

MINIMUM SPECIFICATIONS

A) GREENHOUSE STRUCTURE: (EDUCATOR)

30' X 96' Galvanized Steel Frame Consisting of:

- A. Column Post: Allied 2"x 4" Rectangle 6' Spacing
- B. Bows: Allied 2"x 3" Rectangle 6' Spacing
- C. Trusses: Allied 2"x 2" Square, Spans 18'4" Wide
- D. Uprights: Allied 1 3/8" Round
- E. Purlins: 12 Runs Allied 1 3/8" Round
- F. Side Wall Eave Height: 8'
- G. Ridge: Extruded Aluminum Ridge Cap
- H. Roof Glazing System: Extruded aluminum roof channels spaced 6' apart
- I. Roof Glazing: 8mm clear twin wall no drip polycarbonate panels
- J. Eave Glazing System: Aluminum extruded eave channels
- K. Eave Glazing: 8mm clear twin wall no drip polycarbonate

B) END GABLES:

- 1. North End Gables: Framed for 2 – 48" Exhaust Fans and 1 – 42" x 6'6" Personnel Door
 - A. Framing Studs: Allied 2"x 2" Square
 - B. Horizontal Purlins: Allied 2" x 2" Square
 - C. Base Extrusion: Aluminum Base Extrusion
- 2. South End Gables: Framed for 5' X 25' Evaporative Cooling System and 1 – 42" x 6'6" Personnel Door
 - A. Framing Studs: Allied 2" x 2" Square
 - B. Horizontal Purlins: Allied 2" x 2" Square
 - C. Base Extrusion: Aluminum Base Extrusion

End Gable Glazing: 8mm clear twin wall no drip polycarbonate panels

C) VENTILATION:

- A. 2 – 48" Quietaire GCS Slant Wall Exhaust Fan 1 HP; 19563 CFM each at .10 SP 110v or 220v. 1 – 2 Speed & 1 – 1 Speed; equip fan with shutter & guard; a minimum of 1.3 air exchange per minute at .10 inches of static pressure.
- B. 1 – 39" Motorized gable shutter located above cooling pad.
- C. 5' x 25' Stainless Steel Quietaire Evaporative Cooling System with trough, plate, and 6" thick pad. Use a 65/15 degree water/air flow with a 420 per maximum face velocity.
- D. 5' x 25' Automatic Wall Vent located behind the evaporative cooling system; rack & pinion drive components.

D) HEATING:

- A. 1 – 300,000 BTU Natural Gas high efficiency heater with stainless steel burner; incorporate a time delay to allow the aluminized steel heat exchanger to rise to a certain temperature before fan is engaged; heater equipped with a propeller fan with a guard; include necessary vent pipe & hanger assembly. Design to maintain an inside temperature of 68 degrees with an outside temperature of 0 degrees and a 15 mph wind. Equip with power vent and spark ignition.
- B. Horizontal Air Flow Fans (HAF): 4 – 18" 3 Bladed fans complete with guard and a split capacitor 115 Volt 60 HZ motor, .09 amps develops 2000 CFM. Fans circulate the air to maintain a consistent temperature inside the greenhouse and reduce stratification.

E) DOORS:

A. 2 – 42" x 6'8" A.D.A. compliant personnel doors with lock & key. Doors are three quarter tempered glass, designed to open toward inside of greenhouse.

F) AUTOMATIC TEMPERATURE CONTROL:

A. Five stage thermostat control individually labeled for simple operation and no overlapping of heating or cooling units. System will be wired for 120v, with easy access for adjusting set limits.

G) HANGING BASKET RAILS:

A. Provide 6 runs of 1 3/8" Allied tubing running 84' in length.

H) SHADE CLOTH:

A. Provide a 40' x 98' 63% Shade cloth with grommets placed 2' apart. The shade cloth shall be applied to the roof of the finished structure and be attached to the midpoint on side wall for easy installation and removal. Include lace rope for attaching the shade cloth to the greenhouse.

I) EMERGENCY LIGHTING/EXIT SIGNS/FIRE EXTINGUISHER:

A. Located above doors and will illuminate the word EXIT at all times with emergency lights powered by a rechargeable battery. Emergency lights should come on when the power is interrupted for any reason. One multi-purpose dry chemical A:B:C rated 10 lb fire extinguisher charged with formulated siliconized dry chemical UL rated for fighting paper, wood, fabric, grease, flammable liquid, and electrical fires.

J) BENCHES:

A. Benches framed with aluminum extrusions and 1x2 rectangle galvanized steel. Bench mesh is 3/4" x 13 gauge galvanized expanded metal. Bench cross braces made of 1x2 rectangle tubing and spaced 2 ft. apart, bench legs are made of 1x2 rectangle tubing.

<u>Quantity</u>	<u>Size</u>	<u>Description</u>
2	3' x 78'	Continuous Bench (Sidewall)
16	6' x 9'6"	Portable Bench

K) IRRIGATION: See attached for details.

L) INSTALLATION: See attached for details.

The greenhouse described above must be designed to withstand Wind Loads and Ground Snow Loads in accordance with the International Building Code (IBC) 2006 for a Category 1 continuously heated greenhouse. It will be the contractors' responsibility to comply with State building codes including seismic standards as required by the State Fire Marshall's Office. Documentation of compliance must be submitted prior to start of construction.

IRRIGATION SYSTEM

A) Mist: Recommended Systems:

(1) Complete system with brass high-pressure regulator, filter, punch tool, PVC pipe, gate valves, zone controller, and solenoids. Mist irrigation plumbed above benches with 36" long misters spaced 4' O.C.

B) Drip: Recommended Systems:

(1) Complete with brass high-pressure regulator, filter, punch tool, PVC pipe, gate valves, zone controller, and solenoids. Each bench and overhead hanging basket line will be controlled individually and have manual shut off. Hanging basket drippers are to be adjustable flow and have the capacity to be turned off. Drippers are to be spaced 24" O.C. and 24" long.

C) Fertilizer Injector:

Installed min of 30" off ground for easy access; all irrigation outlets are serviced through fertilizer injector. Unit provides a maximum of 30 GPM of fertilizer/water solution output. Unit must be installed with bypass and gate valves for flexibility. System is Dosmatic A30.

D) Controller: Sterling 8

E) Faucets: 8 each

4 – Plumbed to Injectors

4 – Plumbed to Clear Water

F) Include Labor for Above

INSTALLATION

COMPLETION:

- A. Will provide all labor and material to erect greenhouse using professional greenhouse builders experienced in every aspect of the "Educator" according to manufacturer's specifications.
- B. Upon completion of work, test all equipment for proper operation.
- C. Instruct school personnel in all aspects of operation and maintenance of greenhouse. Provide two copies of operation and maintenance manuals on coverings and equipment.

ELECTRICAL:

1. Will furnish all labor and materials to install 4 – 115 volt receptacles, one on each end of greenhouse and one on each side of greenhouse.
2. Will furnish all labor and materials to properly wire all greenhouse equipment into 100 amp breaker box.
3. Will furnish all labor and materials to provide necessary keyless porcelain lamps with guard installed 12' apart down length of greenhouse. 150 watt bulbs included.
4. National electric codes will be adhered to throughout the greenhouse.

FLOORING:

1. Will furnish all labor and material for concrete slab.

FULL SLAB WITH GRATE DRAIN

1. Concrete slab to be a minimum of 4" thick with perimeter footer of 16" wide x 12" deep.
2. One run of 2" wide PVC grate drain
3. Grate drain will begin approximately 14" from both ends of house and exit the slab by 5'.
4. Slab will be sloped accordingly to allow for proper drainage to center grating.
5. 3 runs 5/8" rebar around perimeter footer. Rebar to overlap corners by minimum of 24".
6. All concrete is to be reinforced with wire located approximately midpoint of p our thickness.

PLUMBING:

1. Will furnish all labor and material to provide 8 spigots; 4 plumbed to injectors, 4 plumbed to clear water supply.
2. Will furnish all labor and material to plumb evaporative cooling system.
3. Will furnish all labor and material for installation of irrigation system.

DRAINAGE SYSTEM:

1. Contractor will furnish drain system to exit structure by 5 feet.

SCHOOL SYSTEM RESPONSIBILITIES

ELECTRICAL:

1. School will furnish 120/240-volt single phase electric supply within 5' of greenhouse
2. 50' of additional electrical cable to be provided to effectively connect power without splice

PLUMBING:

1. School will furnish minimum 1" PVC water supply within 5' of greenhouse. Minimum of 55 psi of pressure required.

DRAINAGE:

1. Local system will perform final connection of drainage system.

GAS LINE:

1. Will furnish gas line for heater to within 5' of greenhouse.
2. Will make final hook-up of heater.

SITE PREPARATION:

1. Schools will flag underground power lines, water lines, gas lines, and drain lines.
2. Will provide finished grade site free of weeds, trees, and debris.
3. Will provide finished site to be built upon.
4. Will have access to drive concrete truck around perimeter of potential greenhouse site.
15' from building 13' height clearance
5. Access to work site 7:00 a.m. to 6:00 p.m.
6. Access to temporary restrooms
7. Dig permits will be provided where required.

UTILITIES:

1. Power supply, gas line, and water supply will be run to site prior to beginning of construction.