



Technical Specifications – Concrete & Chassis Built Units – Rev 1 2023

- Chassis Built Units (Built on a galvanized steel chassis)
 - Ground must be cleared of trees, grass, roots & shrubs.
 - Topsoil must be removed.
 - Surface bed must be levelled off.
 - Maximum elevation difference on length – 200mm.
 - Maximum elevation difference on width – 100mm.
 - Surface bed must be compacted and allow for sufficient water runoff.
 - Concrete Plinths must be installed at specific centres to support steel chassis.
 - Typical plinth size is 400mm x 400mm x 400mm but can vary due to size of unit.
 - Typical plinth spacing is dependent on the size of unit.
- Concrete Built Unit (Built on Concrete Slab)
 - Surface bed must be levelled off.
 - Minimum slab thickness is 125mm with up to 200mm on outer edge.
 - Minimum Slab strength is 20MPA.
 - Slab must be reinforced with 193 mesh or fibre.
 - Slab must be raised above ground level to insure water runoff.
 - Service conduits must be installed prior to pouring concrete.
 - Sewer piping must be installed prior to pouring concrete.
 - Concrete Slab must be mechanically floated to allow for smooth surface.
- Steel Chassis – If Applicable
 - Chassis Members are made from SABS 1431 Cold Form Steel.
 - Main Member are typically 2.5mm to 3mm thick but can vary depending on the size of the unit.
 - Secondary members are typically 2mm to 2.5mm thick but can vary depending on the size of the unit.
 - All members are supplied pre galvanized.
 - Lifting pockets and cut into the main members.
 - All mobile units are supplied with storm chain tie downs.
 - Lifting lugs can also be provided upon request.
- Floor Covering
 - For concrete builds, the vinyl is fitted directly onto the concrete.
 - For chassis builds, the vinyl is fitted onto 18mm industrial ply board.
 - The ply is security fitted onto the steel chassis via tek screw.
 - 2mm Superflex® Vinyl Sheeting can be used as a floor covering.

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- Pekay D90 Supergrip Multi-Purpose is used to still the vinyl down.
- Just prior to handover, the vinyl is polished.
- For concrete builds we can also opt to use ceramic tiles with a variety of colours and sizes
- For chassis builds we can opt to use wood laminate flooring, however this can only be used in general areas, we will still use the vinyl roll out for wet areas.

- Panel Rails
 - Base Rails are made from 2mm Aluminium which is especially extruded for our application.
 - They are designed to be extremely strong and designed that it does not allow for water ingress.
 - Panel rails are fixed to the base with 2 options, with self-tapping steel screws for the steel chassis option and M8 x 70 Nail in Anchors for the Concrete option.
 - Prior to the installation of the panels, the panel rail is filled with a non-hardening butyl sealer to prevent water ingress.
 - We use the same type or rails for the internal partitions, they are just a different shape.

- Insulated Wall & Partition Panels
 - Depending on the size of the buildings, we use insulated panels from 40mm (Standard) thick all the way to 150mm thick (Wider Builds)
 - Panels can be supplied in different finishes and colours but typically, they are supplied as a smooth white finish.
 - They are fixed to the panel rails using aluminium blind rivets.
 - They fit into each other using a tongue and groove joint which securely locks them in place.
 - Panels are fixed on the top using an aluminium top rail which completes the fixing process as they are now securely fixed on four sides.
 - The panels are finished off with a white silicone waterproof sealer.
 - General details of the panels are below.
 - Skins
 - Base – ASTM A792M
 - Coating – ASTM A755M – AZ100
 - Coatings Top Side – 5 Microns Primer + 20 Microns Paint
 - Coatings Underside – 5-7 Epoxy
 - Colour – Frost White
 - Core
 - Flame Retardant Polystyrene
 - Density – 15 kg/m³
 - Thermal Conductivity – 0.038 W/mK

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- Adhesive
 - Sikaforce 7110 L55
- For full details of the insulated panel can be found in the attached brochure from our panel supplier and on their website as per below.
 - <https://www.rudnev.co.za/>
 - https://www.rudnev.co.za/images/downloads/Rudnev_Brochure_2020.pdf
- Ceiling/Roof
 - Depending on the size and design of the buildings, we typically use the same type of insulated panel for the ceiling panels, this also becomes the roof.
 - For this type of installation, we install a non-hardening butyl sealer in-between the tongue and groove joints.
 - For open plans buildings where the insulated panels cannot span the width of the building, we install a galvanised beam to support the ceiling panels, however this is limited to a building width of 6m.
 - For larger buildings we use an LSF(Light Steel Frame) truss system that is supported by the wall & partition panels.
 - Details for the LSF trusses can be found in the attached compressed folder – Sample LSF Roof Trusses.
 - For roof coverings we use IBR roof sheets that are fixed to the roof trusses, these are available in various colours, but we typically use white.
 - For the ceiling, we can use the same insulated panels that are fixed directly into the underside of the galvanized trusses.
 - Or we can use a suspended drop in ceilings which is available in 1200mm x 600mm or 600mm x 600mm. they are available in various finishes and colours. Details can be found on the website of the suppliers.
 - <https://www.pelican.co.za/product-category/ceilings/suspended-ceilings/>
 - <https://capco.co.za/product/ckm-exposed-tee-system/>
- Doors
 - Standard doors are made of an aluminium framed insulated panel.
 - The panel is generally the cutout from the doorway, but if the cutout falls over a joint, we will use a full panel.
 - Door are generally 40mm thick.
 - Standard door sizes are.
 - Single – 830mm Wide x 2030mm High
 - Double – 1600mm Wide x 2030mm High
 - We can manufacture doors any measurements to suite various needs including,
 - Sliding Doors
 - Cold Room Doors

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- Freezer Room Doors
- Roll Up Shutter Doors
- Hatch or Service Doors
- Lab doors
- Each external door is fitted with the below,
 - 3 Aluminium Sinkless Hinges – 2 on the top and 1 on the bottom
 - Aluminium Handle with turn back to mitigate getting caught on clothes.
 - Cylinder Lock Mechanism.
 - Three Keys
- The only different on and internal doors is that they are fitted with 2 hingers instead of 3.
- Each double door is fitted with.
 - 3 Aluminium Sinkless Hinges per leaf – 2 on the top and 1 on the bottom
 - Aluminium Handle with turn back to mitigate getting caught on clothes.
 - Cylinder Lock Mechanism.
 - Spring Loaded Barrel bolt fitted on non-opening leaf to fix into base, this is done to prevent unwanted opening.
 - Three Keys
- All doors can also be fitted with,
 - Emergency push bars
 - Automatic Door Closures
 - Push Plates
 - Viewing Windows
 - Security Gates
 - Flyscreens
- **Windows**
 - All windows are made using an aluminium frame designed to fit into the panel cutout.
 - Standard window sizes & specs are.
 - 900mm x 900mm Top Hung – 50% Sealed/50% Opening
 - 500mm x 600mm Top Hung – Obscure Glass – Ablutions & Toilets – 100% Opening
 - We can however manufacture windows to all general sizes and specifications including.
 - Sliding windows
 - Viewing windows
 - Bay windows
 - Large architectural windows – For this option we would prefer smaller framed sections to make up a large window. This is due to breakage of the glass over long distances.

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- All windows come with standard 4mm float glass unless they are over 1m².
 - If over 1m² we use 6mm safety glass.
 - All windows can also be fitted with flyscreens.
 - All windows are also fitted with burglar bars as standard but can be removed on request.
 - All clear glass windows are fitted with aluminium venetian blinds
- **Surrounds & Flashing**
 - All boundaries are closed off using aluminium extrusions that act like a structural skeleton of the unit.
 - Aluminium extrusions provide an aesthetically pleasing finish and ensure that the unit are robust and long lasting.
 - We also offer CDK flashing in various colours which can be used to finish of buildings.
 - For larger buildings we use CDK trims to close of the eaves and gables.
 - All extrusions and trims are fixed using aluminium rivets and finished off with a white silicone sealer.
- **Electrics**
 - Units are wired and connected to either a 220v or 380v main supply.
 - Voltage is dependent on the usage/size of the unit.
 - 380v Equipment is wired using 4mm 4 Core Cable trunked into white pvc trunking cableways.
 - 220v Equipment is wired using 2.5mm twin and earth cable trunked into white pvc trunking cableways.
 - All lighting is wired using 1.5mm 5mm twin and earth cable trunked into white pvc trunking cableways.
 - Specialized equipment is wired using the manufacturer's specification of cable and connections.
 - Light fittings supplied as per client specifications but generally are.
 - Double 4ft LED Fittings for open areas
 - Glass Bowl Lights for Toilet Stalls
 - Wall mounted LED with Day/Night switch for external light
 - All globes supplied are LED.
 - Plugs points supplied are supplied as per clients requirements but usually include.
 - 2 x 220v 16A Plug Sockets – Shuko or International.
 - 1 x 2a USB Connection Port.
 - 1 x Plug Socket Switch.
 - All light switched are standard single or double switches, unless the design calls for another type.

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- Plug & Switch brands are but not limited to.
 - CBi Electric
 - Crabtree
 - VETi
- Waterproof DB Cases are supplied for all our building. They are fitted as standard with all internal wiring
 - 220v or 380v Main Switch – Amperage will be dependent on unit requirements.
 - Earth leakage/s
 - 25a Breakers for AC units
 - 20a Breakers for Plug Points
 - 10a Breakers for lights
 - Special breakers are installed for specialized equipment.
 - All internal DB wiring is as per
- Beaker brands are.
 - Onesto
 - Schneider Electric
 - CBi Electric
 - Hager
- All electrical installations are installed as per SABS 10142
- Plumbing
 - Main Feed Into the units – 22mm
 - Main pipes are 22mm and 15mm to each plumbing point.
 - All water piping is Speedfit.
 - All connections are Speedfit.
 - Each point is fitted with a 15mm stop tap.
 - All internal & external piping is fixed to the wall with holderbats.
 - All geyser piping & fixings are copper
 - All geysers are fitted with vacuum breakers and controls valves.
 - Wastewater and sewerage pipes are PVC
 - All ceramic fixtures are either.
 - Plumblin
 - Lecico
 - Betta
 - All Taps are either
 - Plumblin
 - Cobra
 - Franke
 - All stainless-steel sinks are supplied by Franke
 - All geysers are Kwikhot.

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- We can also supply solar geysers as well as industrial hot water boilers.
- Air Conditioners
 - All Air conditioners are Neocool Alliance Split Units for general areas.
 - For larger areas we use ceiling mounted units or under ceiling units.
 - BTU are calculated by volume per room.
 - We also allow for redundancy for certain areas such as server rooms.
 - Rated temperatures are 17°C to 30°C
 - All Piping and cabling will be fitted into 100 x 40 PVC trunking surface mounted to walls
 - 32Amp Waterproof AC Isolator Fitted externally to every AC unit
 - All models are R410 Non Inverter Models