

TGOOD

TGOOD Australia Pty Ltd
Unit 1 /4 Henry Street
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Document Number: TGG 004/2016

TGOOD E-HOUSE SALES TECHNICAL SHEET

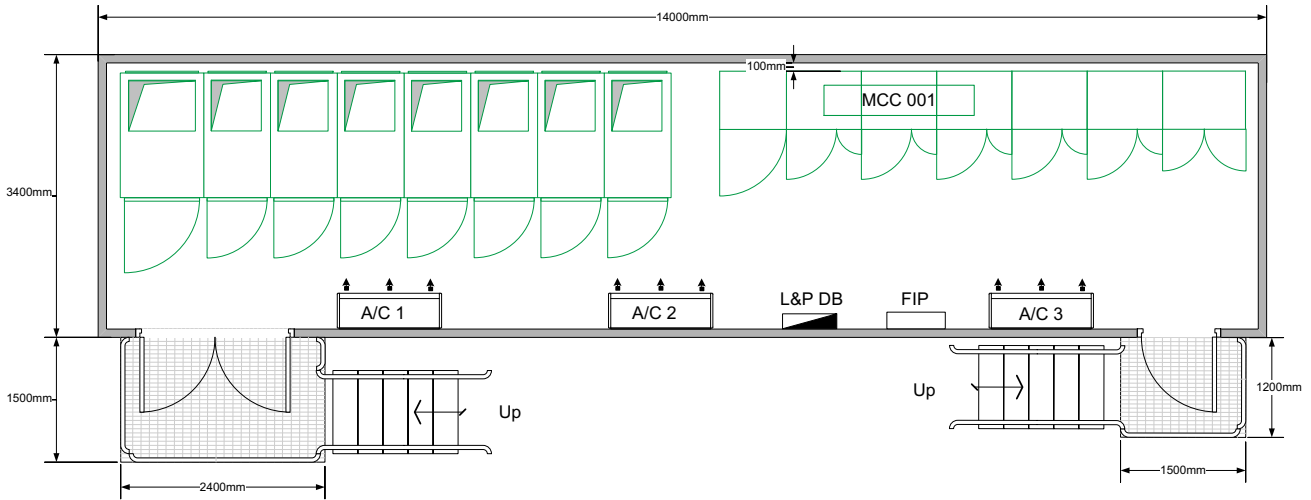


Table of Contents

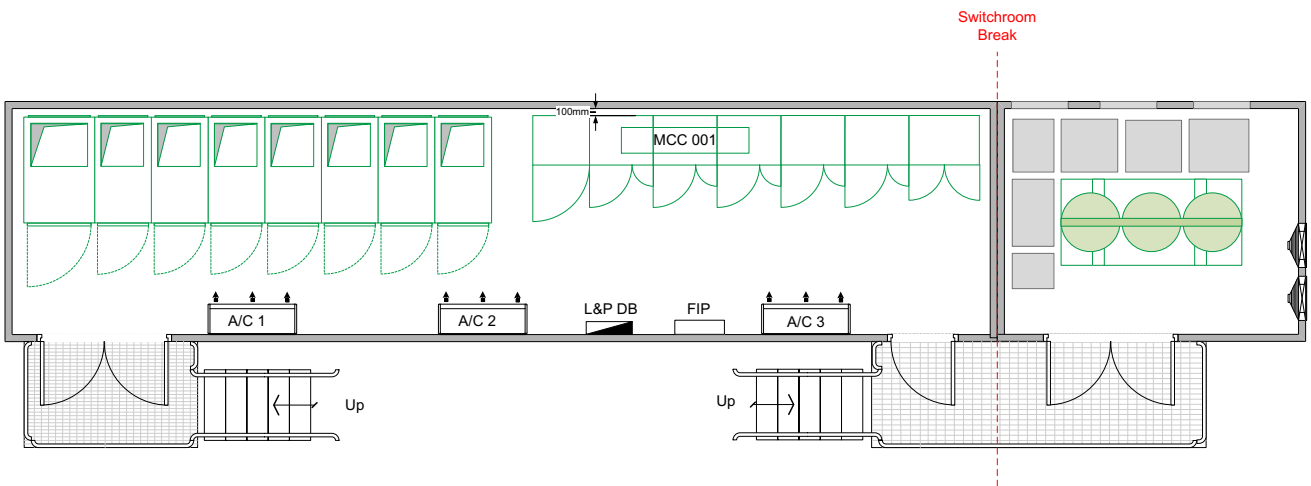
| | | |
|----------|--|-----------|
| 1 | Building Configurations | 3 |
| 2 | Building Data Sheet | 6 |
| 3 | HVAC System | 9 |
| 4 | Fire System | 10 |
| 5 | Packing, Shipping and Installation..... | 11 |
| 6 | Typical Drawings | 12 |

1 Building Configurations

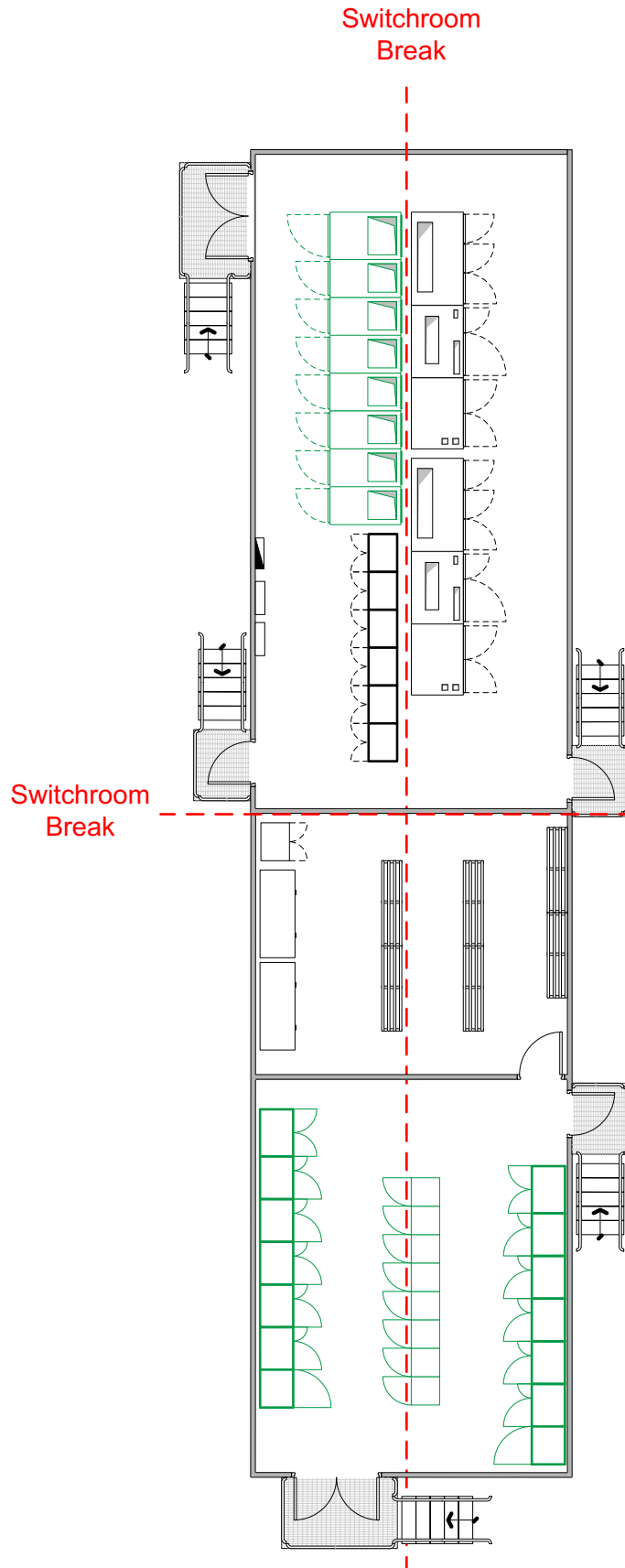
Single Rooms up to 14.0mL x 3.4mW



Multiple rooms assembled on site. Flexibility in design using the modular approach and complete optimisation of building layout.

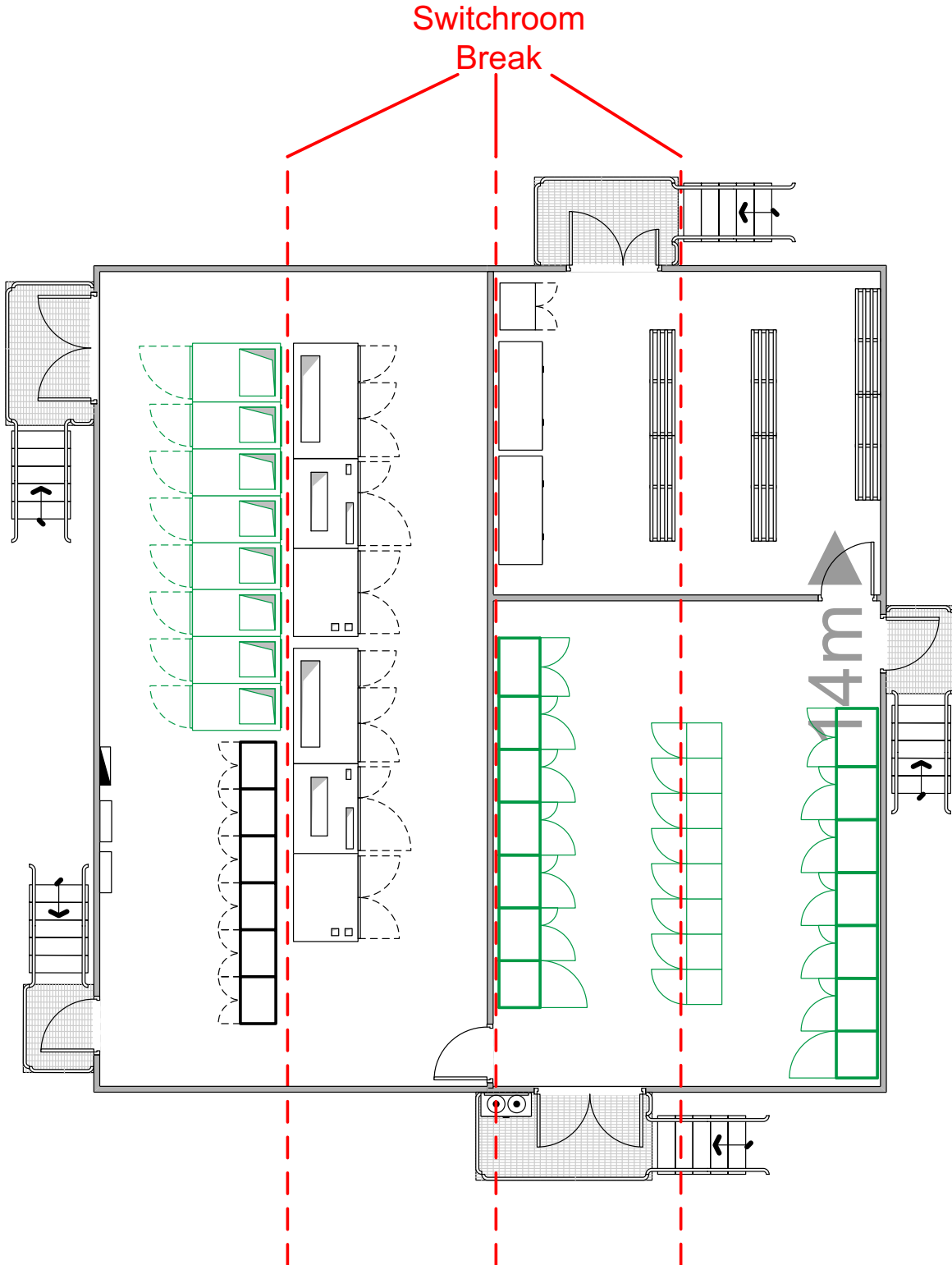


Building can be designed to suit any site layout and equipment configuration. All layouts and configurations complying with Australian Standards for equipment clearances as per AS3000 and AS2067



Multi Module e-Houses housing all types of equipment:

MV Switchboards, HV VSD's, LV Switchboards, LV VSD's Battery Banks and UPS systems, Network and Communications.



2 Building Data Sheet

| Building Identification | Typical for all Switchboards | Yes / No | Comments |
|-------------------------|------------------------------|----------|----------|
| Design Life (years) | 25 | Y | |
| Wind Region | A (160km/Hr) | Y | |
| Building Class | 10a | Y | |

| Design | Yes / No | Comments |
|--|----------|----------|
| Structural Engineering Calculations | Y | |
| Fire Detection – Smoke & heat detection, VESDA | Y | |
| HVAC System | Y | |

| Switchroom Construction General | Yes / No | Comments |
|---|----------|----------|
| Modular Design | Y | |
| Thermally Insulated Wall Panels (R2) | Y | |
| Thermally Insulated Ceiling / Roof (R2.5) | Y | |
| Acoustically Lined (Optional) | N | |
| Gland Plates Supplied and Fitted to the Building (Optional) | N | |
| Drop Boxes as Required (Optional) | N | |
| Air Locks as Required (Optional) | N | |
| Internal Cable Ladders Above Equipment (Optional) | N | |

| Building Fire Rating Requirements (if applicable) (2Hours) | Yes / No | Comments |
|---|----------|----------|
| Fire Rated Walls (Optional) | N | |
| Fire Rated Floor (Not Available) | N | |
| Fire Rated Roof (Optional) | N | |

| Base Frame Structure (structural base frame for Switchroom) | Yes / No | Comments |
|---|----------|-------------------------------------|
| Structural Steel Q345B (Equivalent to G350) | Y | |
| Penetrations within Cross Beams for Cable Ladder (Optional) | N | Subject to Engineering Calculations |
| Baseframe Deflection of 1mm/1000m | Y | |
| Sub Structure (building columns) | Y | |
| Steel Support Columns Height: 1800mm | Yes / No | Comments |
| Stairs | Y | |
| Equipment Platforms | Y | |
| Personal Access Landings | Y | |

| Floor | | Yes / No | Comments |
|------------------------|----------------------------|----------|-------------------------------------|
| Walkway Floor Design | | | |
| Equipment Floor Design | Designed for 5 KPA | Y | Subject to Engineering Calculations |
| Equipment Hold Down | Designed for 10 KPA | Y | Subject to Engineering Calculations |
| Floor Sheeting | 5mm Welded Steel Sheeting | Y | Subject to Engineering Calculations |
| Colour Covering | Painted – Non slip Acrylic | Y | |
| | | | |

Structural Welding Fabrication

All fabrication and welding is carried out using certified Boilermaker Welders. All welding is compliant with AS1554.1SP. Full weld procedure register and welder qualifications register will be issued along with ITP's at the start of project.

| Surface Treatment | | Yes / No | Comments |
|--------------------------|-------------------------|----------|----------|
| Abrasive Blast Clean | Class 2 1/2 / SSPC-SP10 | Y | |
| Painted | 120µm High Build Epoxy | Y | |

| External Cladding | | Yes / No | Comments |
|--|--------|----------|----------|
| External Wall Cladding | | | |
| Wall Panels able to withstand up to 160km/hr | | Y | |
| Standard Colourbond Flat Sheet insulated wall panels | | Y | |
| Roof Cladding | | | |
| Fully Welded Roof structure | | Y | |
| Rockwool Ceiling panels to underside | | Y | |
| Gutters and Downpipes | | Y | |
| Roof Pitch | | | |
| Double Pitch roof structure | | Y | |
| Ceiling Height | 3000mm | Y | |

| Internal Cladding | | Yes / No | Comments |
|------------------------------------|-------|----------|----------|
| Internal Wall Lining | | | |
| Painted Flat Sheet Rockwool Panel. | White | Y | |
| Internal Ceiling Lining | | | |
| Painted Rockwool panel Flat Sheet. | White | Y | |
| | | | |

| Doors (All doors are metal clad fitted with quality panic bars, closers, handles and locks) | Fire Rated? | Yes / No | Comments |
|--|-------------|----------|-----------------------|
| External Single Doors (Personal Access Doors) | N | Y | Fire Rating As Option |
| External Double Doors | N | Y | Fire Rating As Option |
| Internal Single Doors and Air Lock Doors | N | Y | Fire Rating As Option |

| Electrical (small power and lighting) | Yes / No | Comments |
|---|----------|----------------------|
| Standard Distribution Board | Y | 24pole |
| 2 Gang General Purpose Outlets (GPO,s) | Y | |
| Internal Lighting 2 x 36w Fluorescent Batten Lighting | Y | |
| Emergency Lighting 2hr Battery Backed | Y | |
| Exit Lighting | Y | |
| External Lighting 1 x 18w Fluorescent Batten Lighting | Y | Only over exit doors |
| Photo Electric external light switching | Y | |

| AS 1670 Fire System | Yes / No | Comments |
|------------------------------------|----------|-----------------------|
| Conventional Fire Indicator Panel | Y | |
| Smoke Detectors at ceiling level | Y | |
| Thermal Detectors at ceiling level | Y | |
| Manual call points. | Y | Located at each entry |
| Strobe Sounders | Y | |
| Air conditioning shutdown cabling | Y | |
| Signage | Y | |

| Furniture and Miscellaneous | Yes / No | Comments |
|------------------------------------|----------|-----------------------|
| 5kG Co2 Fire Extinguishers | Y | Located at each entry |
| Desk and Padded Chair (Optional) | N | |
| Low Voltage Rescue Kit (Optional) | N | |
| High Voltage Rescue Kit (Optional) | N | |
| Pressure Fans (Optional) | N | |
| Signage | Y | |
| | | |

3 HVAC System

Basis for selection is as follows:

Location – TBA_____

| HVAC Selection | | | | | | |
|----------------|---------------|---------|-----|------------|--------------|---------------------|
| Item | Description | Room m2 | Qty | Ambient kW | Equipment kW | Total Serviced Load |
| 1. | MV Switchroom | 47.6 | 3 | 4.5 | 7 | 11.5 |
| 2. | | | | | | |
| 3. | | | | | | |
| 4. | | | | | | |
| 5. | | | | | | |

Air Conditioning Equipment required based on N+1 Redundancy to be serviced by Multiple Split system type Air conditioning units.

The air conditioning system shall be designed for, and maintain an internal temperature of 22°C assuming an ambient of 40°C dry bulb in summer.

+ 1.5°C dry bulb, assuming an ambient of -5°C in the winter based on the following design assumptions:

- Occupancy of 1 person/10m².
- Ventilation rate of 10 litres/second/person.
- Internal lighting load of 11 watts/m²
- Total Serviced Load as calculated

Installation cost is based on the indoor unit, control wiring, refrigeration pipework and condensate drain installed with the pipework terminating approx. 50mm above the base frame and the control wiring coiled under the building with 4metres of cable for each system.

Refrigeration pipes shall be pressure tested and filled with a holding charge of dry nitrogen. Outdoor units shall be supplied only for connection on site by others.

Fire shutdown wiring for each air conditioning system shall be installed to the FIP for connection to the fire shutdown relay by others.

4 Fire System

VESDA Fire Detection System (Optional)

- Additional to AS1670 Detection
- VESDA unit.
- Conventional Fire Indicator Panel
- The required VESDA pipe work (Room sampling only).
- In-cabinet Sampling Points (Optional)
- Engineering and design.
- Tactical Fire Plan.
- Testing and commissioning.
- The mandatory manuals.
- 12 months warranty (on equipment only)

Fire Suppression System (Optional))

- Additional to AS1670 and VESDA detection
- Detects a fire, creates an alarm via FIP and if fire continues to evolve, saturate the room with suppression agent to extinguish the fire
- Cylinders with the required gas for risk; internal or external (with enclosures) to the room ((FM200, NOVEC1230, Argonite)
- Pressure switches for connection for the risk
- Pressure switches for connection to FIP
- Local control stations
- Do Not Enter signs
- Evacuate Area Signs
- System Inoperative Signs
- Fan Pressurisation test to ensure room integrity
- Engineering and design
- Testing and commissioning of the systems
- Mandatory manuals
- 12 months warranty (on equipment only)

Fire Indicator Panels (FIP) shall be constructed to meet the relevant in country codes and standards. They shall be capable of a minimum of 8 inputs, 8 outputs, a redundant path network module suitable for fibre optic and incorporate Emergency Warning facilities.

The Fire Indicator Panel shall monitor and control:

- Manual call points
- Smoke detection
- Heat detection
- Other input devices such as VESDA
- Gas Suppression

The system shall consist of a highly sensitive VESDA, laser based smoke detector complete with an aspirating fan and filter connected to a network of pipe and sampling points and detector displays.

5 Packing, Shipping and Installation

Packing and Bracing

- Any equipment within the switchroom that may be damaged during transportation shall be removed, packed and shipped separately to site.
- TGOOD shall provide adequate temporary bracing for the roof and wall structures to prevent damage during shipment.
- Switchroom floors shall be covered with plastic sheeting prior to transportation to prevent dust, moisture and vermin ingress.
- All timber and materials used for the bracing and packaging including dunnage must be ISPM 15 Approved and certified to reduce the risk of introduction and/or spread of quarantine pests associated with solid timber packaging material

Shipping

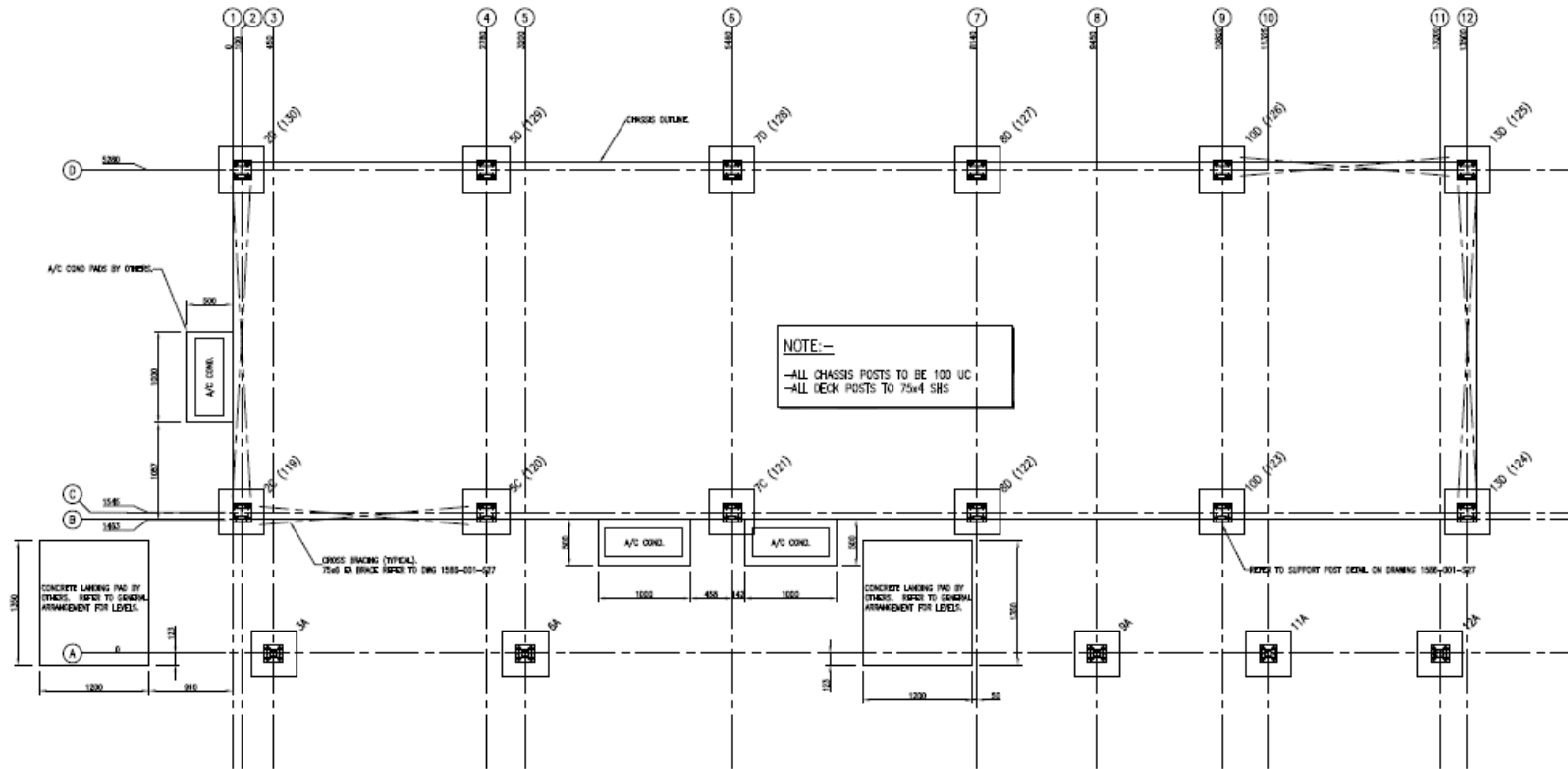
- Switchrooms shall be provided Free On-board (FOB) Transport at Qingdao Port.
- Switchrooms shall travel on Open Deck - Break Bulk Cargo Ship to the customer nominated Port or to the nearest port to the site.
- Road transport to the customers nominated site can be offered as an option. Road Transport shall be via an open deck, low loader truck and trailer. The building shall be suitably lashed for transport utilising the lifting lugs as a tie-down point.

Installation

- The Customer is responsible for the unloading and mounting/installation of the buildings. TGOOD will coordinate the delivery of the building and provide a typical lifting drawing advice to the customer to enable the customer to organise the appropriate lifting and carnage. TGOOD will identify the exact requirements of the lift and the weight to be lifted.
- TGOOD Can also make available as an option, a building installation supervisor to assist the customer or its contractor with the installation of the buildings and interconnection of each module.

6 Typical Drawings

Typical support Post Drawing



SUPPORT POST AND FOOTING LAYOUT
SCALE 1:25

Typical Lifting Drawing

