उच्च प्रविधियूक्त संरक्षित संरचना निर्माणकोलागि स्पेशिफिकेशन

1. **Bamboo Tunnel** (बाँसको प्लास्टिक घर)

Specification of Bamboo Tunnel for Design Area (60 Sqm)

S.N.	Items	Description
1	Materials Used	Bamboo is used to make the Frame of the Structure. Column/Cross Beam/Top Purlin/End Purlin: Straight Bamboo with full diameter is used without any Cracks. Main Rafter: full diameter/ Half Diameter Bamboo is used Support Rafter: Quarter Diameter Bamboo is used.
2	Grid Size	4m x 3m
3	Length of Tunnel*	12 m
4	Area*	Breadth: 5 m Length: 12 m Area: 60 Sqm
5	Height/ Foundation Details:	**Side Height:** Side Height 2 m above and 60 cm below the Ground Level, **Centre Height:** Centre Height 3 m above and 60 cm below the Ground Level. ***Note:*** *Bamboo Should be Coloured with Enamel Painting and Cover with Plastic Wrapping and Stick with GI Wire to prevent Early damage with Water and Insects for Bamboo below the Ground level.*
6	UV Plastic	UV Plastic with Minimum 100 Micron is used to Cover the Roof of the Tunnel

Note: The length, breadth and height could be varied according to the site and climate.

.....

Er. Suman Kumar Sah
Agriculture Enginer
Agriculture Development Directorate

2. Iron made Tunnel Plastic Tunnel (फलामको पाइपको प्लास्टिक घर)

Table 4: Specification of Iron made Tunnel Plastic Tunnel for Design Area: 60 Sqm

S.N.	Items	Description
1.	Materials Used	Iron Pipe with 14 Gauge Thickens is used to make the Frame of the Structure. **Pipe Details:** Column Pipe: 50 mm Cross Beam: 40 mm Top Purlin/ End Purlin: 32 mm King Post: 32 mm Strut Members: 32 mm
2.	Grid Size*	5 m x 3 m
3.	Length of Tunnel*	12 m
4.	Area	Breadth: 5 m Length: 12 m ***Areas: 60 Sqm***
5.	Height/ Foundation Details:	**Side Height:** Side Height 2.5 m above the G L and 75 cm below the Ground Level, **Centre Height:** Centre Height 3.5 m above the Ground Level and 75 cm below the Ground Level. ***Civil Works:*** 1:2:4 PCC works of size 20 cm X 20 cm X 75 cm for embedding vertical pipe below the ground Level and 30 cm PCC works above the Ground level.
6.	UV Plastic	UV Plastic 200 Micron is used to Cover the Roof of the Tunnel
7.	Insect Net	40 Mesh UV Insect is used for the Sides of the Tunnel
8.	Apron Paper (if required)	UV Plastic 200 Micron is used as Apron Paper below the insect in Sides of the Tunnel.

* Note: The length, breadth and height could be varied according to the site and climate.

.....

Er. Suman Kumar Sah
Agriculture Enginer
Agriculture Development Directorate
Bagamati Province

3. **GI Made Plastic Tunnel** (जि .आई. पाइपको प्लास्टिक घर)

Table 6: Specification of GI Made Plastic Tunnel for Design Area: 60 Sqm

S.N.	Items	Description
1.	Materials Used	GI Pipe with 14 Gauge Thickens is used to make the Frame of the Structure. **Pipe Details:** Column Pipe: 50 mm Cross Beam: 40 mm Top Purlin/ End Purlin: 32 mm King Post: 32 mm Strut Members: 32 mm
2.	Grid Size	5 m x 3 m
3.	Length of Tunnel*	12 m
4.	Area *	Breadth: 5 m Length: 12 m ***Areas: 60 Sqm***
5.	Height/ Foundation Details:	**Side Height:** Side Height 2.5 m above the Ground Level and 75 cm below the Ground Level, **Centre Height:** Centre Height 3.5 m above the Ground Level and 75 cm below the Ground Level. ***Civil Works:*** 1:2:4 PCC works of size 20 cm X 20 cm X 75 cm for embedding vertical pipe below the ground Level and 30 cm PCC works above the Ground level.
6.	UV Plastic	UV Plastic 200 Micron is used to Cover the Roof of the Tunnel
7.	Insect Net	40 Mesh UV Insect is used for the Sides of the Tunnel.
8.	Apron Paper (if required)	UV Plastic 200 Micron is used as Apron Paper below the insect in Sides of the Tunnel.

*Note: The length, breadth and height could be varied according to the site and climate.

.....
Er. Suman Kumar Sah
Agriculture Enginer
Agriculture Development Directorate
Bagamati Province

4. Naturally Ventilated Poly House (नेचुरल्ली भेण्टिलेटेड पोलीहाउस)

Table 8: Specification of Naturally Ventilated Poly House

SN	Item	General Specification
1	Type/ Design	• Minimum top ventilation should be 10% of total Poly house. • Preferably Saw tooth design or Even Span, Ridge & Furrow depending upon suitability for naturally ventilated poly-house/greenhouse.
2	Grid	8 m * 4 m
3	Shape	2 meter wide vertical/curved pipe-60 mm OD/2 mm thick GI Pipe with 32 mm OD/2 mm thick horizontal GI pipe as supporting pipe.
4	Structure	Hot Dip Galvanized Tubular structure having wall thickness 2 mm with Galvanization of the Structural should not be less than 300 GSM.
5	Gutter	Gutter should be made of Galvanized sheet of 1.8 mm thickness in trapezoidal shape having 500 mm wide perimeter
6	Ridge Height	Ridge height should be 6 to 6.5 meter from foundation formation level.
7	Arches Overlap	Minimum overlap of top arch over second (small) arch should be 600mm to avoid direct rain entrance into the greenhouse from the vent.
8	Foundation	Pit size should be min 45 cm dia. Depth 75 to 90 cm or suitably altered depending upon Ground strata/level so as to ensure safety and stability of the structure even under extreme wind conditions
9	Civil works	PCC works 1:2:4 blocks of size 30 cm X 30 cm X 80cm for embedding vertical pipe/poll.
10	Curtain Opening/ Insect Net	To reduce the inside poly-house temperature increase, side ventilation, minimum 20% of floor area is necessary. Minimum 1.5 m clear side curtain opening is required. Side curtain should have min.200mm overlap to the bottom apron. This overlap is necessary to avoid direct entrance of rain into the green house and also to stop direct air entry in the nights. 40 mesh 80 GSM UV Stabilized Insect Net is used at the Top Vent Opening and Sides of Poly House.
11	Bottom Apron	To top the CO2 inside the greenhouse, bottom apron is necessary. It should have min 0.6 m height from the ground and max 1.5 meter depending upon the crop and climatic conditions.
12	Doors	Double Door Entry, Doors Should Be Made Of Form FRP Sheets or polycarbonate sheets. Opening and closing is either hinged or sliding in. width of door should be 1m and min height 2M.
13	Shade Net	UV stabilized 50 % shade net with manually operated mechanism for expanding and retracting. Size of Shade net should be equal to the floor area of Green House.
14	Plastic Coverings	UV stabilized 200 micron Plastic films is used to Cover the Green House. Options in green house film: UV stabilization, Diffusion/Clear (Light Transmission)
15	Profile/Poly fixing	C type profile made of GI should have-high strength with light weight-(approx 220-250 gm/m) smooth edges is used, Curve bottom proper for 1.25" to 3" pipes, Proper channel for spring and suitable for double spring locking 0.9mm thick. Self-drilling screw should be fixed on profile every 40 cm along the full length of the profile.
16	Spring	A plastic coated GI wire spring of 2.2-2.5 mm diameter, having good elasticity should be used for longer life that transferring less heat to the cladding materials as plastic films or shade net.
17	Air Circulation Fan	If required

Note: The length, breadth and height could be varied according to the site and climate.

.....
Er. Suman Kumar Sah
Agriculture Enginer
Agriculture Development Directorate