



**Rough
Brothers,
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**Design,
Manufacturing,
Systems,
Construction**

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The A-Frame

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1. Introduction

The A-Frame by Rough Brothers provides the simple style of a traditional greenhouse structure with the technology of a modern system, and is widely used in retail, education, production, and head house applications. With a variety of glazing options available including glass, 8mm or 16mm polycarbonate or acrylic, or insulated panel, the A-Frame is adaptable to meet your needs and achieve the look you want.

2. Project Photo Gallery

3. Photo Gallery

4. Why Rough Brothers?

By working closely with you, we can help you select, construct and maintain the optimal structures and systems to meet your needs. Whether you are expanding your growing range, giving your garden center a fresh look or just starting out, Rough Brothers' experience is second to none. Our people are a diverse group; backgrounds include engineers, educators, garden center managers, and growers, all working together to help you reach your dreams. From thermostats to computer-driven environmental controls or hand-watering to Ebb and Flo Benches, we can help you determine your needs.

5. Features

With a 6/12-roof slope, the raised peak of the A-Frame provides increased air volume, therefore less fluctuation in air temperature, providing the ideal environment for you, your plants, your customers, your employees, and your students. Standard and custom widths and various heights are available to accommodate your needs.

Designed to readily accept hanging baskets, booms, echo systems, and other needed equipment, the Rough Brothers' A-Frame truss system can be designed to support each piece of supplementary equipment. This truss has also been designed for use with heat retention and shading systems, minimizing summer heat gain and winter heat loss.

Rough Brothers is proud of our reputation for superior quality. Standard sizes

include 20'6", 24', 30', 36', 42' and 50'; complete design specifications and structural details are available.

6. Uses & Application

- Growers & Nursery Management
- Retail Garden Centers

7. Specifications

7.1. Available Widths

The standard widths of the A-Frame structures are 20'-6", 24'-0", 30'-0", 36'-0", 42'-0" and 50'-0" wide. Custom widths are always available. The structural details below are based on a 30'-0" width.

7.2. Pitch

Standard roof pitch is a 6/12 pitch, custom pitch is available.

7.3. Gutter Posts

Posts are to be set directly into the concrete pier or on post stubs in the concrete pier. The pier size will be determined by loading requirements determined by engineering.

7.4. Post Top

A cast post top with an integral drip gutter support will bolt to the post and support the gutter saddle.

7.5. Gutter Saddle

A galvanized steel gutter saddle will be at each post to splice the gutter and to bolt to the post top. The gutter saddle has 8 holes to bolt to the gutter. The seal between the gutter saddle and the gutter is created using a black "puttylastic" strip.

7.6. Gutters

The gutters will be set level to facilitate in the mounting of equipment in the

greenhouse.

7.7. Condensation Gutter

An aluminum extruded drip gutter is located under each gutter.

7.8. Downspouts

Cast aluminum downspout is used where downspouts are required. The hole in the gutter is predrilled for ease of installation of the downspout.

7.9. Gutter Extensions

There are many options in the gutter extensions depending on the situation:

1. Open ended to let the water run off the greenhouse
2. Welded end with no downspout
3. Welded in with a downspout

7.10. Trusses

At each interior post there will be a truss which shall span across the structure at 12'-0" centers. Trusses to be galvanized steel tubing with welded construction. Each truss to be constructed of (2) halves, slipped together on site. The truss provides simplified installation of additional equipment such as:

- Hot Water Heating Systems
- Shade and Energy Curtains
- Watering Booms
- Hanging Basket Systems
- Monorails

7.11. Purlins

Galvanized "Z" purlins to be used up the slope to span between the trusses.

7.12. Roof Bars

Aluminum extruded roof bars with the following depending on the glazing system:

- Dry glazed glass system with bar spacing at 24", 28.8", 30" or 36".
- 8mm polycarbonate system with aluminum cap. Bar spacing is 4'-0" on centers.

Rafter caps provide EPDM gasketing over the panels and a rigid PVC thermal break at the attachment to the rafter. Rafter caps are held in place with stainless steel screws on 18" centers.

- 16mm acrylic system with aluminum cap. Bar spacing is 4'-0" on centers. Rafter caps provide EPDM gasketing over the panels and a rigid PVC thermal break at the attachment to the rafter. Rafter caps are held in place with stainless steel screws on 18" centers.

7.13. Ridge

An aluminum extruded ridge profile is used.

7.14. Roof Glazing Options

- 4mm tempered glass
- 6mm laminated glass
- 16mm acrylic/polycarbonate
- 8mm polycarbonate
- corrugated polycarbonate

7.15. Ventilation

- No vent used for mechanical ventilation
- Single continuous vent on one slope of the greenhouse
- Double continuous vent on both slopes of the greenhouse

7.16. Vent Closure

Roof vent sash to be continuous aluminum bottom rail with weather stripping gasket closure.

7.17. Rack & Pinion

A positive drive system shall be used with an easily understood and maintained rack and pinion drive system. The racks shall be a U-profile galvanized steel rack.

7.18. Drive Motor

Each roof vent will be driven with a single drive motor.

7.19. Control Box

Each motor will have a reversing motor control box to wire the motor.

7.20. Computer Control

This house can be controlled with an environmental control computer system.

8. Equipment

- Benching
- Shade & Curtain Systems
- Enviromental Controls
- Heating
- Irrigation
- Cooling
- Plant Growth Lighting
- Material Handling

9. Our Services Include

- Design & Build
- Systems Integration
- Project Management
- Installations
- Maintenance