

NEONATAL MODULAR STRUCTURE AT TSHILIDZINI HOSPITAL MANDATORY REQUIREMENTS FOR TURN-KEY SOLUTION

Mandatory Requirements:

“Proposal to be titled “Fixed and Firm Offer for the Turn-Key Design and Construction”

- Construction duration to be offered and stated in proposal. The duration cannot exceed 16 weeks and it should be noted that the Client prefers occupying the facility by 15 March 2023
- Contractors are to ensure that the attached design details and design requirements are fully priced for in their proposals. It is the contractors responsibility to ensure all local authority and statutory requirements are allowed for. The contractor shall be fully responsible for the management of risk during the project.
- The facilities shall be Agrément Certified which makes use of the Performance Certificate as per the SANS 10400-K and IUSS for Building Clinic Facilities with Innovative Building Technologies latest revisions.
- **Floors:** Vinyl to all floors
- **Wall:** Structural Strength and Stability: Any wall shall be designed and constructed to safely sustain any actions which can reasonably be expected to occur and in such a manner that any local damage (including cracking) or deformation do not compromise the opening and closing of doors and windows or the weather tightness of the wall and in the case of any structural wall, be capable of safely transferring such actions to the foundations supporting such wall. Installation of equipment needs to be considered – wall must be able to cater for mounting solutions. Depending on the type of bed head services to be provided – whether wall mounted, or ceiling or floor mounted.
- For the ICU and high care areas – weight of equipment to be mounted needs to be considered. An average infusion device is estimated at 2kg. one patient on average in the ICU can have between 4 – 6 pumps

- **Wall:** Sound/ Noise Acoustic insulation: A minimum of 40 dB shall be provided in facilities.

Civil/Structural Requirements:

- Geotechnical investigation and report to be allowed for in quotation if required by the contractor's engineer. However, there is an attached geotechnical investigation report that was completed within the facility. Contractor to accept full risk on geotechnical and ground conditions.

Engineered fill:

- Excavate insitu material to a depth of 1500mm minimum (Depth to be confirmed by geotechnical engineer), backfill with G5 gravel material and compact to 98% MODAASHTO in layers not exceeding 200mm up to the required finished level.

Bulk Earthworks:

- Clear and grub site
- Remove trees
- If the in-situ material is not acceptable for a balanced cut/fill (to be confirmed with the geotechnical findings), then we will be required to import material for the bulk earthworks only.
- Allow for trench excavations complete in terms of SABS 1200DB for sewer and Stormwater.
- 1500mm 20Mpa Concrete Apron with Ref193 mesh centrally placed cast around the around the Modular structure.

Architectural Requirements:

- Final floor structure to be designed by Prefab Contractor / Structural Engineer.
- Natural light (window specification and placement) / ventilation / mechanical extraction to be designed and certified, all-in accordance with SANS 10400, 204, XA.
- The contractor's Fire Engineer to assess design and advise accordingly to include fire signage.
- General building signage to be included in pricing (R30 000.00 as a provisional sum.)
- All bulk services and failsafe services to be advised by the Contractor's Engineers.
- Central void area to be advised by Pre-Fab manufacturer, and detailed accordingly, including stormwater drainage, ventilation, etc.
- Main access points to allow for space to maneuver a bed in/ out of the Modular structure.
- Equipment (e.g. trolleys and beds) to move between hospital and temporary structure without difficulty.

Mechanical Engineering Requirements:

- Oxygen points at each bed according to IUSS (1 per 2beds) Connect to site VIE tank with backup dual manifold.
- Medical air and vacuum (suction points) as per below on bedhead unit comment.
- Negative pressure ventilation system.
- Full Fresh Air Supply air
- Toilet Extraction System
- Tertiary filters on the extract system with suitably sized extraction fan.

- COC for all systems

Electrical & Electronics Requirements: - COC For All Systems

- Lighting achieving Lux Levels as per SANS 10400. (Refer to IUSS Engineering guidelines for lux levels tables) – Use LED fittings or T5 Fluorescent (Incandescent, MV, HPS or Halogen fittings will not be accepted).
- Emergency Escape Lights.
- Battery Backed Up Lighting in Fire Escape passages (30%)
- Back-up power (contractor's engineer Specification) to existing or new
- Distribution Board with three sections (Normal, Essential (Generator) and UPS.
- Nurse Call point per bed, push to call push to Cancel.
- Nurse station PC Unit (for Nurse Call)
- CCTV to monitor
- Data Cabling to be CAT6A UTP.
- Access Control.
- Connect with PACs system
- Smoke detection in every room.
- Break-glass Units in Escape Passages.
- UPS for data, Nurse Call and Fire safety systems.
- All Systems to be in appropriate containment (wire ways, P9000, Mesh and/or conduits)
- Power points x 3 connected to the emergency power : For emergency trolleys – one at the nurse's station facing the high care, one inside the ICU and maybe another one facing standard care unit.

General Specifications

- A central nurses station, ensure there is sufficient plug points. A minimum of 3 plug outlets – just for the central station monitoring alone – besides computers for the staff etc.
- A dual corridor is preferable to a single corridor if possible
- Glass partitioning between the units to allow visual access to all areas from the corridor and nurses station
- Access control and one main entrance, and restriction of traffic through the neonatal unit – no traffic allowed through neonatal and high care areas.

Temperature control

- The air temperature should be able to be regulated between 22–26 °C using an HVAC system in the high care, intermediate care and in standard care.
- Relative humidity of 30%–60%
- A minimum of six air-changes per hour
- Filtration of ventilated air should be at least 90% efficient
- Minimisation of draughts on or near infant beds
- The incubators should be placed 50cm away from the wall to limit radiation
- All external windows should have shades or blinds to prevent radiant heat loss.

Infection control

- Large scrub basin at the entrance with taps with elbow or foot control
- Basins in every cubicle – with a minimum of 1 per 6 beds
- Taps must be hands free
- 2 single cubicle in High care and 2 in Intermediate care – they do not require to have full isolation anterooms and sluice rooms.

Lighting

- Natural Lighting., with no direct sunlight.
- General room ambient lighting – controlled by a dimmer and not directly overhead
- Individual workspace lighting – not directly over an infant, with controls to allow for the immediate darkening of any cot position to permit transillumination (the passing of a light through the walls of a body part or organ to facilitate medical inspection).
- The ability to provide darkness is important for certain procedures and to allow babies to sleep.
- The colour of the walls should ensure that clinicians can properly determine the condition of the baby and the paint should be non-reflective.

Noise levels

- Sound in the neonatal unit should be controlled below 40 DB. To achieve this attention should be given to the following.
- Provide Sensors to monitor the noise in the neonatal unit.
- Acoustic ceiling tiles with a noise reduction coefficient of at least 0.9.
- Flooring with sound-absorbing qualities.
- Duct baffles.
- Walls made from sound-absorbing materials.

Security/ safety

- Single access control entry
- Closed circuit TV

- Doors should allow wheelchair and incubator access, and Xray and ultrasound unit
- Exits for the public, staff, goods and waste removal should be minimised.

Bed Head units must contain the following

Per bed	ICU and High Care	Intermediate Care
Plugs-emergency red plugs	12	6
Oxygen Points	2	1
Medical Air Points	2	1
Suction Points	2	1
Dimmer workspace lighting	1	1
Equipment rail and drip rails from the ceiling	Yes	Yes