



THE ULTIMATE HOBBY GREENHOUSE FOR NORTHEAST FLORIDA

By: Terry Bottom

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INTRODUCTION

- ✖ The goal of this presentation is to share with the viewers our knowledge of greenhouse construction & maintenance, put in a format that will help you plan for a new greenhouse or make improvements to your existing house.



WHAT TO EXPECT

- ✘ We will look at several styles of greenhouses by different manufactures so as to give an idea of what is available out in the market place.
- ✘ We will also review components & systems common to our selected greenhouses, so that you can make a better selections when choosing a path to a new or improved greenhouse.



LET'S GET STARTED

WHAT & WHERE YOU CAN BUILD

✘ Know what your legal restrictions are before you get started.

1. Do your homework and be subtle before you formally declare your intentions to build.
2. Clarify the definitions of: 'Permanent Structure' 'Out-Building' 'Temporary Building or Structure', and what is a landscape feature (It may be a greenhouse to you, but a pergola to your HOA).
3. Review your Home Owners Association Deed Restrictions for guidelines & restrictions.
4. Clarify County or City building code guidelines.
5. Feel-out your neighbors about your plans to avoid future problems.

SITE SELECTION & DEVELOPMENT

SITE DEVELOPMENT

Choose an open area away from other buildings and trees – if possible.



SITE DEVELOPMENT

Orient on an East/ West axis



SITE DEVELOPMENT

Clear the site of ALL obstructions

Crown site so water runs away



SELECTING A STRUCTURE

SELECTING A MANUFACTURER

Our Favorite Greenhouse Manufacturers

- Imperial Builders & Supply, Apopka Florida
- Atlas Manufacturing, Alapaha Georgia
- Conely's Greenhouse Manufacturing, Montclair California

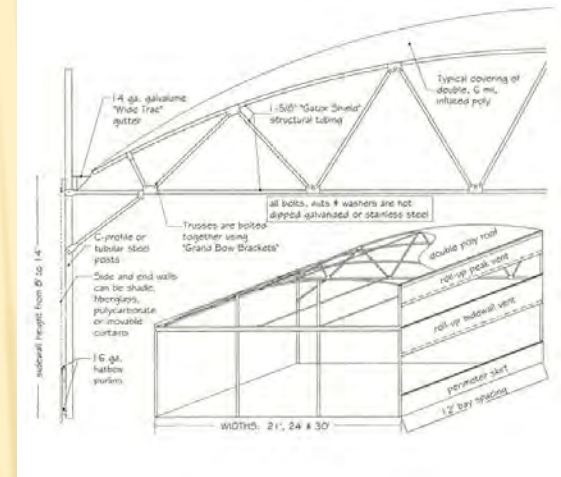


Free Standing Grand Truss Bow by: Imperial

SUGGESTED MODELS

✖ Grand Sawtooth by Imperial

576 sq/ft 24' x 24' w/ 10' side walls
16' tall, With peak vent



PROS & CONS

Grand Sawtooth by Imperial Builders :

PROS

- Made in Florida
- Lots of custom options
- Knowledge of Florida building codes
- Best design for maximum ventilation
- Pole in ground construction
- Gutters
- Local Shipping

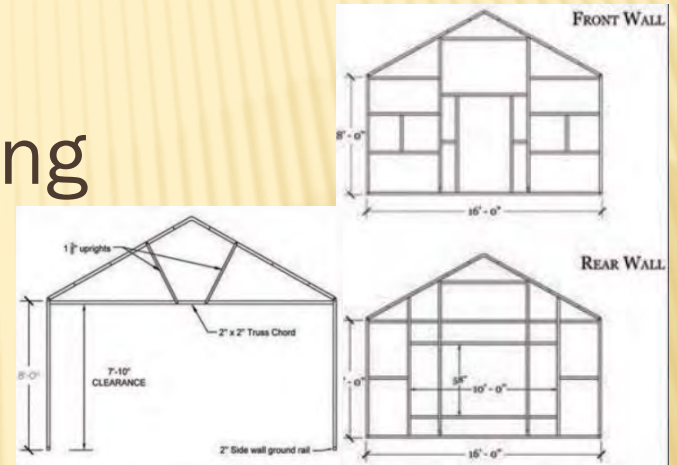
CONS

- Imperial's products are geared toward commercial construction & growing
- Best to have a contractor erect

SUGGESTED MODELS

✖ Scholar by Atlas Manufacturing

576 sq/ft 16' x 36' w/ 8' side walls
14'-6" tall, With peak exhaust fan.
Also available in 12'



PROS & CONS

Scholar by Atlas Manufacturing:

PROS

- Made in Georgia
- Lots of custom options
- Affordable shipping
- Atlas produces a full line of hobby greenhouses & accessories
- You deal directly with manufacture
- Considered a kit house
- 12' & 16' widths for narrow site location

CONS

- Conforming to Florida building codes can involve up charges for engineering
- Requires concrete footers, slab or beams to anchor to
- No ridge or peak vent, must have a peak exhaust fan

SUGGESTED MODELS

✕ The Easy Grow by Atlas Manufacturing

270 sq/ft 10' x 27' w/ 5' side walls 8' tall at peak. With peak exhaust fan & roll-up curtains



PROS & CONS

The Easy Grow by Atlas Manufacturing:

PROS

- Made in Georgia
- Lots of custom options
- Affordable shipping
- Atlas produces a full line of hobby greenhouses & accessories
- Classified as a temporary structure
- Easy to build
- Very affordable
- Fits in narrow space. 10' wide by 11' 16' & 27'

CONS

- Film covering for roof
- Narrow
- Less sturdy
- Low overhead hanging space

SUGGESTED MODELS

- ✖ Gable Executive By Conely's
576 sq/ft 24' x 24' w/ 10' side walls
16' tall, with ridge vent



PROS & CONS

3. Gable Executive by Conley's Manufacturing:

PROS

- Familiar with product
- Ridge vent available
- 10' sidewalls available
- Gutters
- Pole in ground construction

CONS

- Made in California
- Engineering drawings are difficult to acquire
- Expensive shipping
- Less custom options

MY FAVORITE IS

✕ Grand Sawtooth by Imperial Builders



GREENHOUSE FEATURES

COMMON GREENHOUSE DETAILS

- ✗ **Structural Frame:** Galvanized steel.
- ✗ **Roof:** Corrugated Polycarbonate panels.
- ✗ **Side walls:** Corrugated Polycarbonate panels.
- ✗ **Ridge vents:** If possible, for maximum ventilation
- ✗ **Peak Vent:** Automatic roll up poly woven curtain.
- ✗ **Wall Vents:** Automatic roll up poly woven curtain.
- ✗ **Single swing Door:** Aluminum with window or vent.
- ✗ **Sliding Door:** Polycarbonate covered aluminum frame w/ framed sliding screen door.

GREENHOUSE DETAILS

- ✖ **Structural Frame:** Galvanized steel.



GREENHOUSE DETAILS

- ✖ Roof: Corrugated Polycarbonate panels.



GREENHOUSE DETAILS

- ✖ Side walls: Corrugated Polycarbonate panels.



GREENHOUSE DETAILS

- ✖ Ridge Vent: open/close vent



GREENHOUSE DETAILS

- ✖ **Peak Vent:** Automatic roll up poly curtain.



GREENHOUSE DETAILS

- ✖ **Wall Vents:** Automatic roll up poly curtain with metal lath for shade & security.



GREENHOUSE DETAILS

- ✖ **Single swing Door:** Aluminum with window/screen or vents.



GREENHOUSE DETAILS

- ✖ Sliding Door: Polycarbonate covered w/ screen.



MECHANICAL SYSTEMS

MECHANICAL SYSTEMS

- ✕ Electrical
- ✕ Air Circulation
- ✕ Heating
- ✕ Water
- ✕ Cooling
- ✕ Benches & Racks

MECHANICAL SYSTEMS

✖ Electrical

1. 100 amp service with Breaker Box
2. Underground Feed
3. Master control panel
4. Individual controls



MECHANICAL SYSTEMS

✖ Air Circulation

1. HAF – Horizontal Air Flow Fans by Coolaire style # FH18B11
2. Peak exhaust fan with louvers, by Valutek style # 109847



MECHANICAL SYSTEMS

✖ Heating

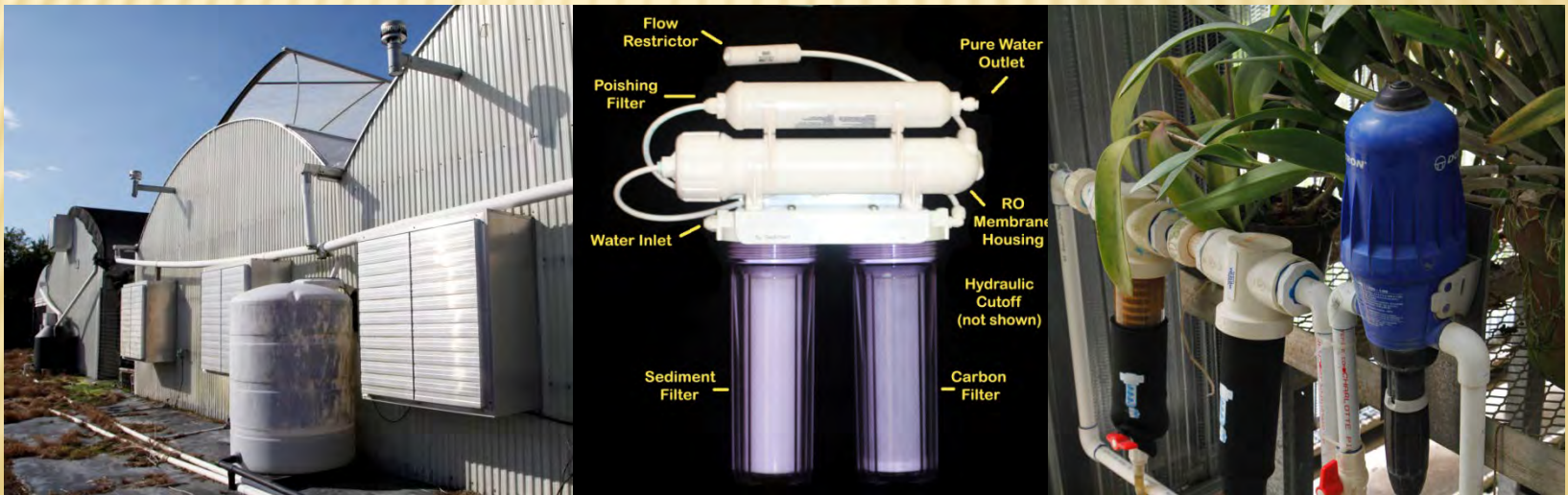
1. Gas Units: Shown is a 45,000 Btu Modine Hotdog HD45 Heaters with stainless Kit
2. 250 Gallon propane tank or Natural Gas hookup is needed



MECHANICAL SYSTEMS

✖ Water System

1. Tie-in to city water or well, 150 gallons needed for one watering cycle
2. 350 – 500 gallon under ground storage tank
3. Rain water storage (1" of rain off of 576 sq ft roof = 350 Gal.
4. 50 gallon per day Reverse Osmosis filtration system to supplement rain water
5. Dosatron Fertilizer Injector .05 – 14 Gpm
6. Hose inductor



MECHANICAL SYSTEMS

✕ Misting System

1. Overhead Misting for general watering & Summer cooling. With Filters & Timers included.
2. Under-bench Misting for summer cooling & Winter heating. With Filters & Timers included.



MECHANICAL SYSTEMS

✖ Benches & Racks

1. Stationary built-in metal frames with wire mesh tops.
2. Rolling top frames for extra space.
3. Metal tubes & wire mesh for hanging plants

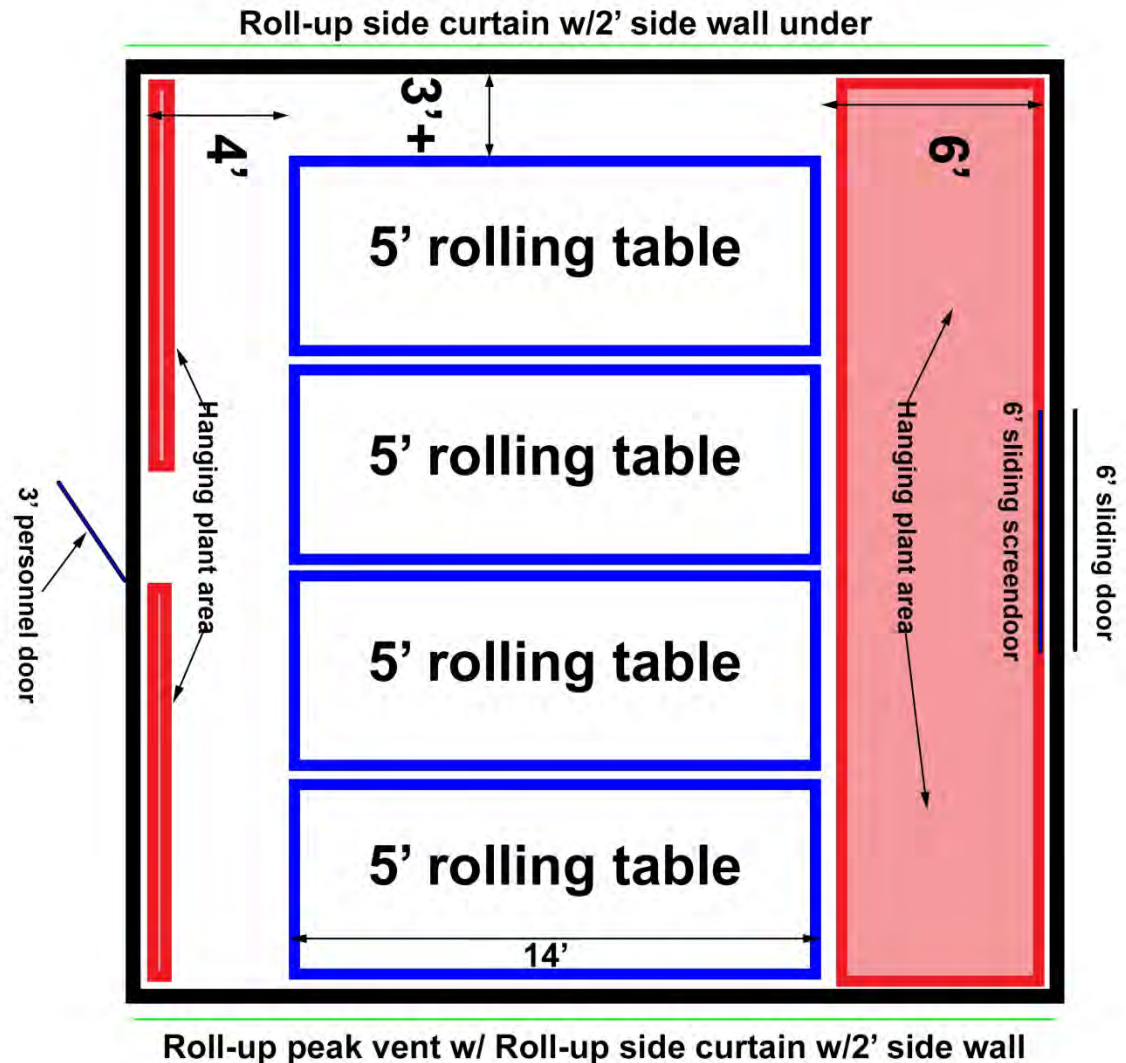


GREENHOUSE LAYOUT

LAYOUT

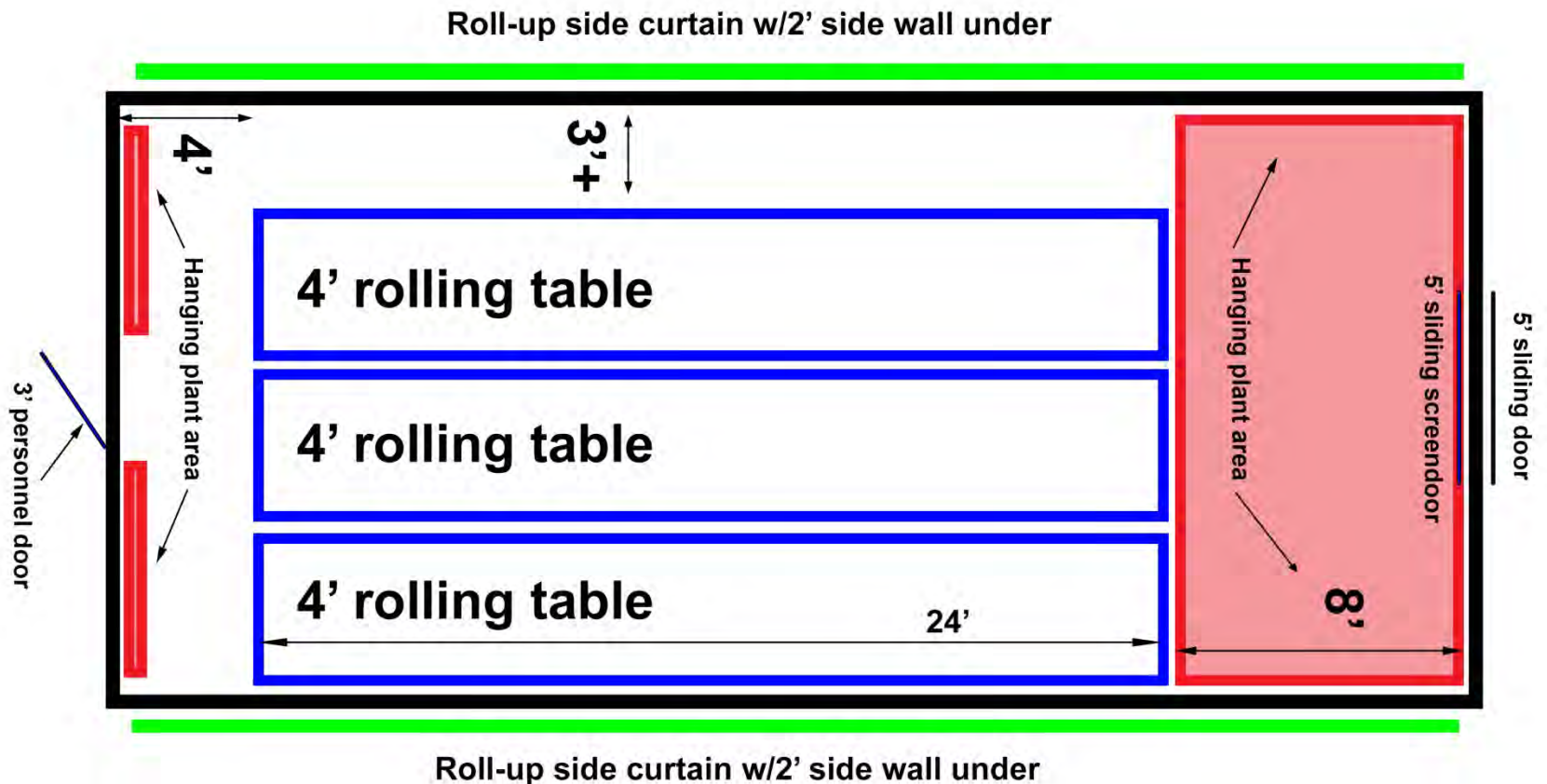
✖ 24' x 24'

Imperial Grand
Sawtooth



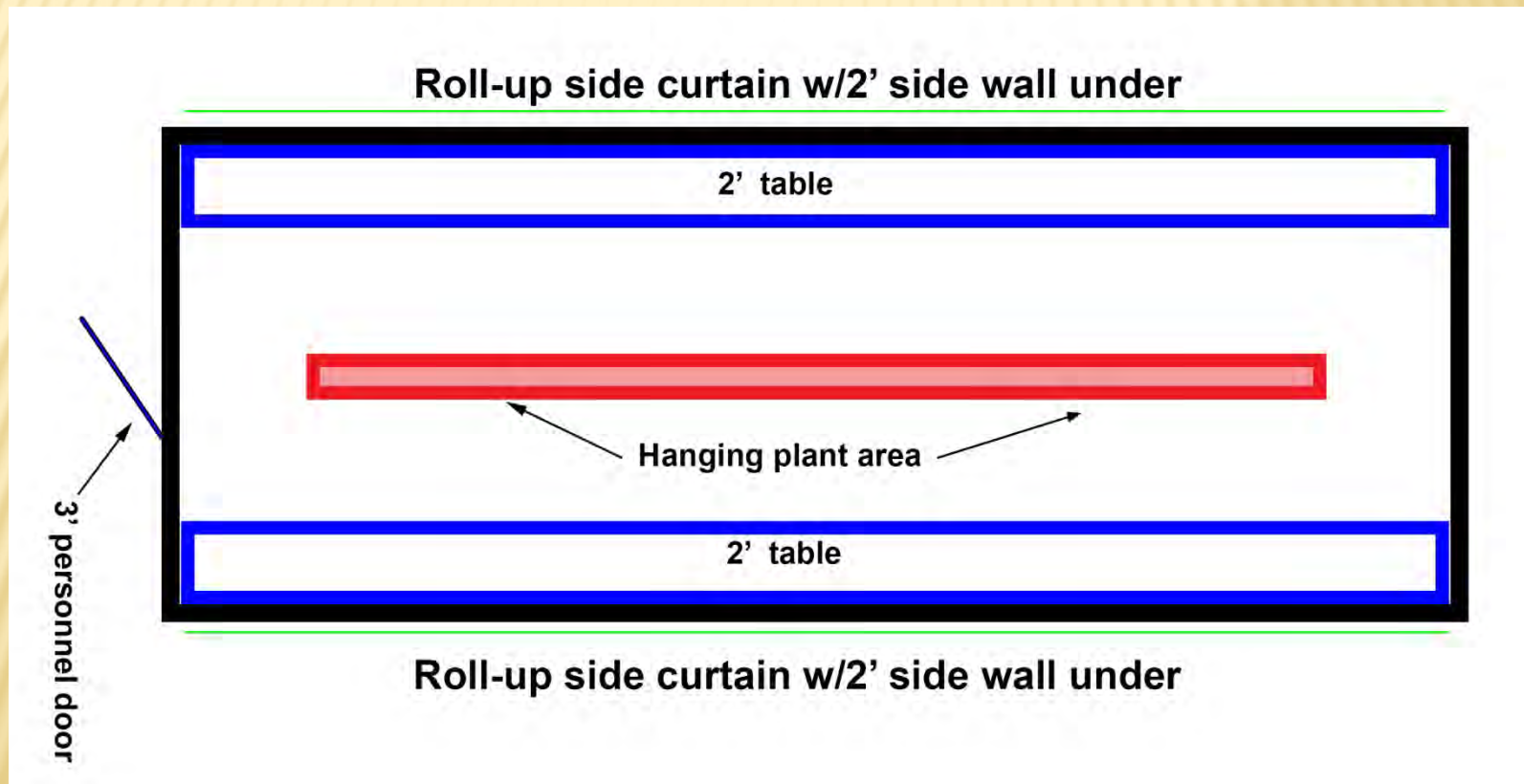
LAYOUT

✖ 16' x 36' Atlas Scholar



LAYOUT

✖ 10' x 27' Atlas Easy Grow



HELPFUL PRODUCTS

HELPFUL PRODUCTS

Aluminum U-channel with wiggle wire:

Easily convert any framed in space into a climate controlled growing area.

Makes greenhouse film, shade cloth and curtain installation fast and easy.

- Reusable latches hold material up to 20 mil thick.
- Creates a professional, finished appearance.

1-1/4"W

3"W

102197

104211

ALUMINUM POLY LATCHES

STK#	ITEM	EACH	50-99	100 & UP
102197	Single U-Channel 8'L	\$ 8.99	\$ 8.79	\$ 8.65
104211	Double U-Channel 8'L	20.39	19.65	19.15
102198	0.083 Stainless Steel Spring 8'L	2.15	2.05	1.99

Available from Imperial Building Supply, Atlas Greenhouse & FarmTek.

HELPFUL PRODUCTS

The Best Horizontal Air Fan is manufactured by American Coolair



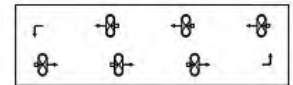
15 year old fan

Available from Long Greenhouse,
Greenhouse Megastore

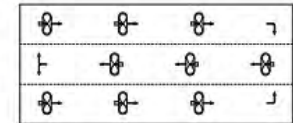
Circulator Fans

In greenhouses, proper air circulation helps plants grow better by increasing the amount of carbon dioxide at the plant level and reducing condensation on plant surfaces, reducing the risk of disease. Eliminate air stratification, reduce condensation, and eliminate hot and cold spots effectively and economically with American Coolair BK and FH fans. These fans feature aluminum propellers directly mounted to totally enclosed motors, steel guards that comply with OSHA standards, and cord sets that plug into standard 115 volt electrical outlets.

In general, the amount of circulation airflow needed is 2-1/2 to 3 CFM per square foot of floor space. Use the fans whenever the house exhaust fan system is not operating at full capacity. Circulator fans should be installed above the top of the crops to be cooled, but should be no closer than 1' from the roof. Use the figures to the right to determine the best fan layout for any type of building.



Typical Fan Placement - Individual House



Typical Fan Placement - Multiple-Gutter House

FH Horizontal Air Fan



Type FH Horizontal Air Fans feature heavy gauge galvanized steel motor mounts, fan guards, and fan casing to provide the durability and corrosion resistance needed for greenhouse environments. Each FH fan comes with a chain mounting kit.

Model	Fan Size	Motor HP	Voltage	Fan RPM	CFM
FH18B11	18	1/15	115	1,100	2,000
FH18G11	18	1/4	115	1,050	3,500

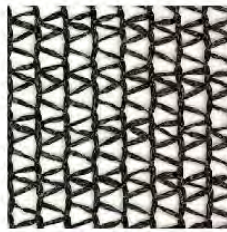
HELPFUL PRODUCTS

Shade Cloth

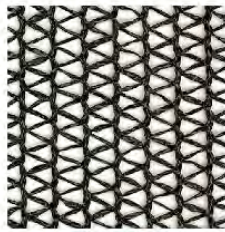
Black Knitted or woven polyethylene



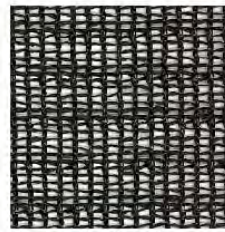
BLACK 30%



BLACK 40%



BLACK 50%



BLACK 60%



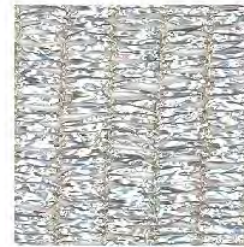
ALUMINET 30%



ALUMINET 40%



ALUMINET 50%



ALUMINET 60%



Aluminet



Svensson

Available from Imperial Building Supply, Atlas Greenhouse & FarmTek.

HELPFUL PRODUCTS

Galvanized Metal Products



Boulevards (Line rail Clamp)



Top Rail Sleeves



EMT Conduit



Perforated Galvanized Pipe Strap



Brace Band



Purlin Clamp



Split Tee (End Rail Clamp)



Galvanized Mechanical Tubing



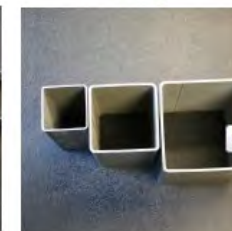
One-Hole Pipe Strap



Two-Hole Pipe Strap



Galvanized Square Tubing



Galvanized Welded Wire Fabric



Available from Imperial Building Supply, Atlas Greenhouse & FarmTek.

HELPFUL PRODUCTS

Poly Greenhouse Film

Most Poly Films have a 4 Year warranty. 6 mil poly covering is used for single and double layer applications. Available in widths ranging from 14' to 48' and lengths up to 150'. Custom sizes can be provided upon request.



Clear & White poly Film for roofs & walls



White woven polyethylene for curtains & doors

HELPFUL PRODUCTS

Galvanized Metal Lath Sheets

Used to cover roofs & walls, acts as a 50% Shade cloth. Ideal to fill in Wall vents with roll-up curtains. Keeps the creatures out & allows the air to flow. It can also be used for tabletops. Very Durable.



Available from Seacoast Supply

HELPFUL PRODUCTS

Electrical Controls for Air & Water

Timers & temperature controls for all of your climate devices



Available from Imperial Building Supply, Atlas Greenhouse

HELPFUL PRODUCTS

In-line Water Filters

Filters to keep your water free of solids



Available from Imperial Building Supply, North Florida Irrigation

HELPFUL HINTS

HELPFUL HINTS

Have a backup Plan:

1. Have a generator for backup power.
2. Have an extra piece of shade cloth to cover the roof.
3. Have extra film & repair tape.
4. Have a backup heat source.
5. Have extra Thermostats, breakers, relays, fuses, GFI's etc.
6. Have more than one source of water.
7. Have spare inductor, hose timers, batteries & spray wand.
8. Have a list with your back-up plan so someone will know what to do in your absence.
9. Have a person that can cover for you when you are gone.

HELPFUL HINTS

Hang 30% shade cloth in ceiling during Summer



March 21 to October 12

HELPFUL HINTS

Take advantage of overhead & wall hanging space



March 21 to October 12

HELPFUL HINTS

Keep under bench areas clean & free of vegetation



HELPFUL HINTS

A Wet Wall is a maintenance night mare. They are largely ineffective and expensive to run and maintain.



COST BREAKDOWNS

GRAND SAWTOOTH BY IMPERIAL

24' x 24' Covered with 8mil corrugated polycarbonate	\$7,796
With personnel door, & 6' sliding door w/ screen	
2 – 8' x 24' ' Roll-up Curtain systems	870
4' x24' Auto Peak roll-up curtain	841
80,000 BTU Modine Heater w/ install kit	1,255
4 – 5' x 14' rolling benches	1,308
Hanging rack system	375
28' x 25' Aluminet Shade Cloth 50% w/ mounting hw	371
2 Coolair HAF Fan	450
24' x 24' Ground Cover	205
100 AMP electrical service	1,800
Install ¾" water line	200
Concrete chain wall	1850
Erection Charge	7,973
TOTAL (sales tax included)	\$23,444
FOB St. Augustine FL	

❖ Engineering drawings & permits are not included

SCHOLAR BY ATLAS

16' x 36' Covered with 8mil twin wall polycarbonate	\$9,298
With door w/ shutters,	
2 – 30' Roll-up Curtain systems	737
18" exhaust fan	449
80,000 BTU Heater	988
Heater vent pipe kit	135
Johnson Controls Thermostat	68
3 – 4' x 24' rolling benches	1,339
Hanging rack system	275
Shade Cloth 50% Aluminet	371
3 Coolair HAF Fan	675
16' x 37' Ground Cover	205
100 AMP electrical service	1,800
Install ¾" water line	200
Concrete chain wall	1850
Erection Charge	7,000
TOTAL	\$25,400
Shipping	1,060

❖ Engineering drawings & permits are not included

EASY GROW BY ATLAS

10' x 27' Covered with 6mil poly	\$1,820	10' x 16'	\$1,210
With door w/ shutters, 3 overhead purlins.		10' x 11'	\$1,080
2 – 27' Roll-up Curtain systems	664		
18" exhaust fan	449		
30,000 BTU Heater	561		
Heater vent pipe kit	125		
Johnson Controls Thermostat	68		
2 – 2' x 27' stationary benches	410		
4 – 27' hanging basket rails	170		
Shade Cloth 50% Aluminet	111		
1 Coolair HAF Fan	225		
10' x 29' ground cover	95		
50 AMP electrical service	1,000		
Install ¾" water line	200		
Anchoring system	125		
Erection Charge	1,000		
TOTAL	\$7,013		
Shipping	560		
Pickup – pay sales tax	276		

**WHAT ELSE CAN I DO
FOR NOT SO MUCH
MONEY?**

RECYCLED SPECIAL

Used frame covered in recycled polycarbonate with new metal lath & new roll-up curtains. Cost less than \$500.

11' x 16'



SOURCE LIST

1. Imperial Builders & Supply, Apopka , FL
www.imperialbuilders.com, 407-889-0453
2. Atlas Manufacturing Inc. Alapaha, GA
www.atlasgreenhouse.com 800-366-9902
3. Farmtek/Growers Supply Dyersville, IA
www.GrowersSupply.com 800-245-9881
4. Long's Greenhouse Entp. Inc. Jacksonville, FL
800-814-0509
5. Greenhouse Megastore, Danville IL
www.greenhousemegastore.com , 888-281-9337