Installation Guide

Foundations

Foundations

The foundation must be calculated and sized by civil engineering specialists. **The surface area where the generator is installed must be able to support a minimum of 150% of the weight of the equipment (where appropriate), together with the accessories and fluids,** as well as keeping the assembly in a level horizontal position and in the most restrictive cases, prevent the transmission of vibrations to surrounding structures, taking into account that generator sets incorporate vibration isolators (anti-vibration elements) for this function.

To assess the need for the construction of foundations, it is necessary to take into account the genset's total wet weight, type (indoor or outdoor) and durability of the installation (provisional or stationary), restrictions related to the vibration, the type of soil and possible variations due to seasonal and climatic changes.

By way of example, in the event the use of concrete foundations is required, the depth that will support the weight of the equipment is obtained as follows:

$$H_{foundation} = \frac{W}{\rho_{concrete} \cdot L_{foundation} \cdot W_{foundation}}$$

- $H_{foundation}$ Height or depth of the foundation (m)
- W Total wet weight of the equipment (kg)
- $\rho_{concrete}$ Density of the concrete (kg/m³)
- $L_{foundation}$ Length of the foundation (m)
- $W_{foundation}$ Width of the foundation (m)

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⚠ It is recommended that the dimensions of the foundation base exceed the dimensions of the base of the generator by at least 150 mm on all sides. In addition, to facilitate maintenance and service activities, we recommend raising the foundation above ground level by at least 100m.
See foundation option

Preliminary calculations must include the total weight of installation. This includes genset and supplementary weight of total liquids (coolant, oil and fuel) supported by foundations.

To calculate gross weight, use specificated volumes by manufacturer to each liquid, multiplied by specific gravity coeficiency of table below:

Liquids weight		
Liquid	**kb/l**	**Specific gravity**
Coolant	1,02	1,030
Water	1,00	1,000
Lubricant oil	0,91	0,916
Fuel (diesel)	0,85	0,855
Fuel (kerosene)	0,80	0,800

Soil where foundation is sustained must support total gross genset weight plus foundation weight. Table below shows load capacity by material for common terrains:

Load capacity (safe load)		
Material	**lb/in²**	**kPa**
Stone surface	70	482
Heavy clay, grave, coarse sand	56	386
Medium-grain sand and clay	28	193
Fine-grain sand	14	96,4
Expanded clay	0 - 14	0 - 96,4

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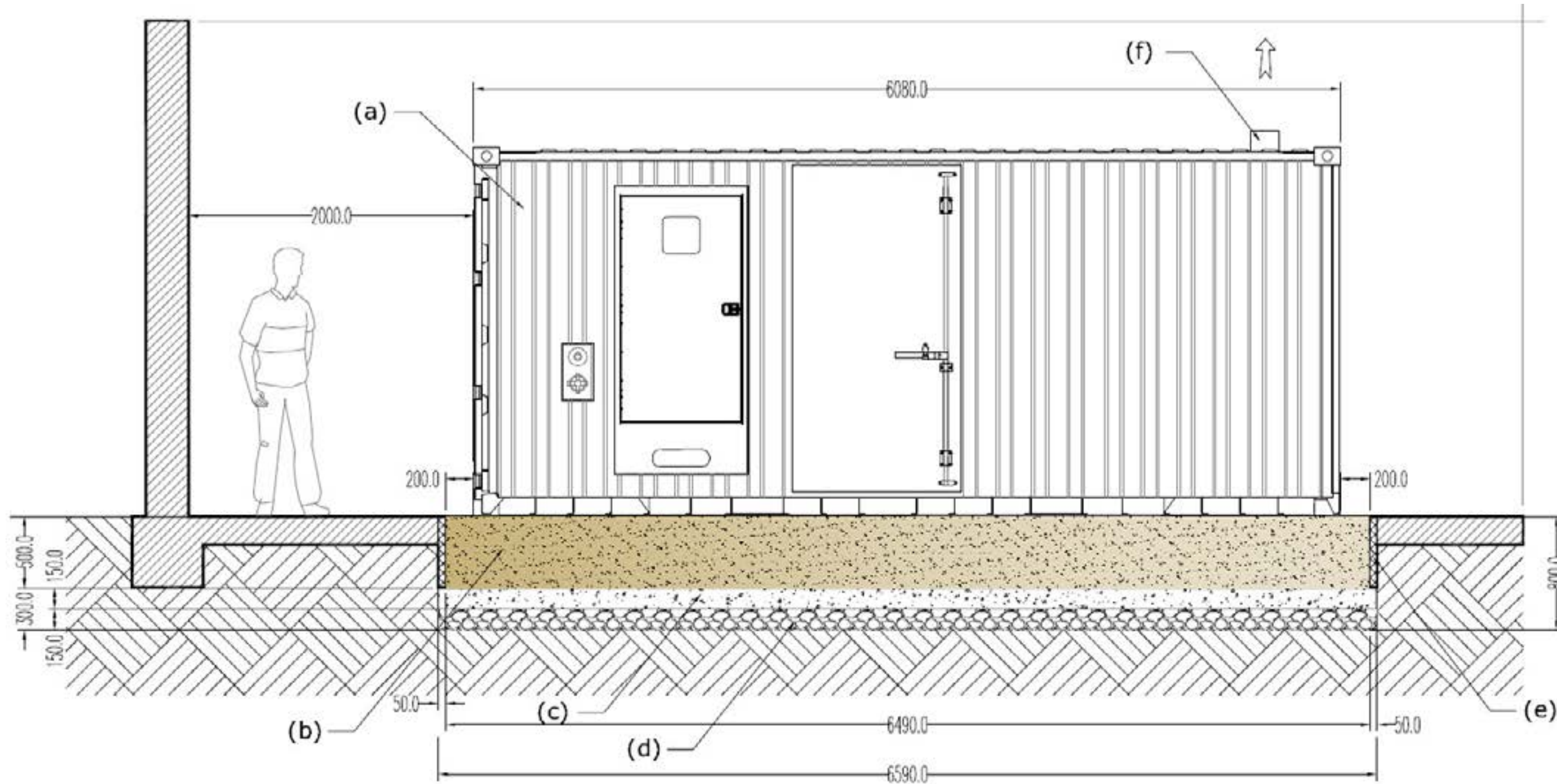
a. 20 feet container

b. Concrete bed

c. Cleaner concrete bed

d. Compacted stone

e. Isulator polyethylene, polyurethane

f. Exhaust outlet

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