



## TECHNICAL SPECIFICATIONS CONSTRUCTION OF HIGHLY SPECIALISED AUTOMATED GREENHOUSE

| Minimum Specifications Required   | Offered Specification  |
|---|--|
| <p>Galvanized steel structure</p> <p>Steel locking profiles with springs</p> <p>4 Rows of top vents &amp; operating gear motors system</p> <p>Side wall curtain: 2 curtain for gable side, 2 curtains for gutters sides</p> <p>Crawling motors for side vents: 6 Units</p> <p>Trellising support system &amp; transverse cables &amp; 4mm steel wire: 14 rows per gable</p> <p>Entry pavilion 4.4m*4m-2 Units in gutter side +2 units of "20fans</p> <p>Steel sliding gate 1m * 2.2m: 4 units will be placed in the Entry pavilions</p> <p>Partition along gutter</p> <p>Draining pipes 6" pipes -5 Units</p> | <p>•General features: Fully automated well ventilated greenhouse (automatic computerized control / climate control system) made of high quality 50 mesh anti-insect net with UV protection designed specifically for tropical climate (tested and proven to be most efficient in the cultivation of vegetables and other horticultural crops in Ghana and fitted with gravity-feed drip fertigation system.</p> <p>•Frame works structured is assembled by prefabricated parts with zinc coated bolts and nuts without welding at work site.</p> <p>Structure:</p> <p>Gable Front No. of Bays <math>1 \times 11.2 = 11.20 + 2.0</math> Corridors of (Each <math>2.50 = 16.20</math></p> <p>Gutter Front No. of Gutters <math>10 \times 4.0 = 40.00</math></p> <p>Gutter Height 4.75 Meters</p> <p>Total Area: 648 m<sup>2</sup> Trellising load: 25 kg/m<sup>2</sup></p> <p>•Frame: Galvanized anti-rust steel pipes with 275g/m<sup>2</sup> Zinc Coating</p> <p>•Wind load :120 km/hr. minimum; Steel locking profiles with springs</p> <p>4 Rows of top vents &amp; operating gear motors system</p> <p>Side wall curtain: 2 curtain for gable side, 2 curtains for gutters sides</p> <p>Crawling motors for side vents: 6 Units</p> <p>Trellising support system &amp; transverse cables &amp; 4mm steel wire: 14 rows per gable</p> <p>Entry pavilion 4.4m*4m-2 Units in gutter side +2 units of "20fans</p> <p>Steel sliding gate 1m * 2.2m: 4 units will be placed in the Entry pavilions.</p> <p>Partition along gutter</p> <p>Draining pipes 6" pipes -5 Units</p> <p>Partition along gutter</p> <p>Draining pipes 6" pipes -5 Units</p> |
| <p>Dimension:</p> <p>• .</p>  | <p><u>Dimension:</u></p> <ul style="list-style-type: none"> <li>• Total Area. &gt; 648 m<sup>2</sup></li> <li>• Gutter Base height 4.50 m</li> <li>• Gable span 8.6m</li> <li>• Balcony width 2.5m</li> <li>• Maximum height 7.3</li> <li>• Gable front length <math>3 \times 9.6 + 2 \times 2.5 = 33.8</math> meter</li> <li>• Gutter front length <math>5 \times 4 = 20</math> meter</li> </ul>  |

**COVERINGS, EQUIPMENT and ACCESSORIES**

C-949 200 Micron Polyethylene for roof, and side-wall covering  
Insect Proof 50 mesh net: On top vent and for side vents covered in the soil  
Motorized thermal screen system  
Aluminate 50% shade screen layer  
Exhaust fans 50" : 8 units+ frames and cages (2 units in gable)  
24 Circulation fans:4 Units(1 unit in each gable)  
Roller hooks 32 meter twin -2200 units +23 mm tomato clips 11,000 units  
Spraying system  
Electricity panel board, cables, installation materials  
Trough 6.5-22-6.5 including spacer -3300 meter  
Grow bags 16\*18\*100 - 3300 units  
Germination tables 4.2 meter by 2.2 - 38 Units  
Germination treys: 1000 units of \*470\*710 (180 holes)  
Germination media: Torf- 13 units of 300 liter, Vermiculite 12 units of 100 liter  
Fertigation tables + water tank and fertilizer tank 500 liter each

**COVERINGS, EQUIPMENT and ACCESSORIES**

C-949 200 Micron Polyethylene for roof, and side-wall covering

- **Covering type: DRIPLOCK CLEAR**  
**Anti- Drip**
- **Thickness: 200 micron**
- **Mechanical strength**
- **5 Layered**
- **3 Years UV Stabilized**
- **Elongation at Break**
- **Tear strength**

**Lab test measurements for light transmission should be:**

**Light transmission in PAR-90%**

**Diffused light transmission in PAR-95%**

- **IR blocking**
- **Dust accumulation Reduction**

**Roof configuration/Full cover with open / close vent on top lined with 50 or 25 mesh anti-insect net to improve ventilation**

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Motorized thermal screen system  
Aluminate 50% shade screen layer  
Exhaust fans 50" : 8 units+ frames and cages (2 units in gable)  
24 Circulation fans:4 Units(1 unit in each gable)  
Roller hooks 32 meter twin -2200 units +23 mm tomato clips 11,000 units

**one door/entrance**

Spraying system  
Electricity panel board, cables, installation materials  
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**PE-AVIV COMPANY LIMITED**  
**BOX CT 1347, CANTONMENTS-ACCRA**  
**TEL: 0302-73694 / 050-4249525**

**Date:.....**  
**DIRECTOR:.....**



## **B. IRRIGATION, FERTIGATION & CLIMATE CONTROL SYSTEM**

Irrigation & fertilization system includes.

Irrigation control system.

Pipe system from 1 irrigation center to the greenhouses.

Fertilizers tanks - 4 units.

Irrigation inside the greenhouses: electric valves on each greenhouse, 8 liter spaghetti drip line system for Grow bags system. Water disposal from Grow bags system

Water tank 40 m3

Automatic control system + climate control system

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### **VENTILATION**

A variety of active ventilation solutions suitable for effectively operating the greenhouse would be implemented we would use Mist irrigation and drip line for irrigation of plants and nursery as well as foggers to cool temperature in the greenhouse. The structure would permanently be fixed with an overlapping vent 1.3 meter on the gable ridge to provide ventilation while preventing penetration of rain. This would again increase the circulation of air inside the greenhouse to allow cold air to enter the greenhouse and to remove hot air.

### **FOUNDATION CONCRETE WITH RE-INFORCEMENT**

Concrete works would cover the total area of greenhouse plus 1 meter around the greenhouse.

### **Excavation and concrete works**

Excavate foundation pits of size 648m2 average depth, commencing from formation level, for steel columns including the preparation and pouring in -situ concrete c30,40mm aggregate,vibrated,in excavated pits.

Minimum Depth of foundation – 1m

Floor reinforcement – mesh 20x20mm and 5mm thickness.

Floor must be smooth with drainage in place.

Concrete strength – 25N

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