



**OFFSHORE
DESIGN
SECTION**

**FUNCTIONAL
SPECIFICATION FOR
BUILDING MODULE**

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Prepared / Revised By	Reviewed By	Approved By	Total No. of Pages	Date	Rev. No.
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1.0. SCOPE The intent of this specification is to establish the minimum requirements for an operationally complete modules of Process Gas Compressor, Turbo generator, Living Quarter and other building modules. The Building Module fabricator hereinafter referred to, as the Contractor shall adhere to this specification in performance of the tasks outlined in the Bid Document. Building module shall be installed on the Platforms as shown in the layout.											
2.0. GENERAL											
2.1 General Requirements											
2.1.1 The Contractor shall be responsible for the design and fabrication of all structural framing based on the layouts approved by the Company.											
2.1.2 Cranes are to be located as per equipment layout. Crane Boom Rest and Crane Access Walkways shall be provided as per requirement.											
2.1.3 Contractor shall furnish all other facilities and equipment both inside and outside the building, as required in these specifications.											
2.1.4 Contractor shall provide all materials, labour, equipment, testing, supervision, plant facilities, consumable supplies and tools as required for design, fabrication and installation of the Building Module.											
2.1.5 Antenna mounting location shall be specified during Detail Engineering.											
2.1.6 All material equipment tools or supplies to be incorporated permanently into the building shall be new and unused, sound, free from all defects and conform to the size and/or capacity and quality specified. Contractor shall when required, furnish satisfactory evidences as to the type and quality of materials, equipment, tools and supplies.											
2.1.7 All materials, equipment, tools used for construction on the project shall be maintained in good working condition to ensure safe and good quality workmanship.											
2.1.8 This specification does not relieve the Contractor of the responsibility to provide a safe design and the Contractor shall notify Company Representative of any aspect of the specification which, in the judgment											

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of the Contractor should be changed to improve the design. Any such changes shall, however, require Company approval.				
2.1.9 All Stainless steel items exposed to atmosphere wherever used shall be SS 316/316L.				
2.1.10 All Stainless steel items provided inside module wherever used shall be SS 304/316.				
2.2 Building Requirements				
The items listed below outline the basic requirements for the various building modules.				
2.2.1 Each building module shall be fabricated as a complete, single unit, skid mounted structure, and installed as per installation philosophy.				
2.2.2 Each building module, complete with all floor decks, interior walls, equipment, furniture, and appliances shall be constructed to sustain lifting, preferably as a single unit. Offshore Lifting shall be carried out using a revolving crane of a Derrick Barge.				
2.2.3 Attachment points (pad eyes) for crane slings shall be located on the roof of the building.				
2.2.4 Members and attachment points provided to facilitate lifting shall be permanently attached to the building to allow for possible future handling.				
2.2.5 Each building package shall be structurally adequate to withstand the severe loads encountered during handling, transportation to offshore site and installation on an offshore platform located offshore India.				
2.2.6 Each building shall be suitable for occupancy and general usage in a marine environment.				
2.2.7 Each building module shall conform to the general arrangement indicated in approved layout drawing. The building shall have interior partitions, interior and exterior doors with frames and windows.				
2.2.8 Each building module shall have framed openings in walls and roof for entry/exit of piping, exhausts, ducts, cables etc. as required by relevant specifications.				

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2.2.9 Each building shall be furnished with flashing, caulking, and all material necessary for the fabrication of a complete, sealed building to prevent air leakage when air conditioned and pressurized and weatherproofed to prevent entry of rain water or moisture.

2.2.10 Each building roof and floors shall be made leak proof so as to prevent any leakage of water to the floor below. Roof shall have minimum slope of 1:50.

2.2.10.1 A gutter shall designed as per NPC and shall have minimum slope of 1:200.

2.2.11 Each building shall be insulated and soundproofed. For sound and vibration limitation, the Contractor shall follow "Offshore Installation Guidelines on Design and Construction" Department of Energy, U.K. (latest edition) in general and specifically following:

- Recommended noise limits for specific work areas. NORSOK S-002
- Recommended noise limits for sleeping/recreation areas of living.
- Accommodation on offshore installation.
- Vibration limits for human exposure.
- Guidelines to minimize noise and vibration problems.

2.2.12 Each building shall be furnished with mechanical/electrical equipment for HVAC and pressurization as detailed in subsequent sections.

2.2.13 Each building shall be completely wired/cabled for power supply, lighting, receptacles, switches, radio system, telephone system, paging and intercom system, fire and gas detection system, emergency lighting, trunk telephone facility and electric appliances. A grounding arrangement shall be provided as per Design Criteria and other relevant Electrical Specifications.

2.2.14 Each building shall be provided with potable water, seawater and sewer piping system sufficient to service the equipment and facilities specified herein and on the referenced drawings, potable water, seawater supply

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and sewage drains shall be furnished by Contractor with separate seawater and potable water piping for the toilet and urinal.

2.2.15 Piping, electrical and instrumentation connection shall be arranged through service shaft/chase and field connections are minimized for each building.

2.2.16 The Building Modules shall be completely furnished, operational and made ready for occupancy after fabrication and prior to load out.

2.2.17 A disposal chute shall be provided connecting Building Module. The chute should extend till L.A.T. and shall be amenable to periodic cleaning by a water hose. The disposal chute should be located near the galley.

2.2.18 The maximum travel distance to be travelled from any point in a building to a protected escape route, external escape route or final exit shall not be more than 30m.

2.3 Applicable Codes

2.3.1 Design Codes

Sr.no.	Spec. No.	Particulars
1	API-RP-2A	'Recommended Practice for Planning, Designing and Constructing Fixed Offshore Platforms', latest edition.
2	AISC	"Specification for the design, fabrication and Erection of Structural Steel Building", latest edition
3	OSHA	"Occupational safety and health Administration", latest edition.
4	NFPA	"National Fire Protection Association Codes", latest edition.
5	NEC	"National Electrical Code", latest edition.
6	NSPC	"National Standard Plumbing Code", latest edition
7	IES	Illumination Engineering Society: "Lighting Handbook" latest edition.
8	ASHRAE	American Society of Heating, Refrigeration and Air-conditioning Engineers Hand Book and Manuals".
9	ASTM	"American Society for Testing Materials".
10	SOLAS	Specification of the International Convention on safety of Life at Sea.
11	DOE,UK	Offshore Installation Guidance on Design and Construction: Department of Energy, U.K., Section

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		5.8, Fire Protection for Accommodation Spaces and Control Stations, latest edition
12	DOE,UK	Offshore Installation Guidance on Fire Fighting Equipment: Department of Energy, U.K. (1980). Fire Protection for Accommodation Spaces and Control Stations, latest edition
13	DnV	Fixed Offshore Installations: Safety and Utility System Equipment, Part 4, Chapter 2, General Safety, Section 3 Fire Protections, latest edition
14	UL 263	Fire Test of Building and construction materials, Underwriters Laboratory.
15	UL 1709	Rapid Rise Fire Tests of Protecting Materials for Structural Steel, Underwriters Laboratory.
16	IS 1172	Code for basic requirement for Water supply, Drainage and Sanitation
17	IS 1742	Code of Practice for Building Drainage
18	IS 5509	Fire Retardant Plywood.
19	IS11871	Method of Determination of Flammability and Flame Resistance of Textile Fabrics.
20	NORSOK C-002	Architectural Component & Equipment
21	NORSOK C-001	Living Quarter Area
22	NORSOK H-001	Heating Ventilation & Air Conditioning
23	AWS D1.1	Structural welding code
24	AWS D1.3	Sheet metal welding code
25	ASTM A653	Specification for Galvanized sheet steel.
26	ANSI Z535.1	Safety Colour Code
27	ANSI Z535.2	Criteria for Safety Symbol (Letter Size)
28	NORSOK H-CR-002	Piping and plumbing
29	NORSOK S-002	Working Environment
30	SP-7	National Building Code of India
31	AIA	American Institution of Architect
32	NFPA 101	Life Safety Code
33	NFPA 701	Standard methods of fire tests for flame propagation of textiles & films
34	SMACNA	Sheet Metal & Air Conditioning Contractor's National Association
35	NBC	National Building Code of India

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2.3.2 Design Criteria of respective Discipline

Sr.no.	Design Criteria	References
1	Piping	Section 3.3 Vol - II
2	Electrical	Section 3.5 Vol - II
3	Instrumentation	Section 3.6 Vol - II
4	Mechanical	Section 3.7 Vol - II
5	Architecture	Section 3.10

2.3.3 General Specifications & Other Specifications

Sr.no.	Spec. No.	Particulars
1	1050	General Specification Definitions
2	1060	Vendor Data Requirements
3	FS 2004	Piping Design
4	FS 2004B	Piping Fabrications
5	FS 2004D	Piping Specification
6	FS 2006	Insulation of Piping & Equipment Package
7	FS 2008 PMS	Piping Material
8	2005	Protective Coating
9	2009	Welding and Weld Inspection
10	3500	Fire & Gas Detection System
11	3503	Instrumentation for Equipment Package
12	FS 4004	lighting & power distribution panels
13	FS 4005	Cable trays
14	FS 4006	lighting fixtures & JB for classified area
15	FS 4011	Electrical, Instrument & Communication Cables
16	FS 4017	Electrical equipment for packaged plant
16	5002	Specification for Noise Level
17	5004	Equipment vibration
18	5901F	Heating, Ventilating, Air-conditioning and Pressurization (HVAC)
19	6001F	Material Specifications

2.3.4 Conflict

In the event of conflict between this specification and other documents listed herein, the following order of preferences shall govern:

- Discipline Design Criteria & Data Sheets

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- ii) The Specification
- iii) Drawings
- iv) General Specifications
- v) Codes & Standards

3.0. STRUCTURAL DESIGN & FABRICATION

For design & fabrication of all Modules structure and its component the following Specifications of the Bid Package shall be followed:

DESCRIPTION

SPECIFICATIONS/STANDARD

- | | |
|--|----------------------|
| 1. Structural Design Criteria | Section 3.4, Part-IV |
| 2. Fabrication, Assembly, Load-out,
Transportation & Installation | Spec.6001F, Part-IV |

3.1 Protective Coating

All exposed structural steel shall be coated in accordance with General Specification 2005, "Protective Coatings".

4.0. ARCHITECTURAL SPECIFICATIONS


4.1 General Scope

These specifications establish and define the material, workmanship and constructional aspects of Architectural works.

- 4.1.1 All materials shall be of standard quality, manufactured by approved manufacturer, conforming to relevant standards and shall be approved by Company.

In case any material other than that of approved quality as stated above, the Contractor shall get all such materials approved by the Company prior to procurement and use. The Contractor shall furnish manufacturers certificate for the materials intended to be used. Further to that. Contractor shall get the materials tested from approved test house, if asked by the Company, at Contractor's own cost. The Company shall have the right to reject all or any of the materials intended to be used. All wall system, door,

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<p>windows, false ceiling, penetrations etc. which are fire rated as per SOLAS or other design criteria shall have approvals from approved test houses like Lloyds Register of Shipping or Det Norske Veritas.</p>											
<p>4.1.2 The building materials and construction shall conform to the requirements of the NFPA: "National Fire Codes".</p>											
<p>4.2 Wall System and Roofing</p>											
<p>4.2.1 General</p>											
<p>The building shall have a proper enclosure using corrosion resistant material for walls and roof. All joints and opening shall be sealed against moisture penetration, to minimize thermal conductivity and transmission loss of air conditioning and pressurization.</p>											
<p>The ratings of various walls, floors, ceilings etc. shall be as given in Section 3.10 of Architectural Design Criteria. Ratings of walls and decks not listed in Design Criteria shall follow relevant SOLAS code. The fire ratings of walls/ decks/ penetrations etc. shall be duly certified by Certification Agencies like LRS, DNV, BV, etc.</p>											
<p>The overall heat transfer coefficient of all exterior walls and roof shall be maximum 0.98 Kilocalorie/h. per sq. m /deg C (0.20 BTU per hour per sq .ft./deg F) using the combined values of the exterior & interior finish materials including insulation and also meet the requirement of HVAC Heat Load Calculation. Contractor to provide the actual U-value calculations showing the material proposed and thickness of the insulation thus selected for different sections of the external walls for company approval.</p>											
<p>Walls, bulkheads and roof shall be incombustible with respective fire rating. Openings for service lines, HVAC duct, electrical cables etc., shall have water and airtight seal all around. Sealing shall have same fire rating as that of Walls, bulkheads and roof.</p>											
<p>4.2.2 External Wall System</p>											
<p>4.2.2.1 Material and Assembly</p>											
<p>External wall shall be made up of an assembly consisting of 6 mm thick corrugated/suitably reinforced steel plate with mineral wool based insulation strip consisting of resin bonded aluminum foil-faced, air gap</p>											

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between insulation and inside wall panel conforming fire rating specified. Corner trim and flashing for exterior closures shall be of matching metal and thickness.

The inside wall panel shall be metal liner panel with PVC film finish over 0.6 mm galvanized steel liner panel of approved shade.

The contractor shall submit the fixing details of wall assembly for review by company. The finish shall be smooth and without any damage/repair mark.

Alternative material like Composite materials can also be used in control room, switchgear room, TG room, Well platforms and protection of process critical equipment such as ESDV & Actuators after satisfying all codal requirements for specific application. Certification by agencies like DnV/ ABS shall be obtained for design methodologies for fire & blast incidences.

4.2.2.2 Restriction

Equipment mounting on the wall panels is not permitted except for lighting receptacles and panels, small distribution boards, lighting switches, electrical outlets, vinyl pockets, etc.

Equipment such as wall-mounted panels, cabinets, shelves etc. shall be secured to structural steel angles or channels welded to the building framing or base floor plate.

4.2.2.3 Insulation

Insulation for roof, walls and floors including structural framing shall be resin bonded, aluminum foil faced mineral wool insulation of sufficient thickness to obtain 'U-value' as specified. The insulation shall be classified as 'non-combustible'. Insulation shall be tightly secured with welded stud clips/ welded steel pins with spring washers at regular intervals of 300 mm centre to centre (max.).

4.2.2.4 Colour Coding & Painting

Colour coding and painting shall be in accordance with FS- 2005 "Protective Coating".

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4.2.2.5 Finish

The external wall shall be as per the colour coding specified in ~~FS- 2005~~.
All surface marks and scratches in field shall be finished /coated with matching paint.

4.2.3 Internal Wall Panel System

4.2.3.1 Materials

Internal partition walls in service spaces, circulation areas, office areas, control room ,living rooms and all other areas unless otherwise mentioned, shall be with pre-finished class B-15 Fire rated insulated metal liner panels with PVC film finish over 0.6 mm galvanized steel liner panel of approved shade.

Boundaries around machinery spaces shall have steel bulkhead extending from floor to ceiling and lined with insulated pre-finished metal liner panels, to achieve an overall fire rating class A-60. The same criteria shall also be applied for boundaries around electrical equipment rooms and other rooms containing appliances, equipment, which are potential sources of fire hazard.

The internal walls of Galley, Air Lock and Room containing Battery shall be of Stainless Steel (SS316) liner panels of approved thickness and finish suitable to usage.

Shatter proof toughened glass panels at one meter above false flooring up to the ceiling shall be provided with extruded, anodized Aluminum frames for common walls of control room, Instrument Room, RTU, communication and computer room as per operational requirement.

Noise attenuating perforated panels shall be provided in Emergency Generator Room. Noise attenuating perforated panels shall be of 18 gauge perforated galvanized sheet model '115' as manufactured by Accurate Perforating Co. or approved equivalent, having galvanized thickness as per ASTM A123 surface treatment with 23% open area.

For internal wall panels, restrictions, insulation and colour coding and painting, refer to corresponding specification.

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Alternative material like Composite materials can also be used in control room, switchgear room, TG room, Well platforms and protection of process critical equipment such as ESDV & Actuators after satisfying all code requirements for specific application. Certification by agencies like DnV/ ABS shall be obtained for design methodologies for fire & blast incidences.

4.2.3.2 Finish

The finished internal wall panels shall be perfectly aligned, without any joints or scratch mark on the panels, thus rendering a level, aesthetically good and continuous finish. The colour scheme shall be approved by Company.

4.2.4 Toilet Partition and Toilet System-

4.2.4.1 Material & Workmanship

All toilet modules shall be built as a waterproof sealed compartment comprising of the following:

1. Inside wall panel assembly (of min. thickness 30 mm) having PVC film finished over 0.6 mm stainless steel 316/316L liner panel with 30 mm mineral wool (110 kg/cum) insulation, wherever B15 rated panel is not required.
2. Ceiling assembly (of min. thickness 50 mm) having PVC film finished over 0.6 mm stainless steel 316/316L sheet /panel with mineral wool(110kg/cum) insulation .
3. The toilet partition shall be of stainless steel 316/316L having 25mm thick insulation.
4. Floor finish over stainless steel 316/316L base plate shall be of non-slip vitrified ceramic tiles min. thickness 5.5 mm laid over solvent based epoxy resin mortar (average 35mm thick) to maintain minimum slope 1:80 and adequate number of floor trap with drains shall be provided.
5. Sanitary Fixtures shall include:

Coloured, wall mounted vitreous china European and / or Indian water closet (stainless steel squat) complete with soap dish, hand type tap

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with spray gun (Stainless Steel SS-316 with acrylic handle), paper holder, stainless steel mug etc. All the W.C. Cubicles shall be provided with lockable door.

6. Granite countertop type, coloured vitreous china wash basin with Stainless Steel SS-316 spouts, SS 'U' bend with minimum 50 mm seal, pail hook, hose end, backflow preventer, indexed lever handles and 12.7 mm female union inlets and 76 mm P-trap standards with spring loaded single, cold mixing nozzle, having 300mm vertical drop in front. Stainless Steel SS-316 continuous mirror (unbreakable type), two nos.450mm long Stainless Steel SS-316 towel rail and coat hook shall be provided near the wash basin.
7. Half stall type wall mounted urinal shall be of size 610mmx400mmx380mm. The flushing inlet pipe shall be of Stainless Steel SS-316 15mm dia. and waste pipe 32mm dia. PVC (heavy duty) shall be provided. Necessary unions and 'U' bend shall be provided in the waste/drainage line. Rawl plug with Stainless Steel SS-316 screws shall be used for fixing the urinal. Unless otherwise indicated height above finished floor shall be 600mm. Urinal partitions shall be of 25 mm thick made of two sheets of 20 gauge stainless steel. The urinal partitions shall be wall hung type of size 600 mm depth by 1050 mm height, fitted with zinc chrome plated wall-hung brackets.
8. Electrical fittings and fixtures including light above the mirrors in front of wash basins, adequate nos. of recessed mounted ceiling light, receptacle (all 240V, 50Hz, 1PH), switches, junction boxes, electrical cables etc. to provide illumination level of min. 200 Lux shall be as per Electrical Design Criteria/ FS.
9. Removable lever type access hatch shall be provided for pipe shaft inspection.
10. B15 class toilet Door (or A 60 class door as per location) with PVC film finished over 0.6 mm stainless steel 316L liner panel complete with hardware like wrap around door hinges, latch, stopper and hook, lock, door closer, louver, kick plate push plate etc. shall be provided.

Toilet compartments including doors shall be of steel construction with stainless steel liners/panels. The face plates shall not be less than 22 gauge stainless steel and shall have a molding interlocking at all

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edges. The Toilet partition panels and door shall have a 25 mm thick insulation .The toilet partitions including door shall be floor mounted with handrail braced and fitted with stainless steel 316L hardware like wrap around or hinges, latch, stopper and hook. Door edges shall be welded around perimeter to insure a rigid unit. Corners shall be welded and grounded smooth.

For restrictions, insulation and finish refer corresponding specifications of external wall systems.

4.2.5 Roof

4.2.5.1 Materials

The roof top plating shall serve as the steel sub-flooring over the entire, uncovered roof area. Roof shall have minimum slope of 1:50. This shall have nonskid, water-repellent, coat of approved shade, quality and make.

Non accessible roof may have Corrugated Roof steel plating welded to the top of beams. Roof plating shall have minimum 4mm thick pre galvanized (G90/Z275) corrugated carbon steel plate.

4.2.5.2 Finish

Coating in yard shall be as per spec.2005 of the bid.

All surface marks and scratches in field shall be finished /coated with matching paint.

4.3 Suspended Ceiling

4.3.1 General

Contractor shall furnish and install the suspended ceiling complete with grid suspension system, false ceiling acoustical panels, related accessories, complete with recessed lighting fixtures, supply and return air vents and other fixtures as required.

4.3.2 False Ceiling Grid Systems (B15/30 Class)

4.3.2.1 Material

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Main runners shall be of Galvanized iron Tee Section of 25 mm X 35 mm size and of thickness 1.5mm.

Cross runners shall be of Galvanized iron Tee Section of 25 mm X 35 mm size and of thickness 1.5mm.

Ceiling in pre-fabricated toilet having Stainless Steel liner panel frame work shall be provided with Stainless Steel 364 false ceiling.

4.3.2.2 Erection

The grid system shall be assembled by interlocking the main and cross runners @ 600 mm maximum on both ways by means of galvanized angle cleats. The main runners shall be suspended from the ceiling by means of 25mmX 3 mm thick galvanized steel flat clamp fixed to the main runners @ 1200 mm maximum and shall be fixed to the structural steel plate. The galvanized steel hooks shall be suspended from the ceiling by means of slotting in 25mm x3mm thick galvanized steel flat, 'L' shaped, welded to the ceiling/ vendor specified suspension arrangement duly approved by company.

The overall grid system shall be rigid in accordance with false ceiling pattern, perfectly leveled and aligned at desirable height.

4.3.3 Suspended Ceiling Panels/Tiles

4.3.3.1 Materials

The suspended ceiling shall consist of lay-in type acoustical panels (600x600 mm (max.) finished with polyester overlay having fire rated class B- 15/30 of specified 'U' value. Insulation of 50/75 mm thick mineral wool (80 kg/cum) shall be covered with 0.70 mm (B-15) & 0.80 mm (B-30) thick galvanized steel plate on exposed face. The ceiling panels are joined one to other on the exposed face by main and cross galvanized T section suspended below the structural deck by means of hangers.

Suspended Ceiling of Galley, Toilet & Air lock shall be provided with Brushed Stainless Steel 316.

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4.3.3.2 Finish

Clear height of the installed system shall be a minimum of 2.80 m from finished floor level unless otherwise mentioned. It shall be perfectly leveled and aligned.

Suspended ceiling panels and exposed T section shall have a factory-applied, washable, white baked enamel paint finish, having a light reflectance of 0.80 or more.

4.3.3.3 TABLE : SUSPENDED CEILING

Sr. No.	Particulars	False ceiling	
		Suspended	
1	Fire Rating	B-30	B-15
2	Material	0.8mm galvanized steel plate	0.7mm galvanized steel plate
3	Panel size	600mm x 600mm	600mm x 600mm
4	Panel Thickness	75mm	50mm
5	System Weight	12.4 kg/m ²	9.35 kg/m ²
6	Sound reduction index	50dB	53dB
7	Core material	Mineral wool	Mineral wool
8	Insulation Weight	80kg/m ³	80kg/m ³
9	Insulation thickness	75 mm	50 mm
10	Thermal transmittance	0.38 kcal/m ² h °C	0.58 kcal/m ² h °C
11	Finish	Baked enamel paint with protective foil	Baked enamel paint with protective foil
12	Certification	As per clause 4.1.2 and SOLAS	As per clause 4.1.2 and SOLAS
13	Standard of construction	BS 476,Part 4 to 8 or equivalent	BS 476,Part 4 to 8 or equivalent


4.4 Flooring

4.4.1 General

The type of flooring at different locations /areas has been indicated in Architectural Design Criteria- 3.10.

4.4.1.1 Vendor shall furnish and install vinyl sheet laid over 12mm thick vinyl/phenolic base over the floor area as mentioned in the Design Criteria 3.10 of the bid.

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4.4.1.2 Ceramic tiles laid over acid/alkali resistant, waterproof epoxy adhesive sloped screed so that any spillage may flow to a predetermined dead end pit. A dado of similar material up to 450 mm above finished floor shall be provided on the walls of all such areas.

Floor screed in wet rooms (toilets and shower areas) shall be laid with predetermined slope of 1:80 to floor drains and other areas shall have slope of 1:80 towards drain spout.

Skirting of similar material up to 100mm above finished floor shall be provided as mentioned in the Design Criteria 3.10.

Boundaries of Toilet areas and wet zones of pantry shall be provided with a stainless steel (SS316) barrier plate, 6mm thick and 100mm high to prevent seepage of water to adjoining areas.

4.4.1.3 Switchgear, Control rooms of TG, PGC and other areas (if any required/come up during detailed engineering) shall be provided with false (cavity) flooring.

4.4.1.4 HVAC, HVAC equipment area and all loading & unloading area floor plates shall be painted with nonskid paint.

4.4.1.5 All other areas, unless specifically mentioned in design criteria shall have floor plate painted with medium gray non-skid paint.

4.4.1.6 Conference room and office areas shall be provided with vinyl sheet floor finish as per #4.4.2 of this spec. with 100mm skirting.

4.4.1.7 Edges of all flooring shall be sealed with a caulking compound to prevent leakages.

4.4.1.8 The overall heat transfer coefficient ('U' value) of the flooring system at all floor levels shall be a maximum of ~~0.98~~ Kilocalorie/ hour sq.m./Deg C, using the combined values of finished flooring, floor plate and insulation.

4.4.1.9 Flooring in gymnasium shall be a shock absorbing construction, with markings & shall be installed where indicated in the room finishes schedule. Sports flooring shall have passed the NT FIRE 007 "Floorings, fire spread and smoke generation" test and satisfy the relevant fire test requirements.

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4.4.2 Polyvinylchloride (PVC) Floor Finish

4.4.2.1 Material

Vinyl sheet shall be of homogeneous, un-backed, antistatic, flexible type of approved colour and pattern of minimum 2.0 mm thickness in the form of sheet rolls. The cove base shall be 100 mm high and minimum 2 mm thick.

The Vinyl sheet flooring shall be installed on vinyl / phenolic based layer of 12 mm (average) thick. The sub-floor shall be minimum 6mm steel plate, seal-welded to frame and insulated with 50mm thick mineral wool on the under side of the non-exposed decks and 100 mm thick mineral wool under exposed decks except where fireproofing is provided.

PVC floor finishes shall be of minimum 2 mm thick vinyl of extra heavy wear quality and include a minimum 0,7 mm wear layer of PVC or similar. For environmental reasons, the PVC floor finish shall be provided with a field and laboratory emission cell emissions test certificate, where the values shall not exceed 115 µg/m²h after four weeks in 23 °C and 50 % humidity, and 50 µg/m²h after 26 weeks in 23 °C and 50 % humidity. The PVC floor finish shall not contain any formaldehyde or asbestos.

4.4.2.2 Workmanship

The preparation of sub-base and base course shall be of specified thickness as per specifications. The base course shall be thoroughly cleaned and dried. The layout of vinyl sheet shall first be marked with on the base course to required pattern without adhesive. Neoprene based runner adhesive of approved make shall then be applied on the base floor and back of the vinyl sheet / tiles. Vinyl sheet / tiles shall be placed in position from center of the floor space towards the edges, slowly without creating any air pockets between the tiles and base course. The vinyl tiles shall be placed only when the adhesive is set sufficiently for laying. The edge pieces of vinyl tiles, if required shall be uniform on all edges of the floor. The joint between tiles shall be thin hairline type.

After placing, the flooring shall be pressed suitably with a wooden roller of about 5 kg., to have uniform, leveled floor.

After a minimum period of 24 hours, after laying the tiles, the finished floor shall be cleaned with a wet cloth soaked in warm soap solution.

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All joints shall be hot welded using hot air welding techniques. The joints shall be smooth and flush with the surrounding surfaces.

The floor finish shall be waterproof, chemical proof and of non-slip quality, capable of withstanding heavy wear and maintaining a high hygienic standard. Polyurethane top layer shall not be used.

4.4.3 Ceramic Tile Flooring & skirting

4.4.3.1 Materials

Ceramic floor tiles shall have a minimum thickness of 5.5 mm with a non-slip and easy to clean surface. Floor tiles shall be through coloured.

The floor tiles shall laid with alkali and acid resistant, waterproof epoxy adhesive screed.

Tiles and joints in the kitchen (galley) shall resist thermal shock from hot grease and boiling water.

4.4.3.2 Workmanship

The floor tiles shall be laid with alkali and acid resistant, waterproof epoxy adhesive. Any ingress of water to underlying materials and constructions is unacceptable.

All tile joints shall be firmly and neatly finished in alkali and acid resistant, waterproof epoxy grout with documented elastic properties. Grout joints in floors and skirting shall align in both directions. The maximum joint width shall be 6 mm.

Joints between top of skirting and wall panels shall be neatly sealed with an appropriate flexible and waterproof polyurethane mastic. Expansion joints shall be provided at approximately every 10 m, and against fixed equipment and constructions. The finished tile floor shall have an even surface with superior hygienic properties and with functioning slopes to floor drains.

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4.4.4 False Flooring (Cavity Flooring)

4.4.4.1 False Flooring system shall be in compliance with BS EN12825, Heavy duty 6/A/3/1.

Vendor shall furnish and install, on steel base floor, a raised free access floor suitable for heavy equipment, consisting of an assembly of panels mounted on adjustable pedestals to provide an under floor space for the accommodation of electrical and instrumentation cable ways and mechanical service lines.

Finished Floor surface shall be smooth, leveled and uniform. Complete floor system shall be free of vibration and rocking panels.

4.4.4.2 Materials

4.4.4.2.1 Pedestal Base Plate

Pedestal base plate shall be made of galvanized mild steel, of size 100mm x 100mm x 3.0 mm thickness.

4.4.4.2.2 Pedestal Stud

Pedestal stud shall be made of galvanized mild steel threaded rod and shall be of 30mm dia. It shall have threading at top portion for attaching the top-head attachments. Pedestal assembly shall be capable of supporting a minimum Load of 24 kN with a safety factor of 4 times minimum working Load.

4.4.4.2.3 Top Head Attachments

Top head attachment shall be made of pressure die-cast zinc aluminum alloy. The top head attachments shall be provided with check nuts at bottom portion for attaching the top head with threading in the stud allowing for adjustment up to 38 mm up and down.

4.4.4.2.4 Channel Stringers

Channel stringers shall be channel shaped and of galvanized, machine cut, cold rolled mild steel having size of 45mm x 35mm x 45mm and thickness of 2 mm.

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4.4.4.2.5 Floor Panels

Floor panels shall be of aluminum faced with resin bonded core (38mm thick), with bottom tray of 0.5mm thick galvanized steel returning unto sides of the panel and penetrating into the tray, finished with high pressure PVC or Vinyl lamination of size 610mm square. The panels when placed in position and functioning as part of the complete floor system shall be capable of supporting a minimum concentrated load of 6.0 kN on 25mmx25mm with maximum defection of 2.5mm. Load safety factor shall be 2 times minimum load. The floor panels shall be finished on top with high-pressure laminate/antistatic type vinyl tiles of thickness 3mm, and along four sides at top with suitable lapping. Flooring shall be **peel resistant and fire resistant**.

The access floor under structure shall be edge support rigid grid type, mechanically fasten with lateral stability. The entire panel support structure shall be treated for corrosion. The access floor shall have a finished floor height of 900mm. The specified access floor shall be rated for the following loads:

Min. working load	:	6.0 KN (25mmx 25mm square)
Ultimate Load	:	12.0KN
Max. Deflection	:	2.5 mm
Soft body Impact resistance	:	0.4 kNm
Load Safety Factor	:	2.0

4.4.4.3 Workmanship

False Flooring pattern shall be as per approved drawing. A grid work consisting of stringer channels placed on top-head attachments of pedestal studs shall be erected in line with the flooring pattern. Pedestal base plates shall be fixed to the base floor by welding to the base plate flooring. Pedestal studs shall be welded on the base plates true to the plumb. The pedestal stud location @ 610mm both ways shall ensure the grid work as per the flooring pattern. The length of the pedestal studs shall be such that cavity between false flooring and base flooring is of constant depth.

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Top head attachments shall be fixed over the studs with the help of check nuts and shall be adjusted to obtain proper level of the finished floor panels.

Stringer channels then shall be placed over the top heads in position to form the supporting grid work for the floor panels. Floor panels shall be placed over these stringer channels perfectly leveled and aligned without any gaps in between the panels.

All panels shall be completely interchangeable and easily removable with suction lift tools. Panel arrangement shall be properly coordinated with the equipment layout, so that easy access is available to the cable way near the cable alley of each floor mounted equipment.

Necessary material handling Ramps, 1:6 minimum slope shall be provided as per requirement. The cavity between false flooring and base floor shall be properly cleaned and made dust free.

The main traffic area and the frontage of all equipment, in false floor area shall be provided with 5mm thick heavy duty ribbed rubber matting, which shall be cut and installed in such a way, so as to facilitate periodical removal for washing.

4.4.4.4 Table: Raised Flooring/Cavity Flooring as BS EN 12825, (Heavy duty 6/A/3/1)

Sr. No.	Component	Particulars	Requirement
1	Floor Panel		
		Type	Heavy duty
		size	610mm x 610 mm
		Thickness	38mm
		Min. working load	6.0 kN (25mmx25mm square)
		Ultimate Load	Minimum 12.0 kN
		Max. Deflection	2.5 mm
		Material	A high density resin bonded core
		Finish	High pressure laminate
		Load Safety Factor	2
2	Stringers	Supporting framing	45mm x 35mm x 45mm and thickness of 2 mm
3	Pedestal	Minimum Load	24.0 kN
		Pedestal stud	galvanized mild steel threaded rod

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			and shall be of 30mm dia.
		Top head attachment	As per vendor
		size	100x100x3.0 mm
		adjustment up to	38mm
4	Floor	Height	900mm

4.4.5 Impact Resistant Flooring shall be provided in gymnasium as per #4.4.1.11 of this spec.

4.5 Door

4.5.1 General

4.5.1.1 Door shall meet the requirement of Norsok C-002 & as indicated in table - 4.5.4.11 of this spec.

4.5.1.2 Contractor shall furnish and install all door frames, doors glazing and hardware with insulation as required for a complete installation including door name plates, threshold and weather stripping.

4.5.1.3 All doors in air conditioned and pressurized areas shall be of air tight construction, and generally open inside, except for emergency exits. The doors in air-conditioned areas shall have a U value of 0.40 W/sq. m/degree Celsius. Automatic door closure of twice the capacity against the air-conditioning pressure shall be provided.

4.5.1.4 Doors shall be of type and construction in line with wall / partition fire ratings as specified in architectural design criteria.

4.5.1.5 In case of outward opening door provided in the air conditioned / pressurized areas, door closure shall be capable of closing the doors against the internal pressure in the building with minimum loss of conditioned air.

4.5.1.6 All exterior doors shall be furnished with thresholds and weather-stripping appropriate to withstand the environmental conditions.

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4.5.1.7 Doors and door frames shall be coated in accordance with general specification 2005 "Protective Coating" and shall have matching colour.

4.5.1.8 All marks and scratches shall be painted with minimum one coat at field to match the original finish of doors and frame.

4.5.1.9 Alternative material like Composite materials can also be used in control room, switchgear room, TG room, Well platforms and protection of process critical equipment such as ESDV & Actuators after satisfying all codal requirements for specific application. Certification by agencies like DnV/ ABS shall be obtained for design methodologies for fire & blast incidences.

4.5.2 Door Shutter

For A-class heavy duty hinged door, door shutters shall be made up of two 2.0 mm stainless steel sheets with insulated cores having protective foil. The thickness of the door blade shall be minimum 50 mm for A-60 doors. The shutter shall be finished with PVC film for internal doors and 2mm stainless steel sheet on both face of external doors.

For B-class internal doors, 0.6mm PVC laminated galvanized steel sheets with protective foil shall be provided. The thickness of B-15 internal door blade shall be minimum 38mm. The edges of the door blades shall be protected with laminated profile.

Thickness of shutter, insulation and shutter skin (sheet) indicated in product description of fire test certificate of specified ratings may slightly vary from above.

In case of airtight door shutters, approved quality, continuous neoprene based rubber beading shall be provided along the entire perimeter of the shutter, fixed with approved quality rubber adhesive.

The shutters shall be provided with locking device, handles and other hardware as specified.

200mmx300mm Vision panels shall be provided in Door shutters in Corridors/escape route and stairways, galley & radio room as per # 4.5.4.9 of this specification. Vision panel shall be an integral part of the certified door.

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4.5.3 Door Frame

4.5.3.1 Material and Workmanship

Door frames shall be a combination buck and jamb and shall be of the same material as doors.

Door Frames for A-60 class doors shall be made of frame of 4mm Thick stainless steel SS316L and shutter made of 2 mm thick stainless steel SS316L suitable for welding or bolting, complete with adjustable neoprene sponge seal, stainless steel sill, cover plate, gaskets etc., finished with baked enamel paint as per door and window schedule table.

For B-15 internal doors, the frames shall be of 1.6mm (min.) thick galvanized steel, finished with baked enamel paint.

Door frames shall carry the Underwriters Laboratory Inc. Label where applicable.

Provisions for hinges, locking arrangement and other hardware shall be provided in the frames by machine cutting required size cutout on the frame body and welded to 2mm thick mild steel pad plates already welded over the cutout from behind. Door frames shall be adequately reinforced for all hardwires.

4.5.4 Door Fixture and Fittings

4.5.4.1 Doors shall either have a continuous hinge or a minimum of three 114mm x 114 mm ball bearing hinges of standard weight stainless steel (SS316).

4.5.4.2 All external and interior doors shall be furnished with stainless steel (SS316) latches for operation inside and outside.

4.5.4.3 All external doors shall be furnished with panic latches on the inside, push down to unlatch' type. The panic latch shall have the capacity of 0.25 million operations. The leaf shall be furnished with approved type mortise exit devices.

4.5.4.4 All doors shall be provided with stainless steel (SS316) large grip pull handles to hold in position. Rubber shock absorbers shall be provided, so as not to strike and damage the adjoining walls. All doors shall be

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lockable with stainless steel (SS316) latches (6 lever heavy duty mortise or approved equivalent).

4.5.4.5 The building module shall be provided with two master keys for all the doors.

4.5.4.6 Heavy duty corrosion resistant door closures shall be furnished in the following doors:

- All external doors including airlock doors.
- All toilet doors.
- All circulation doors.
- All other doors except those opening to storage janitor closet, pipe chase etc.

4.5.4.7 All hardware used shall be stainless steel of grade SS-316, unless otherwise mentioned.

4.5.4.8 All doors for attached toilet shall be provided with kick plates and approved quality Stainless Steel (SS316L) coat and hat hook inside and approved quality 75 mm long Stainless Steel (SS316) toilet door latch with 'vacant/occupied' indicator outside.

4.5.4.9 Vision panels shall be installed as required for orientation or safety reasons in doors in corridors/escape route, stairways and galley & radio room. The vision panels shall be positioned to ensure good line-of-sight through the panel whilst operating the door. This may require the vision panel to be positioned off-center in the door leaf. The vision panels shall be an integral part of the certified door. The glazed area shall be approximately 200x300mm (width x height) and consist of laminated or tempered security glass.

4.5.4.10 Direction of opening of doors in Toilets, galley, corridors/escape route and stairways shall be in the direction of escape.

4.5.4.11 TABLE : SCHEDULE OF DOORS AND WINDOWS

Sr. No.	PARTICULARS	DOORS	WINDOWS
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1	Location	Internal	External	External
2	Exposure	Not exposed to weather	exposed to weather	exposed to weather
3	Material	Pre galvanized carbon steel ASTM A653	Stainless steel SS316/316L	Stainless steel SS316L
4	Fire Rating	B15/30	A60	A60
5	Frame	1.6 mm sheet, Pre galvanized carbon steel ASTM A653	4mm thick sheet stainless steel SS 316/316L	4mm thick sheet stainless steel SS 316L
6	Shutter	0.8mm thick sheet, Pre galvanized carbon steel ASTM A653	2mm thick sheet stainless steel SS 316L	2mm thick sheet stainless steel SS 316L
7	Finish	Baked enamel powder coat	Stainless steel	Stainless steel
8	Shutter thickness	38mm	48mm	-----
9	Louvers	1.2 mm thick sheet, Pre galvanized carbon steel ASTM A653	-----	-----
10	Glazing	-----	-----	8mm thick laminated or tempered security glass meeting fire integrity requirement as per BS 476: Part-11
11	Vision Panel	-----	Rectangular 200x300mm, 8mm thick laminated or tempered security glass meeting fire integrity requirement as per BS 476: Part-11	-----
12	Insulation	35 mm thick Mineral wool 140 kg/m ³	45 mm thick Mineral wool 200 kg/m ³	-----
13	Door Leaf finish	Baked enamel powder coat	Baked enamel powder coat	-----
14	Threshold	-----	Max. 25mm high, SS 1mm thick plate	-----
15	Description	Thin plate light duty Plate thickness Minimum 0.70mm For bolting into light weight partition normally part of partition supply seals where required.	Stiffened plate Heavy duty Plate thickness Minimum 2mm For bolting or welding into Bulkheads or pre - Fabricated walls, Weather tight Seals Where required.	Stiffened plate Heavy duty Plate thickness Minimum 2mm For bolting or welding into Bulkheads or pre - Fabricated walls, Weather tight Seals Where required.

4.6 Windows

4.6.1 General

Windows shall meet the requirement of Norsok C-002 & as indicated in table -4.5.4.11 of this spec.

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Contractor/ Vendor shall furnish and install windows, window frames, glass, caulking compound etc. as required for a complete leak proof and sealed installation.

Windows shall provide daylight. Window shall be generally located exposed elevation of dining, main recreation room, work places & majority of cabins, and minimum glazed area shall be 0.6m² & sized as shown on the approved drawings.

Windows shall have the same fire rating as the wall in which they are fitted.

Vendor shall furnish necessary fire test certificates for the windows.

Schedule of window shall be as per approved drawings.

4.6.2 **Materials and Workmanship**

All windows shall be fixed, non-opening type, having an external stainless steel frame.

Windows frames shall be set plumb, and in alignments. Full mastic bed shall be provided at all sills, mullions and metal contact surfaces.

Glass shall be tinted, heat reflecting, laminated/tempered fire rated glass inside and pressure glass outside. Glass frame shall be of stainless steel and perimeter insulation provided shall be of mineral wool.

Caulking compound shall be non-staining, elastic, waterproof and non-corrosive.

All windows shall be provided with Venetians blinds. Blinds shall be surface marked, to fit window joints and shall be of a colour matching with the room interior.

4.6.3 **Louvers**

Vendor shall provide Louvers, with automatic shut-off dampers, on walls of the buildings wherever required. Besides ensuring adequate ventilation these shall also prevent the entry of rainwater into the rooms. The material selected shall be resistant to corrosive saliferous environment and be subject to Company approval.

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4.7 Stairways, Platforms and Railing

4.7.1 General

Vendor shall furnish and install stairways, platforms and railing as per approved layout drawings.

4.7.2 Construction

All design, fabrication and construction shall conform to the latest OSHA Regulations and the specification.

Stairway platforms shall be designed and constructed to carry safely a moving concentrated load of 500 kg/m².

Pipe handrails shall be as shown on the drawings and designed to sustain a load of 100 kg/m², applied in any direction and at any point on the top rail.

4.7.3 Finish

Exterior stairway platforms, treads and rails shall be galvanized in accordance with General specification No.2005, "Protective Coating".

4.8 Internal Staircases

4.8.1 General

Contractor shall provide internal staircases as per approved layout drawings.

4.8.2 Construction

All design, fabrication and construction shall conform to the latest OSHA Regulations and this specification.

Interior staircase shall be provided with side balustrades, treads and risers clad with vinyl sheet /tile finish, and walls with matching Vinyl faced steel panels. The boundary walls of interior staircases shall have a fire rating of A60. Side balustrades & handrails and nosing shall be of stainless steel.

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4.9 PAINTING AND COLOUR SCHEME

4.9.1 General

The Contractor shall supply all labour, tools equipment and paint to complete the painting in accordance with these specifications and the painting schedules. Painting shall be in accordance with the attached specification 2005, "Protective Coating".

4.9.2 Colour Scheme

The Contractor will develop a colour scheme for the interior of each room. This will show the colour and shades selected for the walls, flooring, carpets, curtains, furniture, upholstery, blinds, doors, notable equipment etc. The colour scheme shall be submitted to the company for approval.

4.9.3 Extra Items

An extra of five percent requirement of vinyl tiles, ceramic tiles, acoustical ceiling panels/boards, electrical light fittings, wall panel, sanitary/wash basin fittings such as hot cold mixing nozzles etc. shall be shipped loose and with the building module for future maintenance/repair work by the Company.

A procedure shall be submitted for future maintenance & repair along with the supply of material.

5.0. SYSTEMS SPECIFICATIONS

Contractor shall supply and install all equipment and systems specified herein, including all cabling, ducting, tubing, piping controls, etc. in order to make the building fully operational and ready for occupancy as a self-contained operable unit.

5.1 Electrical

The electrical system for the Building Modules shall be designed and fabricated in accordance with design criteria, General Specifications, Equipment Specifications as given in the bid.

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The electrical system of the each of the building module shall be designed and fabricated so as to have minimum offshore hook-up work between the building module and other platform facilities.

5.2 Lighting Intensities

Lighting intensities shall follow electrical design criteria.

5.3 Intercom and Paging System

An integrated intercom and paging address system shall be provided as per specifications and Design Criteria.

5.4 Radio and Telephone System

Radio and Telephone system shall be provided as per relevant Design Criteria.

5.5 Closed Circuit T.V. System

The Contractor shall supply and install a closed circuit T.V. System including cameras to monitor, as per relevant design criteria as described elsewhere in bid package.

5.6 HVAC System

5.6.1 General

The Contractor shall design, furnish and install an air-conditioning, heating, ventilation and pressurization system in accordance with the requirements given in General Specification No.5901F "Heating, Ventilation, Air-conditioning and Pressurization", Design criteria (Mech. Equipment) including relevant Codes and Standards

The ducting including grilles, diffusers, internals, and controls for all the areas shall also be installed by the Vendor.

Toilets shall be ventilated by means of filtration from surrounding area and exhaust equipment to ensure no foul smell is emanated from toilets into other rooms. Extractor/exhaust fan with ducting arrangement shall be provided in wet rooms & common toilets for venting out foul smell from them into the service shaft.

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Penetration for ducting in fire rated walls shall be with fire dampers and sleeves as per SOLAS requirement. Fire dampers will be pneumatically actuated on signals from F&G Panel.

5.7 Sanitary and Plumbing

5.7.1 General

The Contractor shall furnish and install sanitary facilities complete with fixtures, vents, drains, valves etc. as shown on the drawings and in accordance with the requirements of the National Plumbing Code /Norsok M-001:

Services	Material
Potable water supply (hot/cold)	Copper piping and fitting plus insulation on HW piping
Utility(sea) water supply	Cu-Ni piping & fitting
Fire water online for overhead	Cu-Ni piping & fitting
Black water drainage	UPVC piping to ASTM D-1784,Sch.81 to ASTM D-1785,Sch.80
Grey water drainage	UPVC piping to ASTM D-1784,Sch.81 to ASTM D-1785,Sch.80


All sanitary fittings such as wash basins, sinks, water closets, urinal ports, bath, tubs etc. unless otherwise specified shall be of stainless steel SS 316, suitable for marine use. All fixtures and fittings shall be of proven hard duty industrial type fittings. The Contractor shall authenticate use of all such fixtures to the Company's representative. In case of any conflict responding specification for piping material as given here and in FS 2004 the later shall be followed.

5.7.2 Sanitary Facility Requirements

All sanitary fittings shall be suitable for marine use. All fixtures and fittings shall be of proven hard duty industrial type fittings. The contractor shall authenticate the use of all such fixtures to company representatives. Following sanitary facilities shall be provided:

- Sewer lines, vents, traps, etc. of socket- type plastic CPVC pipe. The pipes shall as per ASTM D - 1784 Sch. 81 and fittings shall be to ASTM D -1785 Sch. 80.

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b) Copper and Cupro-Nickel (90-10) for potable water and utility water respectively. For hot water system copper piping shall have insulation as per General Specification No. FS 2006. ~~Toilets and~~ urinals require separate piping system for standby sea water use for flushing, in case of limited pot water supply. However potable water shall be provided for all utilities.

c) Wall mounted Western style water closet and Indian (squat) type water closets & urinals (wall hung type) for marine service with complete fitting and fixtures as shown on the drawing. All water closet compartments shall be provided with a hygiene hose with potable water connection and adequate floor drains with traps. Wall hung Stainless Steel (SS 316) double roll tissue holder and coat hook in each toilet compartment shall be provided.

d) Granite (approved shade) counter top type wash basins with faucets shall have single hot/cold mixing nozzle, spring loaded with continuous counter type arrangement, with 300 mm vertical drop in front. Continuous unbreakable type mirror with Stainless Steel SS 316 frame above each wash basin along with spot lighting arrangement shall be provided.

e) One 400 mm x 500 mm mirror with Stainless Steel SS 316 frame above each wash basin.

f) Shower compartment shall be provided with hand held type shower spouts with hot/cold water mixer and adjustment knob, wall mounted coat hanger (two nos.) ,soap dish, towel rail (all accessories of Stainless Steel SS 316). Each shower compartment shall have minimum slope of 1:80 with floor drains with traps. A threshold shall be provided at the door to prevent any flow of water out.

g) One wall-hung Stainless Steel SS 316 paper towel dispenser and waste receptacle near each wash basin.

h) A grease trap sized to handle the galley waste. Location of this trap shall be accessible for periodic cleaning.

i) Service sinks with single hot and cold mixing nozzle in each janitor closet with spring loaded traps.

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- j) Shower drains, wash basin drains, and laundry drains shall discharge overboard. Vendor shall install a concealed downspout for all floor drains and terminate at skid level. ~~This shall be accessible for piping on the lower deck.~~
- k) Fire insulation shall be provided for 1m distance of pipes crossing from one floor to another floor.
- l) Service shaft shall be provided for serviceability & maintenance of plumbing & HVAC system.

5.7.3 Service supplied

Potable water, seawater and sewer lines within the building module shall be supplied by Vendor. Seawater shall be used for flushing whenever potable water supply is limited.

6.0. SAFETY EQUIPMENT


6.1 Hazardous Gas Detection

- 6.1.1 The contractor shall supply and install a Gas Detection and Alarm System within the building according to guidelines given in Specification No.3500, Fire & Gas Detection System and design criteria for fire & gas system.
- 6.1.2 The number and location of Gas Sensors, to be installed in the various activity areas of the PGC & Building module, shall be as per the guidelines given in specification No.3500, Fire & Gas system and design criteria for fire & gas system.
- 6.1.3 Vendor shall install the smoke, Gas Sensors and gas detection panel and shall provide all wiring conduits, fittings and labour necessary to install the gas detection system inside the building as indicated in section of Design criteria.

6.2 Fire Detection and Suppression

- 6.2.1 For Fire Detection and Suppression, Contractor shall design and supply a suitable system as per guidelines given in the Spec. No.3500, Fire & Gas Detection System and design criteria for fire & gas system.

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6.2.2 The number capacity, type and location of the portable fire extinguishers to be furnished and installed in the various activity areas of PGC & building module, shall be as given in Architectural Design Criteria.

6.2.3 The number and location of Fire Hose Reels to be furnished and installed in the various activity areas of the living quarter module are provided in of Architectural Design Criteria.

7.0. OUTFITTING AND FURNISHING

7.1 General

The Contractor shall furnish and install all electrical appliances fixtures and furniture etc. necessary to have the building ready for occupancy.

7.1.1 The Contractor shall provide complete list, specs, numbers etc. of all these items viz. furniture items, etc.

7.1.2 Furnish and install wall mounted digital clocks with Date & time display as specified in Architectural Design Criteria.

7.1.3 All mirrors provided in the building shall be unbreakable type.

7.1.4 On the wall inside and also on other conspicuous places, boards indicating the survival craft numbers and escape routes leading to the survival craft should be affixed. The board shall be of minimum size 300 mm x 450 mm.


Self-luminous, "EXIT" signs shall be placed over all external doors. The escape route to the external deck shall be marked in self luminous paint on the walls in the corridor.

7.1.5 750 mm x 450 mm wall mounting framed paintings (or like) should be provided in all office rooms and living room and recreation room.

7.1.6 Shoe racks should be provided outside the Conference Room, Control Room, and Office Room and in all air-locks in a recess in the wall.

7.1.7 Stainless steel waste baskets are to be provided in all Conference and office rooms.

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7.1.8 The use of timber/wood substitute shall be kept at a minimum for Building Module furniture. However, where unavoidable, the same shall be impregnated with poly-urethane foam or shall be coated with other fire-insulation coating.

7.1.9 Leave lockers shall be provided for each bed on the installation. The Width shall be minimum 300 mm and the volume shall be approximately 0.1m³.

7.1.9.1 Room-wise furniture requirement:

Room-wise furniture requirement of the various utilities/accessories that are indicated in Architectural Design Criteria Sec. 3.10:

8.0. PREPARATION FOR SHIPMENT

8.1 General

Where applicable, preparation for shipment shall be performed in accordance with General Specification for “Skid Mounted Assemblies”.

9.0. Testing

9.1 In addition to Testing requirements according to General Specification, testing of the electrical, piping, sewer systems, all equipment and all other components (windows, doors, switches, etc.) shall be carried after fabrication onshore and prior to acceptance. Onshore testing does not absolve the Vendor/Contractor of their responsibility to meet the specified requirement of offshore.

9.2 Temporary Bracing

Vendor shall provide temporary bracing for all equipment and furnishings to ensure its stability during transportation, shipping and handling of the billing. While bracing must be strong enough for its purpose, it should be designed for easy removal with no damage to any portion of the billing once it is securely set in its final location.

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10.0. WARRANTY

Vendor shall have final and total responsibility for the design and mechanical performance of all equipment supplied under this specification. Contractor shall warrant the equipment furnished by him and the performance of the said equipment in accordance with this specification and General Specification No. 1050, "General Specification Definition".

11.0. Vendor Data

Vendor shall furnish information and data for proposal, approval and dossier in accordance with General Specification No.1060, "Vendor Data Requirements". Vendor data for HVAC system and all other equipment and systems, shall be furnished as per Vendor Data Requirement sheet. In addition, Vendor shall submit documents and drawings for review and approval by Company as listed in the following paragraphs.

11.1 Design Calculations:

- a) Complete design calculations for the building structures, building framing, roof and floor beams and plating, wall framing and cladding, skid framing, lifting pad eyes, stairs and landings, for in place, seismic/wind, transportation, lifting and installation conditions, etc.
- b) Illumination level calculations, load calculations, voltage drop calculations etc.
- c) Heating, air-conditioning and ventilation system design calculations, and data as required in HVAC specification.
- d) Supporting calculations for:
 - i) Selection of thermal insulation.
 - ii) Vibration and vibration isolation.
 - iii) Selection of acoustic panels and acoustic insulation.
- e) Any other calculations as specified elsewhere in this bid package.

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11.2 Drawings

Following drawings shall be submitted:

- Architectural drawings.
- Structural framing and fabrication drawings.
- Sanitary and plumbing layout and details.
- Heating, ventilation and air-conditioning system layout and details.
- Electrical system layout and details (cable, lighting, Earthling, communication and equipment (layouts).
- Gas and fire detection/suppression devices layout and detail construction drawings
- Any other drawings as specified elsewhere in this bid package.

11.3 Specifications:

- Type and details of materials proposed for construction with informative broad specifications along with track records, separately listing structural, architectural, piping sanitary, electrical instrumentation, F & G system and other materials.
- Specifications, catalogues/brochures and drawings of all furniture, fittings and fixtures submitting at least three alternatives for each item for selection.
- Specification, catalogues/brochures with sketch/drawings /picture of all electrical appliances submitting at least two alternatives for selection.
- Complete description with specifications of Heating, Air Conditioning and Ventilation/Pressurization units with catalogues.

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