up in drying room.

*4.2.2. After assembly:* All weldments will be shot blasted to remove all welding fluxes, splatters, burnt primer coatings caused by welding heat, and other foreign materials. Then all blasted weldments will be coated with zinc rich epoxy primer.

*4.2.3. The total dry film will be (microns):*
All surface of the assembled container will be have coating system as follows:

| *Where* | *Paint name* | *DFT (u)* |
|---|---|---|
| Exterior surface | Epoxy zinc rich primer | 30 |
| Epoxy primer | Chlorinated rubber or Acrylic topcoat | 40 |
| Color: | | 40 |
| | **Total:** | **110** |
| Interior surface | Epoxy zinc rich primer | 20 |
| Epoxy high build coating | | **40** |
| | **Total:** | **60** |
| | | |
| Under structure | Epoxy zinc rich primer | **20** |
| Bitumen | | **190** |
| | **Total:** | **210** |

4.3 Container to be externally coated with 2 mm thick FRP (Fiber Re-inforced Plastic) lined with Bi-sphenol A fumerate resin for corrosion free environment.

## *5. Guarantee*

***5.1 Structure :*** All the containers shall be guaranteed by manufacturer to be free from defects in materials, workmanship and structure for a period of one (1) year from the date of acceptance of the container by the buyer.

**Annexure - II**

## TECHNICAL SPECIFICATIONS FOR INTERIOR WORKS

**Counter cum storage unit :**

The storage unit counters to have counter top made of 25mm thick prelaminated MDF of approved brand and shade. The top to be finished with 18mm thick jet black granite with edge moulding. All the exposed edges of the top shall be provided with machine pressed 2mm thick PVC lipping glued with hot melt EVA glue. Storage to have adjustable shelves finished with laminate. Storage to have openable shutters and necessary hardwares like SS handles, hinges, tower bolts etc complete as per the drawing and as directed by the Engineer incharge. The storage counter individual unit will be of size 1000x750x800 mm each equally divided throughout the full length (L shape) as shown in the drawing.

**Overhead storage unit :**

Storage unit to have counter top made of 18mm thick prelaminated MDF of approved brand and shade. All the exposed edges of the top shall be provided with machine pressed 2mm thick PVC lipping glued with hot melt EVA glue. Storage to have adjustable shelves finished with laminate. Storage to have openable shutters and necessary hardwares like SS handles, hinges, tower bolts etc complete as per the drawing and as directed by the Engineer incharge. The overhead storage individual unit will be of size 1000x450x700 mm each equally divided
throughout the full length (L shape) as shown in the drawing.

**Aluminium Sliding windows:**

Providing and fixing of powder coated aluminium windows of size 3'x3', 4 nos each with 5mm float glass of approved make for container as shown in the drawing. The powder coating shade to be approved before execution. The windows to be compulsorily provided with chajjas etc complete as per the drawing and as directed by the Engineer incharge.

**Vinyl flooring:**
Providing and fixing of 3 mm vinyl flooring of approved shade and make. The flooring to be acid resistant, washable.

**Wash basin**:
Wash basin (ceramic) of size 600x400x200 mm shall be of approved make conforming to IS:771 fixed over granite counter. 32mm dia waste coupling, rubber plug etc. complete shall be provided. 32mm dia CP brass bottle trap with CP pipe to wall along with wall flange etc of approved make shall be provided for sink..

Providing and fixing of ½" water supply pipeline of approved make over the counter as shown in the drawing.

All control valves, stop cocks, ball valves, bib-cocks shall be of the best approved quality.

**Annexure - III**

## TECHNICAL SPECIFICATIONS FOR ELECTRICAL WORKS

### For AC container.

1. Providing & fixing concealed 8way (8+24) ETPN DB with metal door with 63A FP MCB(01no,incomer),32A TP MCB (04 nos),10/20A(12nos) SP MCB, positioned on the wall exactly opposite to the door, as indicated in the layout plan. Providing 70 mm dia opening to the container wall below the TPN DB at 300mm above floor level and making proper provisions for connecting the main electrical incoming cable (of size varying from 35 to 50sqmm) into the DB.
2. Providing & fixing a total 16 numbers of concealed 5/15A power points using 4sqmm wire (PNE) such that three power points in a single circuit from main DB. 12 nos equally positioned at 100mm above the granite counter on both sides and 02 nos on 'each side'(Left as well as right) of the door as indicated in the layout plan at the height of 300mm from the floor level.
3. Providing & fixing 04 numbers of concealed three phase power points with socket and 3pole 32Amps MCB, such that one power point per circuit from main DB, using 6sqmm wire (RYBNE), positioned at 100mm above the granite counter and equally spaced as indicated in the layout plan.
4. Providing & installing a total 05 numbers of "400mm sweep-wall mounted fans" with power points for each fan.02 nos positioned on 'door side' wall such that one at 4mtrs from 'short span wall' on both sides of the door,01 each at the center of 'short span wall' on both the sides and 01 at the center position of the wall exactly opposite to the door, as indicated in the layout plan.
5. Providing and installing 2 numbers of 2Ton AC units (100% copper tubing) positioned on both the sides of the door as indicated in the layout plan with 20A metra plug & socket DBs for each AC using 6sqmm wire (PNE) from main DB as per the positioning of AC units.
6. Providing & fixing 2x28W surface mounted luminaries (06nos) positioned equidistantly on the ceiling and one Bulkhead Luminaire fitting CFL 8W PVC body on the outer side wall above the door and its concealed wiring using 2.5sqmm wire (PNE) with the concealed lighting switch board to be provided near the door, including switches.
7. Providing & fixing one telephone point at 100mm above the granite counter as indicated in the layout plan and drawing 02pair telephone cable up to the 70mm dia opening done near main electrical DB.
8. Providing & fixing 04 numbers of lan points, such that two on each side at 100mm above the granite counter as indicated in the layout plan, drawing its UTP CAT-6 cable up to the 70mm dia opening done near main electrical DB.

### For Non-AC container.

1. Providing & fixing concealed 8way (8+24) ETPN DB with metal door with 63A FP MCB(01no,incomer) ,32A TP MCB (04 nos),10/20A(12nos) SP MCB, positioned on the wall just opposite to the door as indicated in the layout plan. Providing 70 mm dia opening to the container wall just below the main DB at 300mm above floor level and

making proper provisions for connecting the main electrical incoming cable (of size varying from 35 to 50sqmm) into the DB.

2. Providing & fixing a total 16 numbers of concealed 5/15A power points using 4sqmm wire (PNE), such that three power points in a single circuit from main DB, positioned at 300mm above the floor level equally spaced as indicated in the layout plan.
3. Providing & fixing a total 04 numbers of concealed three phase power points with socket and 3pole 32Amps MCB such that one power point per circuit from main DB, using 6sqmm wire (RYBNE), positioned at 300mm above the floor level and equally spaced as indicated in the layout plan.
4. Providing & installing a total 05 numbers of "400mm sweep-wall mounted fans" with power points for each fan, positioned such that 02 each on either side of door at 2mtrs and 4mtrs respectively from short span wall and 01 at the center position of the wall exactly opposite to the door , as indicated in the layout plan.
5. Providing & installing 02 numbers of 250mm sweep-exhaust fans (Plastic body & blade ) with power points for each fan, positioned as indicated in the layout plan.
6. Providing & fixing 2x28W surface mounted luminaries (06nos) positioned equidistantly on the ceiling and one Bulkhead Luminaire fitting CFL 8W PVC body on the outer side wall above the door and its concealed wiring using 2.5sqmm wire (PNE) with the concealed lighting switch board to be provided near the door, including switches.
7. Providing one telephone point at 300mm above the floor level as indicated in the layout plan and drawing 02 pair telephone cable up to the 70mm dia opening done near main electrical DB.
8. Providing 04 numbers of lan points, such that two on each side at 300mm above the floor level as indicated in the layout plan, drawing its UTP CAT-6 cable up to the 70mm dia opening done near main electrical DB.

**Note: The recommended position of the lighting control switches, distribution boards, electrical equipments as shown in the layout drawing should be adhered to as far as practical.**

**Annexure - IV**

## LIST OF APPROVED MAKES

- Aluminum : Hindalco, Nalco, Jindal or equivalent
- Laminate : Merino, Green lam, Century or equivalent
- MDF Board : Nuwud, Duratuff, Ecoboard or equivalent
- Edge bands : Rehau, Dolken or equivalent
- Eccentric Locking : Haffle, Hettich or equivalent
- Metabox : Hettich or equivalent
- Hinges : Hettich, Haffle or equivalent
- Hot melt Glue : Ici , Jowat, Rehau or equivalent
- Adhesive: Fevicol, Vamicol, Araldite
- Miscellaneous Hardware : Hettich, Haffle, Ebco or equivalent
- Float Glass : Modiguard, Saint–Gobain, Asahi
- Locks : Aries, Eg, Efficient Gadget or equivalent
- Tambour slates and hardware : "REHAU " only.
- Aluminium – Jindal, Indal, Hindalco, Dorma Entramatic, Bhoruka or equivalent
- UPVC – Fenesta, Sintex, City or equivalent
- Glass – Modiguard, Asahi, Saint Gobain,Continental
- Hydraulic Door Closer – Everite, Hindustan, Godrej, Sevax, Dorma, Everest Universal 68, Omega
- Cylindrical Lock, Rim Lock – Godrej, Europa or equivalent
- Laminates – Formica, Greenlam, Merino, Century, Decolam,
- Stainless Steel Handles /Hinges – Confirming to ASTM 203grade
- Valves – Zoloto, Firtop, Airfield or equivalent
- Fixtures – ARK, Jaguar, Mark, Crabtree or equivalent
- PVC pipes – Finolex, Prince, Supreme or equivalent
- SS Sink – Nirali, Jyna or equivalent
- Switches & Sockets: Roma, Legrand.
- Distribution boards, MCBs: Legrand
- Wire:Finolex, Polycab
- Fan:Bajaj,CG,Almonard or equivalent
- Light fittings: Phillips, havells or equivalent
- Lan and Telephone socket, CAT-6 cable: Legrand, Mosaic,D-link or equivalent
- Bulkhead Luminarie fitting:Pressteak,Ganpati or equivalent

**NOTE: In the event of non- availability / stoppage of manufacture of the materials of the above approved make, suitable substitution shall be made by the Engineer with the prior approval at the request of the contractor**

**TECHNICAL COMPLIANCE STATEMENT FOR SUPPLY OF STEEL DRY CARGO CONTAINER**

| Sr.No. | Description | COMPLIED/ NOT COMPLIED | EXTRA FEATURES |
|---|---|---|---|
| | **TECHNICAL COMPLIANCE FOR "SUPPLY OF STEEL DRY CARGO CONTAINER".** | | |
| 1. | ***General*** | | |
| | ***1.1 Scope:*** This specification will cover the design, construction, materials, testing and inspection performances of 40'x8'x8'6" ISO. type steel dry cargo containers. These containers specified herein will be manufactured under strict quality control and be approved by the classification society or agency. | | |
| | ***1.2 Operational environment****:* The container will be designed and constructed for carriage of general cargo by marine (on or below deck), road and rail throughout the world. All materials used in the construction will be to withstand extremes of temperature range from -40°(-40°) to +70°(+158°) without effect on the strength of the basic structure and water tightness. | | |
| | ***1.3 Standards and Regulations:*** The container will satisfy the following requirements and regulations, unless otherwise mentioned in this specification. | | |
| | *1.3.1. ISO Container Standards (1CC type)* | | |
| | *1.3.2. Classification society:* All the containers will be certified for design type and individually inspected by classification society, BV, ABS, LR, GL or CCS.<br><br>***Handling:*** The container will be constructed to be capable of being handled without any permanent deformation under the following conditions: | | |
| | *1.3.3.* Lifting, full or empty, at top corner fittings vertically by means of spreaders fitted with hooks, shackles or twist locks. | | |
| | *1.3.4.* Lifting, full or empty, at bottom corner fittings using slings with terminal fittings at any angles between vertical and 45 degrees to the horizontal. | | |
| | ***1.4 Transportation:*** The container will be constructed to be suitable for transportation in the following modes:<br><br>*1.4.1.* Road: On flat bed or skeletal chassis, secured by twist locks or equivalent at the bottom corner fittings. | | |
| | *1.4.2.* Rail: On flat cars or special container cars secured by | | |

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| | twist locks or equivalent at the bottom corner fittings | | |
| **2.** | ***Dimensions and Ratings*** | | |
| | ***1.5 External Dimensions***<br><br>Length 12,100 + 0mm - 6mm<br>Width 2,438 + 0mm - 5mm<br>Height 2,591 + 0mm - 5mm<br><br>1) No part of the container will protrude beyond the external dimensions mentioned above.<br>2) Maximum allowable differences between two diagonals on anyone of the following surfaces will be as follows:<br><br>Roof, bottom and side diagonals: 13 mm<br>Front and rear diagonals: 10 mm | | |
| | ***1.6 Internal Dimensions (nominal)***<br>Length 11,796 mm<br>Width 2,350 mm<br>Height 2,390 mm<br><br>***1.7 Door opening Dimensions (nominal)***<br>Width 2,343 mm | | |
| **2.** | **Materials** | | |
| | ***2.1 General:*** The following materials will be used in the construction of containers:<br><br>***2.2 Part specification:*** | | |
| | *Parts Materials by JIS*<br><br>*2.2.1.* All steel except screws, rivets, Anti-corrosive steel. SPA-H bolts/nuts, door hardwares<br>or equivalent and other shown on drawings Y.P. : 35 kg/mm2 and specification T.S. :<br>49 kg/mm2 | | |
| | *2.2.2.* Rear corner posts (inner) Rolled high tensile steel. SM50A Y.P. :<br>33 kg/mm2<br>T.S. : 50 kg/mm2 | | |
| | 2.2.3 Door hinges S25C<br>Y.P. : 27 kg/mm2<br>T.S. : 45 kg/mm2 | | |
| | *2.2.4.* Door locking bars Structural steel round pipe. STK41<br>Y.P. : 24 kg/mm2<br>T.S. : 41 kg/mm2 | | |
| | *2.2.5.* Corner fittings Casted weldable steel. SCW49<br>Y.P. : 28 kg/mm2<br>T.S. : 49 kg/mm2 | | |

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| | *2.2.6.* Locking gear cams and keepers S20C<br>Y.P. : 25 kg/mm2<br>T.S. : 41 kg/mm2 | | |
| | *2.2.7.* Door hinge pins Stainless steel. SUS304 Gasket retainers | | |
| | *2.2.8.* Door gasket EPDM | | |
| | *2.2.9.* Floor board 19-ply Hardwood plywood. | | |
| | *2.2.10.* Ventilator ABS resin labyrinth type<br>* Note: Y.P. - Yielding Point<br>T.S. - Tensile Strength | | |
| **3.** | **Construction** | | |
| | ***3.1 General***<br><br>*3.1.1.* The container will be constructed with steel frames, fully vertical-corrugated steel sides and front wall, horizontal-corrugated steel double doors at rear end, die-stamped steel roof, wooden flooring, corrugated double hinged doors and ISO corner fittings at eight corners. | | |
| | *3.1.2.* All exterior welding including the base frames will be continuous welding using CO2 gas to give perfect watertight properties. | | |
| | *3.1.3.* Interior welds - when needed - will be stitched with a minimum bead length of 25 mm. | | |
| | *3.1.4.* Gaps between adjacent components to be welded will not exceed 3 mm or the thickness of the parts being welded. | | |
| | *3.1.5.* Chloroprene sealant is to be applied at periphery of floor surface and inside unwelded seams, butyl sealant is used to caulk at invisible seam of floor joint area and between door gasket and frame. | | |
| | *3.1.6.* The internal bend radii of pressed sections of steel will be not less than 1.5 time the thickness of the materials being pressed. | | |
| | *3.1.7.* The wooden floor will be fixed to the base frames by zinc plated self-tapping screws. | | |
| **3.2** | ***Protrusion*** | | |
| | *3.2.1.* The plane formed by the lower faces of all transverse members shall be positioned by 12.5 mm +5/-1.5 mm above the plane formed by the lower faces of the bottom corner fittings. | | |
| | *3.2.2.* The top corner fittings are to protrude a minimum of 6 mm above the highest point of the roof. | | |
| | *3.2.3.* The outside faces of the corner fittings will protrude from the outside faces of the corner posts by nominal 4 mm for the front and nominal 3 mm for the rear. | | |
| | *3.2.4.* The outside faces of the corner fittings will protrude from the outside faces of the sides and front wall by nominal 8 mm. | | |

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| | *3.2.5.* Under maximum payload, no part of the container will protrude below the plane formed by the lower faces of the bottom corner fittings at the time of maximum deflection. | | |
| | *3.2.6.* Under 1.8 x maximum gross weight, no part of the container will protrude more than 6.0 mm below the plane formed by the lower faces of the bottom corner fittings at the time of maximum deflection. | | |
| **3.3** | ***Corner fittings:*** The corner fittings will be designed in accordance with ISO 1161 and manufactured at the works approved by classification society. | | |
| **3.4** | ***Base frame structure:*** Base frame will be composed of two bottom side rails, eighteen cross members, and a forklift pockets | | |
| | *3.4.1. Bottom side rail:* Each bottom side rail is built of a 50x158x30x4.5 mm thick cold formed channel section steel made in one piece. The floor guide rails of 3.0 mm thick pressed angle section steel are provided to the bottom side rails by staggered stitch welding. The lower flange of the bottom side rail is outward so as to facilitate easy removal of the cross members during repair and of less susceptible corrosion. Reinforcement plates to be made of 4.5 mm thick "L" type steel is welded to the bottom surface of both side rails around the bottom corner fitting. | | |
| | *3.4.2 Cross member:* The cross members are made of pressed channel section steel with a dimension of 45x122x45x4.0 mm for the normal areas and 75x122x45x4.0 mm for the floor butt joints. The large one is reinforced by three 4.0 mm thick gussets. The cross members are placed fully to withstand floor strength and welded to each bottom side rail. | | |
| **3.5** | ***Flooring****:* The floor will consist of six pieces plywood boards, floor center rail, and self- tapping screws. | | |
| | *3.5.1 Floor:* The wooden floor to be constructed with 28 mm thick 19-ply hardwood plywood boards are laid longitudinally on the transverse members between the 4.0 mm thick flat bar floor center rail and the 3.0 mm thick pressed angle section steel floor guide rails stitched welded to the bottom side rails. The floor boards are tightly secured to each transverse member by self-tapping screws, and all butt joint areas and peripheries of the floor boards are caulked with sealant.<br>1) Wood species: Apitong or Keruing.<br>2) Glue: Phenol-formaldehyde resin.<br>3) Treatment:<br>a) Preservative: Meganium or Equivalent. In accordance with Australian Health Department Regulations.<br>b) Average moisture content will be 14% before installation. | | |
| | *3.5.2 Self-tapping screw:* Each floor board is fixed to the transverse members by zinc plated self-tapping screws that are 8.0 mm dia. shank x 16 mm dia. head x 45 mm length, and fastened by five screws per cross member but six screws at joint areas. Screw heads are to be countersunk with about 2 mm below the floor top surface. | | |

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| **3.6** | ***Rear frame structure:*** The rear frame will be composed of one door sill, two corner posts, one door header and four corner fittings, which will be welded together to make the door- way. | | |
| | *3.6.1. Door sill:* The door sill to be made of a 4.5 mm thick pressed open section steel is reinforced by four internal gussets at the back of each locking cam keeper location. The upper face of the door sill has a 10 mm slope for better drainage. There is cut out at each end of the door sill and reinforced by a 200 x 75 mm channel steel as a protection against handling equipment damages. | | |
| | *3.6.2. Rear corner post:* Each rear corner post of hollow section is fabricated with 4.5 mm thick pressed steel outer part and 40x113x12 mm thick hot rolled channel section steel inner part, which are welded continuously together to ensure a maximum width of the door opening and to give a sufficient strength against stacking and racking forces. Four (4) sets of hinge pin lugs are welded to each rear corner post. | | |
| | *3.6.3. Door header:* The door header is constructed with a 4.0 mm thick pressed "U" section steel lower part having four internal gussets at the back of each locking cam keeper location and a 3.0 mm thick pressed steel upper part, which are formed into box section by continuous continuous welding. | | |
| **3.7** | **Door** | | |
| | *3.7.1.* Each container will have double wing doors as per the drawing, and each door will be capable of swinging approximately 270 degrees. | | |
| | *3.7.2.* Each door is constructed with two 3.0 mm thick pressed channel section steel horizontal frames for the top and bottom, 100x50x2.3 mm and 100x50x3.2 mm thick rectangular hollow section vertical frames for the post side and center side of door respectively, 2.0 mm thick horizontally corrugated steel door panel, which are continuously welded within frames. The main door to be provided with chajja. | | |
| | *3.7.3.* Two sets of galvanized "BE2566MN" bolt on model locking assemblies with forged steel handles are fitted to each door using zinc plated steel bolts and Huck bolts according to TIR requirements. Locking bar retainers are fitted with nylon bushings at the top, bottom and intermediate bracket. Locking gears should be assembled after painting of container. The shims are to be provided between locking brackets and door panel. | | |

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| | *3.7.4.* The left hand door can not be opened without opening the right hand door when the container is sealed in accordance with TIR requirements | | |
| | *3.7.5.* Each door is suspended by four hinges being provided with stainless steel pins, self- lubricating nylon bushings and the brass washers, which are placed at the hinge lugs of the rear corner posts. | | |
| | *3.7.6.* The door gasket to be made of an extruded J&C-type EPDM rubber is installed to the door peripheral frames with stainless steel gasket retainers which must be caulked with butyl sealant before installation of gasket, and fastened by stainless steel rivets at a pitch of 150 mm. | | |
| **3.8** | ***Roof structure:*** The roof will be constructed with five-corrugated (die-stamped) steel panels and corner protection plates. | | |
| | *3.8.1. Roof panel:* The roof panel is constructed with 1.2 mm thick die-stamped steel sheets having about 5.0 mm upward smooth camber, which are welded together to form one panel and continuously welded to the top side rails and top end rails. All overlapped joints of inside unwelded seams are caulked with chloroprene sealant. | | |
| | *3.8.2. Protection plate:* Each corner of the roof in the vicinity of top corner fitting is reinforced by 2.0 mm thick rectangular steel plate to prevent the damage caused by the mishandling of lifting equipment. | | |
| **3.9** | ***Top side rail:*** Each top side rail is made of a 60x60x3.0 mm thick square hollow section steel. | | |
| **3.10** | ***Side wall:*** The trapezium section side wall is constructed with 1.2 mm thick fully vertically continuous-corrugated steel outer panels near the each post and 1.2 mm thick intermediate inner panels, which are butt welded together to form one panel and continuously welded to the side rails and corner posts. All overlapped joints of inside are caulked with chloroprene sealant. | | |
| **3.11** | ***Front structure:*** Front end structure will be composed of one bottom end rail, two corner posts, one top end rail, four corner fittings and an end wall, which are welded together. | | |
| | *3.11.1. Bottom end rail:* The bottom end rail to be made of a 2.0 mm thick pressed open section steel is reinforced by four internal gussets. There is cut out at each end of the bottom end rail and reinforced by a 200x75 mm channel steel as a protection against handling equipment damages. | | |
| | *3.11.2. Front corner post:* Each corner post is made of 4.0 mm thick pressed open section steel in a single piece, and designed to give a sufficient strength against stacking and racking forces. | | |
| | *3.11.3. Top end rail:* The top end rail is constructed with 60x60x3.0 mm thick square hollow section steel at lower part and 3.0 mm thick flat steel plate at upper part. | | |

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| | *3.11.4. Front wall:* The trapezium section front wall is constructed with 2.0 mm thick vertically corrugated steel panels, butt welded together to form one panel, and continuously welded to front end rails and corner posts. All overlapped joints of inside are caulked with chloroprene sealant. | | |
| **3.12** | ***Special feature*** | | |
| | *3.12.1. Ventilator:* Each container will have two labyrinth type small plastic ventilators. Each ventilator is fixed to the right hand upper part of each side wall by three 5.0 mm dia. stainless steel rivets in accordance with TIR requirements after drying of top coating, and caulked with silicone sealant around the entire periphery except underside to prevent the leakage of water. | | |
| **4** | ***Surface preservation*** | | |
| | *4.1.1.* All steel surfaces - prior to forming or after - will be fully abrasive shot blasted conforming to Swedish Standard SA 2 1/2 to remove all rust, dirt, mill scale and all other foreign materials. The shot blasted surface profile shall be have a maximum peak to valley height not exceeding 50 microns and average peak to valley height of about 25 microns | | |
| | *4.1.2.* All door hardwires will be hot-dipping zinc galvanized with approximately 75 microns thickness. | | |
| | *4.1.3.* All fasteners such as self-tapping screws and bolts, nuts, hinges, cam keepers and lashing fittings will be electro-galvanized with approximately 13 microns thickness. | | |
| **4.2** | ***Coating*** | | |
| **4.2.1** | *4.2.1. Prior to assembly:* All steel surfaces will be coated with 10 microns thick two-pack polyamide cured zinc rich epoxy primer immediately after shot blasting, and then dried up in drying room. | | |
| | *4.2.2. After assembly:* All weldments will be shot blasted to remove all welding fluxes, splatters, burnt primer coatings caused by welding heat, and other foreign materials. Then all blasted weldments will be coated with zinc rich epoxy primer. | | |
| | *4.2.3. The total dry film will be (microns):*<br>All surface of the assembled container will be have coating system as follows: | | |

| *Where* | *Paint name* |
|---|---|
| Exterior surface | Epoxy zinc rich primer |
| Epoxy primer | Chlorinated rubber or Acrylic topcoat |
| Color: | |
| | **Total:** |
| Interior surface | Epoxy zinc rich primer |

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| | | Epoxy high build | | **40** | |
| | | | **Total:** | **60** | |
| | | | | | |
| | | Under structure | Epoxy zinc rich primer | **20** | |
| | | Bitumen | | **190** | |
| | | | **Total:** | **210** | |
| **4.3** | Container to be externally coated with 2 mm thick FRP (Fiber Re-inforced Plastic) lined with Bi-sphenol A fumerate resin for corrosion free environment | | | | |
| **5** | ***Guarantee*** | | | | |
| **5.1** | ***Structure :*** All the containers shall be guaranteed by manufacturer to be free from defects in materials, workmanship and structure for a period of one (1) year from the date of acceptance of the container by the buyer. | | | | |
| | **TECHNICAL SPECIFICATIONS FOR INTERIOR WORKS** | | | | |
| | **Counter cum storage unit :**<br><br>The storage unit counters to have counter top made of 25mm thick prelaminated MDF of approved brand and shade. The top to be finished with 18mm thick jet black granite with edge moulding. All the exposed edges of the top shall be provided with machine pressed 2mm thick PVC lipping glued with hot melt EVA glue. Storage to have adjustable shelves finished with laminate. Storage to have openable shutters and necessary hardwares like SS handles, hinges, tower bolts etc complete as per the drawing and as directed by the Engineer incharge. The storage counter individual unit will be of size 1000x750x800 mm each equally divided throughout the full length (L shape) as shown in the drawing. | | | | |
| | **Overhead storage unit :**<br><br>Storage unit to have counter top made of 18mm thick prelaminated MDF of approved brand and shade. All the exposed edges of the top shall be provided with machine pressed 2mm thick PVC lipping glued with hot melt EVA glue. Storage to have adjustable shelves finished with laminate. Storage to have openable shutters and necessary hardwares like SS handles, hinges, tower bolts etc complete as per the drawing and as directed by the Engineer incharge. The overhead storage individual unit will be of size 1000x450x700 mm each equally divided throughout the full length (L shape) as shown in the drawing. | | | | |
| | **Aluminium Sliding windows:**<br><br>Providing and fixing of powder coated aluminium windows of size 3'x3', 4 nos each with 5mm float glass of approved make for container as shown in the drawing. The powder coating shade to be approved before execution. The windows to be compulsorily provided with chajjas etc complete as per the drawing and as directed by the Engineer incharge. | | | | |
| | **Vinyl flooring:**<br><br>Providing and fixing of 3 mm vinyl flooring of approved shade and make. The flooring to be acid resistant, washable. | | | | |

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| | **Wash basin**:<br><br>Wash basin (ceramic) of size 600x400x200 mm shall be of approved make conforming to IS:771 fixed over granite counter. 32mm dia waste coupling, rubber plug etc. complete shall be provided. 32mm dia CP brass bottle trap with CP pipe to wall along with wall flange etc of approved make shall be provided for sink.. | | |
| | Providing and fixing of ½" water supply pipeline of approved make over the counter as shown in the drawing.<br><br>All control valves, stop cocks, ball valves, bib-cocks shall be of the best approved quality. | | |
| | **TECHNICAL SPECIFICATIONS FOR ELECTRICAL WORKS** | | |
| | **For AC container.** | | |
| **1.** | Providing & fixing concealed 8way (8+24) ETPN DB with metal door with 63A FP MCB(01no,incomer),32A TP MCB (04 nos),10/20A(12nos) SP MCB, positioned on the wall exactly opposite to the door, as indicated in the layout plan. Providing 70 mm dia opening to the container wall below the TPN DB at 300mm above floor level and making proper provisions for connecting the main electrical incoming cable (of size varying from 35 to 50sqmm) into the DB. | | |
| **2.** | Providing & fixing a total 16 numbers of concealed 5/15A power points using 4sqmm wire (PNE) such that three power points in a single circuit from main DB. 12 nos equally positioned at 100mm above the granite counter on both sides and 02 nos on 'each side'(Left as well as right) of the door as indicated in the layout plan at the height of 300mm from the floor level. | | |
| **3.** | Providing & fixing 04 numbers of concealed three phase power points with socket and 3pole 32Amps MCB, such that one power point per circuit from main DB, using 6sqmm wire (RYBNE), positioned at 100mm above the granite counter and equally spaced as indicated in the layout plan. | | |
| **4.** | Providing & installing a total 05 numbers of "400mm sweep-wall mounted fans" with power points for each fan.02 nos positioned on 'door side' wall such that one at 4mtrs from 'short span wall' on both sides of the door,01 each at the center of 'short span wall' on both the sides and 01 at the center position of the wall exactly opposite to the door, as indicated in the layout plan. | | |
| **5.** | Providing and installing 2 numbers of 2Ton AC units (100% copper tubing) positioned on both the sides of the door as indicated in the layout plan with 20A metra plug & socket DBs for each AC using 6sqmm wire (PNE) from main DB as per the positioning of AC units. | | |
| **6.** | Providing & fixing 2x28W surface mounted luminaries (06nos) positioned equidistantly on the ceiling and one Bulkhead Luminaire fitting CFL 8W PVC body on the outer side wall above the door and its concealed wiring using 2.5sqmm wire (PNE) with the concealed lighting switch board to be provided near the door, including switches. | | |
| **7.** | Providing & fixing one telephone point at 100mm above the granite counter as indicated in the layout plan and drawing 02pair telephone cable up to the 70mm | | |

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| | dia opening done near main electrical DB. | | |
| **8.** | Providing & fixing 04 numbers of lan points, such that two on each side at 100mm above the granite counter as indicated in the layout plan, drawing its UTP CAT-6 cable up to the 70mm dia opening done near main electrical DB. | | |
| | **For Non-AC container** | | |
| **1.** | Providing & fixing concealed 8way (8+24) ETPN DB with metal door with 63A FP MCB(01no,incomer) ,32A TP MCB (04 nos),10/20A(12nos) SP MCB, positioned on the wall just opposite to the door as indicated in the layout plan. Providing 70 mm dia opening to the container wall just below the main DB at 300mm above floor level and making proper provisions for connecting the main electrical incoming cable (of size varying from 35 to 50sqmm) into the DB. | | |
| **2.** | Providing & fixing a total 16 numbers of concealed 5/15A power points using 4sqmm wire (PNE), such that three power points in a single circuit from main DB, positioned at 300mm above the floor level equally spaced as indicated in the layout plan. | | |
| **3.** | Providing & fixing a total 04 numbers of concealed three phase power points with socket and 3pole 32Amps MCB such that one power point per circuit from main DB, using 6sqmm wire (RYBNE), positioned at 300mm above the floor level and equally spaced as indicated in the layout plan. | | |
| **4.** | Providing & installing a total 05 numbers of "400mm sweep-wall mounted fans" with power points for each fan, positioned such that 02 each on either side of door at 2mtrs and 4mtrs respectively from short span wall and 01 at the center position of the wall exactly opposite to the door , as indicated in the layout plan. | | |
| **5.** | Providing & installing 02 numbers of 250mm sweep-exhaust fans (Plastic body & blade ) with power points for each fan, positioned as indicated in the layout plan. | | |
| **6.** | Providing & fixing 2x28W surface mounted luminaries (06nos) positioned equidistantly on the ceiling and one Bulkhead Luminaire fitting CFL 8W PVC body on the outer side wall above the door and its concealed wiring using 2.5sqmm wire (PNE) with the concealed lighting switch board to be provided near the door, including switches. | | |
| **7.** | Providing one telephone point at 300mm above the floor level as indicated in the layout plan and drawing 02 pair telephone cable up to the 70mm dia opening done near main electrical DB. | | |
| **8.** | Providing 04 numbers of lan points, such that two on each side at 300mm above the floor level as indicated in the layout plan, drawing its UTP CAT-6 cable up to the 70mm dia opening done near main electrical DB. | | |
| | **Note: The recommended position of the lighting control switches, distribution boards, electrical equipments as shown in the layout drawing should be adhered to as far as practical.** | | |
| | **LIST OF APPROVED MAKES**<br>• Aluminum : Hindalco, Nalco, Jindal or equivalent<br>• Laminate : Merino, Green lam, Century or equivalent | | |

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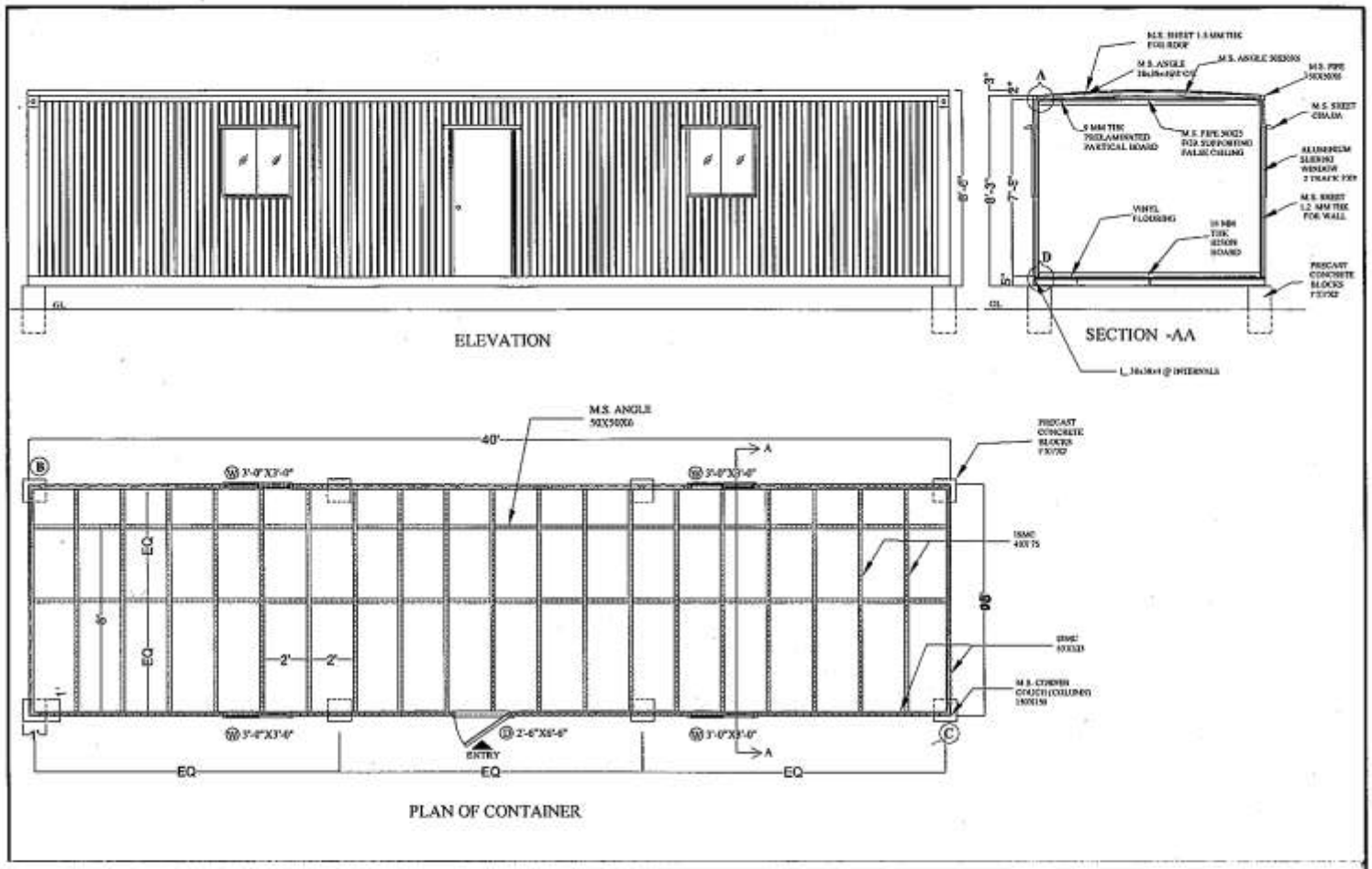
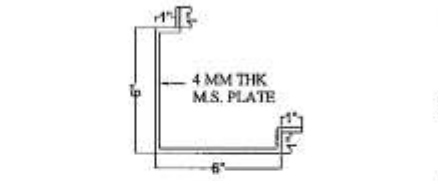
| | • MDF Board : Nuwud, Duratuff, Ecoboard or equivalent<br>• Edge bands : Rehau, Dolken or equivalent<br>• Eccentric Locking : Haffle, Hettich or equivalent<br>• Metabox : Hettich or equivalent<br>• Hinges : Hettich, Haffle or equivalent<br>• Hot melt Glue : Ici , Jowat, Rehau or equivalent<br>• Adhesive: Fevicol, Vamicol, Araldite<br>• Miscellaneous Hardware : Hettich, Haffle, Ebco or equivalent<br>• Float Glass : Modiguard, Saint–Gobain, Asahi<br>• Locks : Aries, Eg, Efficient Gadget or equivalent<br>• Tambour slates and hardware : "REHAU " only.<br>• Aluminium – Jindal, Indal, Hindalco, Dorma Entramatic, Bhoruka or equivalent<br>• UPVC – Fenesta, Sintex, City or equivalent<br>• Glass – Modiguard, Asahi, Saint Gobain,Continental<br>• Hydraulic Door Closer – Everite, Hindustan, Godrej, Sevax, Dorma, Everest Universal 68, Omega<br>• Cylindrical Lock, Rim Lock – Godrej, Europa or equivalent<br>• Laminates – Formica, Greenlam, Merino, Century, Decolam,<br>• Stainless Steel Handles /Hinges – Confirming to ASTM 203grade<br>• Valves – Zoloto, Firtop, Airfield or equivalent<br>• Fixtures – ARK, Jaguar, Mark, Crabtree or equivalent<br>• PVC pipes – Finolex, Prince, Supreme or equivalent<br>• SS Sink – Nirali, Jyna or equivalent<br>• Switches & Sockets: Roma, Legrand.<br>• Distribution boards, MCBs: Legrand<br>• Wire:Finolex, Polycab<br>• Fan:Bajaj,CG,Almonard or equivalent<br>• Light fittings: Phillips, havells or equivalent<br>• Lan and Telephone socket, CAT-6 cable: Legrand, Mosaic,D-link or equivalent<br>• Bulkhead Luminarie fitting:Pressteak,Ganpati or equivalent<br><br>**NOTE: In the event of non- availability / stoppage of manufacture of the materials of the above approved make, suitable substitution shall be made by the Engineer with the prior approval at the request of the contractor** | | |

**Signature with seal**



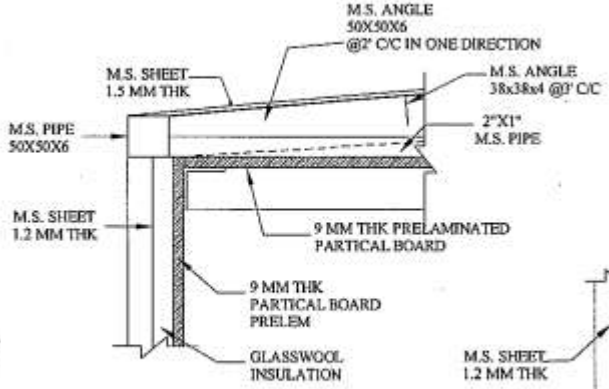

DESIGN OF CONTAINER OF SIZE 40' X 8' X 8'6".

DRAWING NO. 1

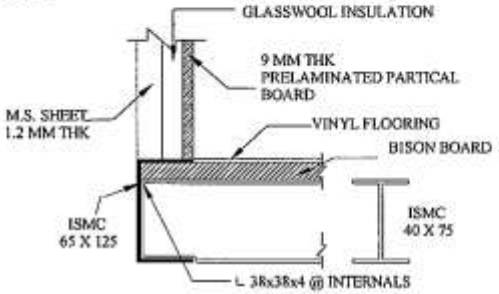



DETAIL -C
CORNER COUCH

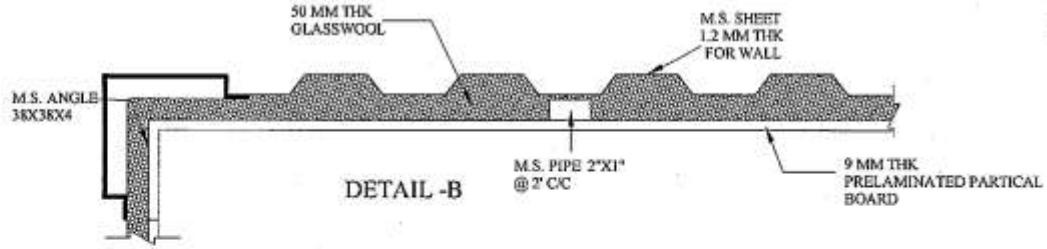

CORRUGATION DETAIL




DETAIL -A




DETAIL - D

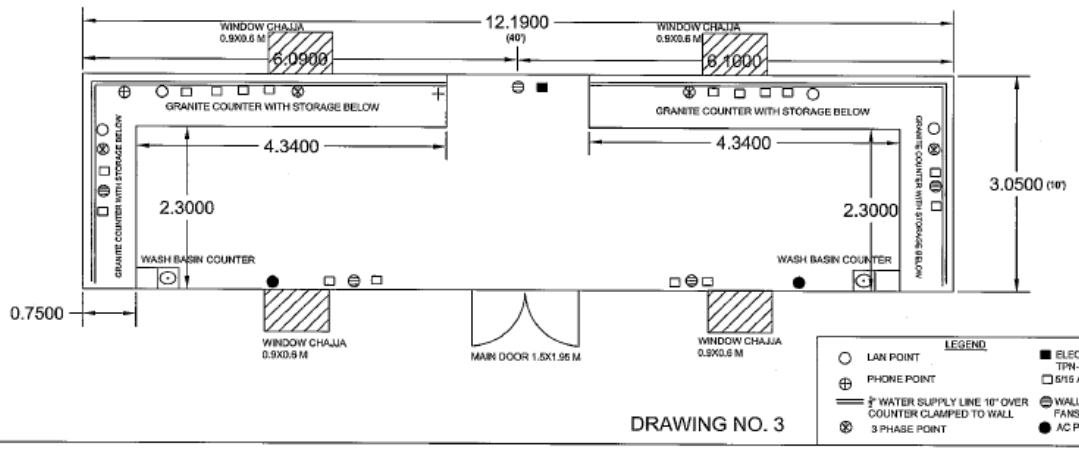



DETAIL -B

DESIGN OF CONTAINER OF SIZE 40'X8'X8'6"

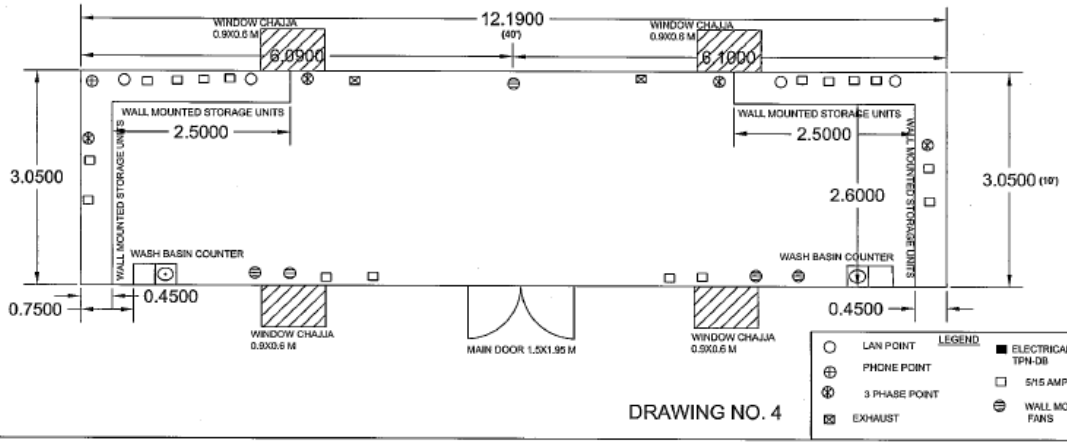
DRAWING NO. 2

PROPOSED INTERIOR LAYOUT PLAN FOR 40'X8'X8'6" CONTAINER (AC)




DRAWING NO. 3

## PROPOSED INTERIOR LAYOUT PLAN FOR 40'X8'X8'6" CONTAINER (NON AC)




DRAWING NO. 4