

Box4Grow – 40ft Two-Tier Veg Container Technical Specification

Preliminary technical basis for a sealed, climate-controlled modular cultivation room configured for vegetative production with two-tier rolling cultivation benches or racks. Final equipment quantities, capacities, layouts, structural supports, clearances, connections, and code requirements are subject to engineering and approved submittals.

INCLUDED IN STANDARD CONFIGURATION

40 ft x 8 ft modular cultivation unit with the standard Box4Grow room envelope, environmental systems, safety package, electrical and utility provisions, and a two-tier cultivation basis. Listed equipment and system categories are included as the design basis; final quantities and capacities remain subject to engineering.

01 / DESIGN BASIS

ROOM MODULE 40 ft x 8 ft (12.19 m x 2.44 m) modular cultivation unit	CULTIVATION USE Vegetative production ; sealed room with two cultivation tiers
CONSTRUCTION ENVELOPE R21 insulated panels ; sealed room; 36 in (914 mm) out-swing steel door	CEILING-HEIGHT BASIS 14 ft (4.27 m) may be required for the two-tier configuration; confirm final height during design
CONTROLS Environmental automation controlling temperature, humidity, CO2, and lighting	CONFIGURATION STATUS Preliminary technical basis ; final review required before fabrication and installation

02 / ENVIRONMENTAL INFRASTRUCTURE

HVAC & DEHUMIDIFICATION

- **Heating and cooling:** 3-ton GMV-36WL outdoor unit with 18,000 BTU GMV-ND18G indoor unit.
- **Humidity control:** one 320-pint dehumidifier. Final capacity and operating sequence subject to room load calculations.
- **Air movement:** 12 in (305 mm) ceiling-mounted HAF fans plus six floor blowers.

LIGHTING & CO2

- **Grow lighting:** high-intensity full-spectrum LED grow lighting. Final fixture count, model, layout, mounting, and electrical load subject to design.
- **CO2 delivery:** regulator, supply tubing, tank rack, and integrated delivery provisions.
- **CO2 safety:** Carbon X CO2 alarm system with visual and audio alerts, emergency CO2 shutoff, and air exchange.

System basis: The equipment above is categorized as included in the standard configuration. Final equipment selection, quantities, capacities, setpoints, controls integration, and connection details are to be confirmed through engineering for the two-tier room.

03 / STANDARD CONFIGURATION INDEX

ENVELOPE

Insulated, sealed modular room
with access door

ENVIRONMENT

Automated temperature,
humidity, CO₂, and lighting
control

CULTIVATION

Independent lighting and
irrigation at each tier



STANDARD CONFIGURATION / ROOM SERVICES AND LIFE SAFETY

Room Services & Safety Package

The following systems are included in the standard configuration. Final quantities, circuiting, capacities, mounting positions, and interfaces are subject to engineering, site conditions, code review, and approved submittals.

04 / LIFE SAFETY & EGRESS

SYSTEM	INCLUDED STANDARD BASIS	DESIGN STATUS
Detection	Smoke/CO detector serving the cultivation room.	INCLUDED / FINAL LOCATION BY DESIGN
Fire response	Fire extinguisher positioned in accordance with the approved room and code review.	INCLUDED / FINAL TYPE BY CODE
Exit & emergency lighting	Green exit sign and two-head emergency lights.	INCLUDED / FINAL LOCATIONS BY DESIGN
CO2 protection	Carbon X visual/audio alarm, emergency CO2 shutoff, and air exchange sequence.	INCLUDED / FINAL SEQUENCE BY CONTROLS

05 / ELECTRICAL PACKAGE

150A 208-240V ELECTRICAL PACKAGE

Service panel, receptacles, work light, fan circuit, grow-light circuits, and green LED work lights in vapor-proof enclosures. Final load schedule, disconnects, circuit count, conductor sizing, grounding, and connection to site service are subject to electrical engineering and code review.

06 / UTILITY & IRRIGATION

UTILITY SINK

- Sink:** 18 in (457 mm) stainless steel utility sink.
- Hot water:** on-demand hot water provision.
- Connection:** hose connection included; final plumbing routing and drain connection subject to site conditions.

IRRIGATION PACKAGE

- Drip emitters, drip stakes, and drip tubing.
- Low-profile reservoir tanks with lids, pumps, flexible supply line, and reservoir.
- Final emitter count, flow rate, zoning, pump duty, tank capacity, filtration, drainage, and controls subject to design.



07 / AIR MOVEMENT & ENVIRONMENTAL SEQUENCE

EQUIPMENT GROUP	STANDARD CONFIGURATION BASIS	DESIGN STATUS
HVAC	3-ton GMV-36WL outdoor unit and 18k BTU GMV-ND18G indoor unit for heating and cooling.	INCLUDED / CAPACITY VERIFY
Dehumidification	One 320-pint dehumidifier.	INCLUDED / CAPACITY VERIFY
Air circulation	12 in ceiling-mounted HAF fans plus six floor blowers.	INCLUDED / FINAL LAYOUT
Environmental automation	Temperature, humidity, CO2, and lighting control with coordinated equipment operation.	INCLUDED / FINAL SEQUENCE

Coordination note: The two-tier arrangement changes internal heat load, airflow paths, access requirements, irrigation zoning, and service clearances. HVAC, dehumidification, electrical, CO2, and drainage provisions must be reviewed together rather than treated as independent packages.



CULTIVATION CONFIGURATION / VERTICAL PRODUCTION BASIS

Two-Tier Cultivation System

The room is intended for vegetative production using rolling cultivation benches or racks with flood/drain trays. Each tier is treated as an independently serviced cultivation plane for lighting and irrigation.

08 / CULTIVATION SYSTEM BASIS

ELEMENT	PRELIMINARY TECHNICAL BASIS	DESIGN STATUS
Rolling benches / racks	Two-tier rolling cultivation benches or racks with flood/drain trays.	INCLUDED / FINAL SYSTEM BY DESIGN
Tier independence	Each tier to have independent lighting and irrigation.	REQUIRED / COORDINATE CONTROLS
Rack dimensions	Final rack dimensions and quantity to be confirmed from the room plan, access aisles, service clearances, and operating method.	SUBJECT TO ENGINEERING
Structural basis	Structural supports and design loads to be verified for the rack assemblies, trays, plants, water, equipment, and maintenance activities.	SUBJECT TO ENGINEERING
Drainage	Tray drainage, collection, slope, routing, cleanouts, and discharge point to be coordinated with the irrigation and room services plan.	SUBJECT TO ENGINEERING
Service layout	Final electrical, lighting, irrigation, controls, airflow, and maintenance access layout to be confirmed through design.	SUBJECT TO ENGINEERING

09 / TWO-TIER CONFIGURATION NOTES

PRELIMINARY TECHNICAL BASIS

This sheet establishes a preliminary technical basis only. The two-tier configuration requires final review of structural supports, tier spacing, worker access, fall protection, lighting heat load, irrigation zoning, drainage, electrical loads, HVAC/dehumidification capacity, and applicable code requirements before final configuration.

10 / HEIGHT AND ACCESS BASIS

HEIGHT BASIS 14 ft (4.27 m) ceiling-height basis may be required to accommodate two tiers, fixtures, air distribution, structure, and safe working clearances.	CONFIRMATION Confirm final room height, tier elevations, fixture clearances, and access geometry during design development.
WORKER ACCESS Aisles, access points, maintenance zones, and fall-protection provisions to be defined for the final rack arrangement.	OPERATIONAL INTENT Support repeatable vegetative production with independent service and control at each cultivation tier.

11 / STANDARD CONFIGURATION CONTROLS

TIER 01

Independent lighting, irrigation, drainage, and access coordination

TIER 02

Independent lighting, irrigation, drainage, and access coordination

ROOM-WIDE

Environmental automation, HVAC, dehumidification, CO2, and safety interlocks



DESIGN DEVELOPMENT / ENGINEERING CONFIRMATION REGISTER

Engineering Confirmation Register

Use this register to carry the standard configuration into the final room plan, equipment schedule, coordinated submittals, and commissioning documentation. Items below are technical confirmation points, not commercial exclusions.

12 / REQUIRED TECHNICAL REVIEWS

01 Structural supports and loads Verify rack structure, tray loads, live loads, point loads, anchorage, and panel interfaces.	01 Tier spacing and ceiling height Confirm tier elevations, fixture clearances, duct/airflow zones, and the 14 ft (4.27 m) basis.
02 Worker access and fall protection Define aisles, access points, maintenance zones, safe work positions, and fall-protection measures.	02 Lighting layout and heat load Confirm fixture selection, count, mounting, photometric intent, controls, circuiting, and heat contribution.
03 Irrigation zoning Separate each tier as required; confirm emitters, stakes, tubing, pumps, reservoirs, filtration, and controls.	03 Tray drainage Confirm flood/drain tray routing, slope, collection, cleanouts, discharge, and room penetrations.
04 Electrical loads Develop the final load schedule for HVAC, dehumidification, lights, fans, pumps, controls, receptacles, and emergency systems.	04 HVAC and dehumidification Verify room load, airflow, latent capacity, equipment duty, setpoints, condensate management, and control sequence.
05 CO2 and safety interlocks Confirm alarm locations, visual/audio notification, emergency shutoff, air exchange, and operating sequence.	05 Applicable code requirements Complete code review for structural, electrical, mechanical, plumbing, fire/life-safety, egress, and emergency lighting requirements.

13 / INCLUDED STANDARD CONFIGURATION SUMMARY

ROOM & CONTROLS 40 ft x 8 ft (12.19 m x 2.44 m) modular unit; R21 panels; 36 in (914 mm) out-swing steel door; sealed room; automation for temperature, humidity, CO2, and lighting.	ENVIRONMENTAL SYSTEMS 3-ton GMV-36WL outdoor unit; 18k BTU GMV-ND18G indoor unit; high-intensity full-spectrum LED lighting; integrated CO2 delivery; Carbon X alarm system.
AIR, SAFETY & POWER 12 in (305 mm) ceiling HAF fans; six floor blowers; one 320-pint dehumidifier; smoke/CO detector; extinguisher; exit sign; two-head emergency lights; 150A 208-240V package.	UTILITIES & CULTIVATION 18 in (457 mm) stainless utility sink with on-demand hot water and hose connection; complete irrigation package; two-tier rolling benches/racks with flood/drain trays.

ISSUE BASIS

All systems listed in this document are categorized as included in the standard configuration. Final quantities, capacities, dimensions, layouts, loads, connections, controls, structural details, and code compliance requirements remain subject to engineering, site conditions, code review, and approved submittals.



DOCUMENT CLASS / TECHNICAL SPECIFICATION • CONFIGURATION / 40FT TWO-TIER VEG • UNITS / US CUSTOMARY WITH METRIC IN PARENTHESES