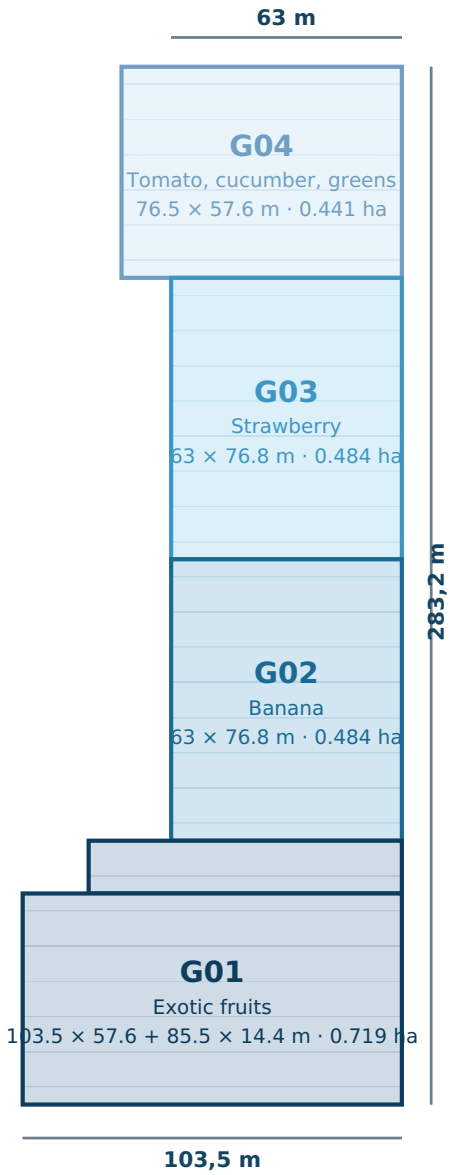


Glass Greenhouse 2.18 ha — Zoning Concept

Multi-crop greenhouse complex: exotic fruits · banana · strawberry · vegetables and greens

2.18 ha total plot area	2.128 ha cultivation area	103.5 × 283.2 m overall size · axis 48.6°	Venlo glass structure
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1. Zoning Layout



2. Area Schedule

Block	Crop	Technology	Dimensions (width × length)	Area, m²	Share
G01	Exotic fruits (6 species)	hydro + soil	103.5 × 57.6 + 85.5 × 14.4 m	7 193	33,0 %
G02	Banana	soil	63 × 76.8 m	4 838	22,2 %
G03	Strawberry	hydroponics	63 × 76.8 m	4 838	22,2 %
G04	Tomato / cucumber / greens	hydro + soil	76.5 × 57.6 m	4 406	20,2 %
Total cultivation area				21 276	97,6 %
Technical aisles, service area				524	2,4 %
TOTAL (plot)				21 800 (2,18 ha)	100 %

The geometry follows the master plan: the outline of blocks G01–G04 was digitised from the site plan, the complex axis is 48.6° to the horizontal, the eastern edge is straight and shared by all blocks, and the setbacks are on the western side. Overall size of the complex is 103.5 × 283.2 m. Block G01 has a setback: the main part is 103.5 m and the adjoining part 85.5 m. **The 4.8 m spans run along the length of the complex; ridges and gutters are oriented crosswise — parallel to the facade.** Block width is a multiple of the 4.5 m truss pitch, block length a multiple of the 4.8 m span.

3. Block G01 — Exotic Fruits (0.72 ha)

Crop	Technology	Microclimate	Structure height
Pitahaya (dragon fruit)	soil / trellis	warm dry	≥ 3.0 m
Passion fruit (passiflora)	hydroponics (Dutch bucket)	moderately humid	≥ 3.5 m

Papaya	soil	warm humid	≥ 4.5 m
Guava	soil / container	moderately humid	≥ 3.5 m
Mango	soil	warm, cool dry nights	≥ 5.0 m
Pineapple	hydroponics / substrate	warm dry	≥ 2.0 m

Block G01 is divided into two microclimate sub-compartments: “warm dry” (pitahaya, pineapple) and “warm humid” (papaya, mango, guava, passion fruit), separated by a screen partition with an independent ventilation circuit.

4. Technology Blocks — Growing Parameters

Parameter	G01 · Exotic fruits	G02 · Banana	G03 · Strawberry	G04 · Vegetables/greens
Technology	hydro + soil	soil	hydroponics (hanging gutters)	hydro + soil
Day temp., °C	24 – 30	26 – 30	18 – 24	21 – 26
Night temp., °C	16 – 20	20 – 22	8 – 12	16 – 18
Relative humidity, %	50 – 80 (by sub-compartment)	70 – 85	60 – 70	65 – 75
Gutter height	6.0 m	6.0 m	5.0 m	5.0 m
Irrigation	drip + recirculation	drip	closed recirculation	drip / NFT
Supplemental lighting	optional	none	LED (winter)	LED (greens)

5. Structural Solution

Frame and glazing

- Type: Venlo glass greenhouse · truss pitch 4.5 m
- Span 4.8 m — along the length of the complex
- Ridges and gutters — crosswise, parallel to the facade
- Frame: hot-dip galvanised steel
- Roof: tempered diffuse glass 4 mm
- Side glazing: glass 4 mm + plinth
- Snow/wind loads — per the standards of the Republic of Uzbekistan

Engineering systems

- Heating: circuit-based, separated across 4 blocks
- Ventilation: double-sided ridge vents + forced ventilation in G01/G02
- Shading / energy-saving screen: per block
- Nutrient dosing unit: 2 independent systems — G01/G03 and G02/G04
- Water treatment adapted to local water quality
- Firmmit climate control system (IoT, single control room)
- Service block: preparation, sorting, cold room

6. Implementation Stages

Stage	Scope	Duration
1. Surveys	Topographic survey, soil and water analysis, geology	3 – 4 weeks
2. Detailed design	Plans, sections, engineering sections, specification	6 – 8 weeks
3. Earthworks and foundations	Site levelling, pile/strip foundation	8 – 10 weeks
4. Frame and glazing installation	Steel structures, glass, roof vents	12 – 16 weeks
5. Engineering systems	Heating, irrigation, dosing unit, automation	8 – 10 weeks
6. Commissioning and planting	System testing, planting by block, staff training	4 – 6 weeks

Stages 3–5 are partly executed in parallel. The estimated overall implementation period is 12–14 months from contract signing.

7. Notes and Next Steps

- Block dimensions were digitised from the master plan and adjusted to the Venlo modular grid of 4.8 × 4.5 m; final positioning after the topographic survey.
- The difference between the sum of the blocks (2.128 ha) and the plot area (2.18 ha) — 524 m² — is allocated to technical aisles and the service area.
- The list of exotic crops for block G01 is subject to final approval taking into account target sales markets and plant quarantine requirements (karantin.uz).
- The cost estimate and commercial offer will be prepared after approval of this concept.