

SPECIFICATIONS FOR F+P SYSTEM REQUIREMENTS FOR EXECUTION PER WORK UNIT

WORK UNIT: HYDROPONIC VERTICAL GARDEN FOR INDOOR OR OUTDOOR USE. F+P SYSTEM

1. TECHNICAL SPECIFICATIONS

F+P Vertical Garden by SingularGreen, composed of a 100% recycled and recyclable SG-P35 waterproof panel, inert SG-L40 substrate with a density of 100 kg/m³ fixed with A4 stainless steel screws, planting density of 30 units/m², customized garden design and species selection by a SingularGreen technician. Installation of an irrigation system consisting of SG-R16 irrigation pipe, SG-A24R centralized irrigation with automatic fertilizer dosing, and GALCON GSI remote control and management system with flow and electrical alerts via email. Includes programming, set up, and monitoring of alerts by SingularGreen.

2. APPLICABLE REGULATIONS *

- CTE. DB HS Health and Safety.
- CTE. DB SI Fire Safety.
- CTE. DB-HE Energy Efficiency.
- NTJ 11V Vertical Landscaping.

*This regulation is mandatory in Spain. If the work is to be carried out in another country, please consult the specific regulations of that country.

3. MEASUREMENT CRITERIA IN PROJECT

Area measured according to the graphic documentation of the project, without duplicating corners or intersections, deducting openings with a surface area greater than 5 m².

4. PREVIOUS CONDITIONS TO BE FULFILLED BEFORE EXECUTION OF SUPPORT WORK UNITS

4.0 GENERAL

- Plans of the facade to be landscaped will be available, indicating structural joints, materials, location of protruding elements, and any other included elements.

- Plants and elevations at a scale of 1:100 will be available, showing the layout of landscaped areas, permissible facade overloads, other installations, and necessary passageways for conservation and maintenance work.
- Graphic representation of details of singular points of the system will be available.

4.1 OF THE SUPPORT

- It will be verified that the supporting structure has adequate plumb, flatness, and verticality.
- When the support is made of concrete, cellular concrete, cement mortar, or lightweight aggregate mortar, its surface must be cured and dry, without voids or protrusions.
- Before starting work, water collection and drainage elements must be installed.
- In supports with particularly high moisture sensitivity, additional continuous waterproofing protection may be applied.

4.2 OF THE INSTALLATIONS

Before starting the works, the existence of the following services will be verified:

- Water intake at the location of the irrigation system assembly.
- 32mm polyethylene water conduit up to the base of the vertical garden.
- Protected location for control device installation.
- Lixivate channeling.
- Artificial lighting (interior vertical gardens).

4.3 ENVIRONMENTAL

- Work will be suspended when the ambient temperature is below 5°C or above 40°C, in case of rain or snow, or when the wind speed exceeds 50 km/h.

4.4 CONTRACTOR'S RESPONSIBILITIES

- The installation of the system may only be carried out by specialized and qualified companies, recognized by the manufacturer and under their technical control.
- The necessary auxiliary means for work at height, as specified in the project, must be available.

5. PROCESS OF EXECUTION

5.1 EXECUTION PHASES

- Layout of the panels
- Installation of the lower facade finish
- Placement and fixing of panels
- Sealing between panels
- Installation of the irrigation system
- Performance of service tests
- Finishing touches
- Placement of plants

5.2 SG-P35 + SG-L40 PANELS

The SG-L40 panel, which is an inert substrate specifically designed for hydroponic vertical gardening, will be mechanically fixed to the SG-P35 waterproof support panel in the workshop, so the installation will be a panel consisting of a support and substrate. They will be fixed to the existing surface using appropriate screws for the material, resistance of the wall to be occupied, and expected stresses.

If there are elements on the wall that need to be saved, it will be necessary to install a substructure joined with stainless steel anchor brackets. The joints between the SG-P35 panels will be filled and sealed with polyurethane silicone.

5.3 PLANTING

The vegetal finishing will be carried out by planting the selected plant species, at a rate of 30 units/m², in the pre-existing gaps in the substrate.

The selection of plants will be conditioned by the climate of the area, the orientation of the facade, and the exposure to wind.

6. EXECUTION CONTROL

The execution of the works will be controlled according to the project specifications, its appendices and modifications authorized by the DF, and the instructions of the director of the execution of the work, in accordance with article 7.3 of Part I of the CTE* and other applicable current regulations.

The most notable control points are the following:

- It will be verified that the necessary measures have been taken to ensure the compatibility between different products, elements and construction systems.
- Checking of the plant layout and the elevation of the enclosures.
- Inspection before, during and after execution of the load-bearing walls that support the F+P system.

7. INTERPRETATION OF RESULTS AND ACTIONS IN CASE OF NON-COMPLIANCE

- Work will not be allowed to continue until execution defects are resolved.
- When layout irregularities are observed, they will be corrected before installation of the vertical garden system.

8. SAFETY CONDITIONS

- Work will be suspended in case of rain, snow or wind speeds exceeding 50 km/h; in the latter case, materials and tools that may become dislodged will be removed.
- Work will not be carried out in proximity to high voltage power lines.
- In addition, all general Health and Safety regulations will be complied with, as well as any applicable Municipal Ordinances.
- Appropriate clothing for the job and weather conditions will be worn. Footwear must be free of metal parts to ensure proper electrical insulation.
- During assembly, protection at the eaves or safety nets will be provided.
- Exposed workers will ensure adequate individual protection for each situation.

9. FINISHING CONDITIONS

- The entire system will be resistant and stable against external and building-induced actions.
- The façade will be waterproof and have a good appearance.
- The irrigation system will be operational and in working order.

The most notable control points for the finished work are as follows:

- Visual inspection of the finished unit.
- Full inspection of the irrigation system.

10. MEASUREMENT CRITERIA AND PAYMENT CONDITIONS ON-SITE

This item does not include civil works (such as digging, preparation and backfilling of the hole, trenching for pipes, etc.), preparation works in the area (leveling of vertical surfaces, ducts, modification of pavements, etc.), space for centralized irrigation (manhole, cabinet, etc.), top and lateral finishes, remote control, execution of perimeter encounters, connections to water, electricity and drainage points, collection channels or lifting equipment.

The irrigation system equipment must be located protected from the weather and from unauthorized access by personnel, in order to guarantee its durability and prevent manipulation by unqualified third parties.

Water, electricity, and drainage points are assumed to be located next to the work area.

11. CONSERVATION AND MAINTENANCE

- The element will be protected during operations that could cause stains or mechanical damage.
- Mechanical actions not foreseen in the calculation will be avoided on the element.
- Removal of materials accumulated by the wind and any possible vegetation.
- Optimal conservation of existing elements in the system.
- In case a waterproofing defect is observed, it must be repaired by specialized personnel, with materials similar to those used in the original construction.
- No elements that perforate the panel, hinder drainage, or harm plant growth will be placed on the facade.
- Once the system is fully rooted, the fertilization proportions are reduced to the minimum necessary for vegetative growth, postponing pruning periods as long as possible, spacing them approximately every 12 to 24 months.
- Fertigation control is fully automatic and autonomous, so maintenance consists of periodic revision of the installations and refilling of fertilizer, acid, and base tanks.
- The irrigation control incorporated in the SG-A24 hydroponic system provides flow control alarms. It is essential to attend to these alarms within a maximum of 24 hours.
- These future works do not necessarily have to be contracted with SingularGreen. The promoter of the project is responsible for providing them following SingularGreen's system guidelines.