

GreenRoo™

Wind-Driven Turbine Ventilator



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GreenRoo™ Table of Contents

GreenRoo™ Table of Contents 2

GreenRoo™ Product Details..... 3

GreenRoo™ Wind Driven Turbine Self-Flashing - Submittal Data..... 4

GreenRoo™ Wind Driven Turbine with Curb Cap - Submittal Data 5

GreenRoo™ Damper Options 6

GreenRoo™ Cost Comparison 7

GreenRoo™ Assembly and Installation Instructions 8

GreenRoo™ Assembly and Installation Instructions cont. 9

GreenRoo™ Assembly and Installation Instructions cont. 10

GreenRoo™ Assembly and Installation Instructions cont. 11

GreenRoo™ Base Framing System – Single Purlin Space 12

GreenRoo™ Base Support System – Single Purlin Space..... 13

GreenRoo™ Pictures..... 14

GreenRoo™ Wind Driven Turbine Ventilator Guide Specification 15

GreenRoo™ Product Details

PRODUCT DESCRIPTION

The GreenRoo™ uses light gauge, marine grade aluminum that is generations ahead of the old heavy gauge "onion" units. The light gauge material spins more easily in the wind and offers a huge capacity enhancement over the "onion". In addition the unit's light weight places virtually no wind load on a building's roof eliminating the need for costly support steel. Moffitt will be happy to provide independent tests and models for performance including;

- Water penetration tested per AS4740:2000, Class A at 112 miles per hour
- Air capacity tested per AS4740:2000 Appendix D & E
- Wind load tested per AS4740:2000

Watch the video at moffittcorp.com/greenroo to see the GreenRoo™ in action.

STANDARD FEATURES

- Corrosion Resistant Lightweight Aluminum
- Anodized steel Bearing Support Spider
- Stainless steel shaft.
- Vertical turbine blades.
- Available 12", 24" & 36" throat sizes
- Capacities: 500 – 10,000 CFM
- Tandaco Pre-Packaged Double Row Ball Bearing System
 - Main Bearings: Double row ball bearings
 - Spider Bearings: Single row ball bearings
- Integral Base Flashing
- Flashing: Aluminum, included
- Recommended unit spacing is 15 ft.

OPTIONAL FEATURES

- Damper
 - Motorized
 - Manual
- Coating
 - Epoxy
 - Urethane
- Screen
 - Bird Screen
 - Insect Screen
- Curb caps to fit new or existing roof curbs
- Extended Throat for pitches above 22°
- Adaptor kit for standing seam, floating roof system

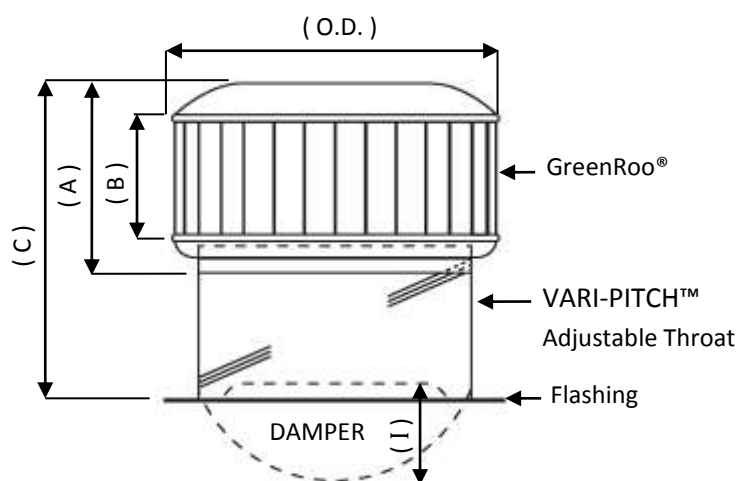
PRODUCT BENEFITS

- No Operating Costs
- No Wiring Costs
- No Starter Costs
- No Maintenance Costs
- No Noise
- Weighs Just 60 lbs.

INDUSTRY APPLICATIONS

- | | | |
|------------------------------|-----------------------|--------------------------|
| • Chemicals | • Gypsum Facilities | • Steel & Metal Industry |
| • Distribution & Warehousing | • Plastics | • Storage |
| • General Manufacturing | • Power Generation | • Universities & Schools |
| • Glass Plants | • Pulp & Paper Plants | • Utilities |

GreenRoo™ Wind Driven Turbine Self-Flashing - Submittal Data



Model #H_____” Dia. Throat
Quantity Required _____

Performance

- Stack Height: _____ Ft.
- Temp. Diff.: _____ Deg. F
- Avg. Wind Speed: _____ MPH
- CFM/Unit: _____ CFM
- Roof Slope: _____ In 12”

(I) - Minimum damper clearance required

MODEL	THROAT	DIMENSIONS (INCHES)					FLASHING	WEIGHT
		A	B	C	O.D.	I		
H-12	12 DIA.	15	7	20	19	6	23 5/8 x 19 5/8	15 lbs.
H-24	24 DIA.	19	11	29	30	12	39 3/8 SQ	30 lbs.
H-36	36 DIA.	25	16	37	44	15	47 1/2 SQ	60 lbs.

STANDARD FEATURES

- Aluminum construction
- Stainless steel shaft
- Vertical turbine blades
- Rotation Bearings:
 - Main Bearings: Double row ball bearings
 - Spider Bearings: Single row ball bearings
- VARI-PITCH™ adjustable throat up to 22° slope.
- Aluminum flashing, included
- Recommended unit spacing is 15 ft.

OPTIONAL FEATURES

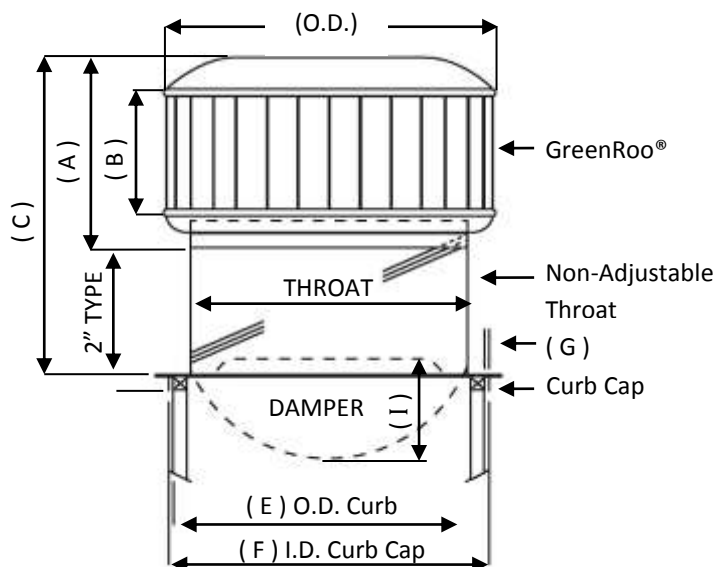
- Damper
 - Motorized
 - Manual
- Screen - Located in bottom of turbine.
 - Bird Screen
 - Insect Screen
- Powder Coated Paint (standard white color).
 - Epoxy
 - Urethane
- Curb Cap Base- Curb SQ. O.D. dimension required.

NOTES

- The GreenRoo throat overlaps the VARI-PITCH™. The height listed above is with the maximum overlap (lowest overall height). VARI-PITCH™ to suit a roof slope also reduces its height.
- The VARI-PITCH™ sits inside the throat of the GreenRoo™ ventilator. Therefore the total height of the VARI-PITCH™ is reduced by the overlap of the GreenRoo™ throat. This overlap can vary from 2” – 4” 3/8.
- Bird screen is not recommended for normal applications as rotating head prevents birds from entering.
- Single disc style dampers (optional feature) require a 24” height non-adjustable throat.

All specifications are subject to change without notice unless approved in submittal by Moffitt Corporation, Inc.

GreenRoo™ Wind Driven Turbine with Curb Cap - Submittal Data



Model #H_____” Dia. Throat
Quantity Required _____

Performance

- Stack Height: _____ Ft.
- Temp. Diff.: _____ Deg. F
- Avg. Wind Speed: _____ MPH
- CFM/Unit: _____ CFM
- Roof Slope: _____ In 12”

(I) - Minimum damper clearance required

MODEL	THROAT	DIMENSIONS (INCHES)								WEIGHT
		A	B	C	O.D.	E	F	I	G	
H-12	12 DIA.	15	7	20	19	15	15 1/2	6	23 5/8 x 19 5/8	15 lbs.
H-24	24 DIA.	19	11	29	30	28	28 1/2	12	39 3/8 SQ	30 lbs.
H-36	36 DIA.	25	16	37	44	39	39 1/2	15	47 1/2 SQ	60 lbs.

STANDARD FEATURES

- Aluminum construction
- Anodized steel Bearing Support Spider
- Stainless steel shaft:
- Vertical turbine blades:
- Rotation Bearings:
 - Main Bearings: Double row ball bearings
 - Spider Bearings: Single row ball bearings
- Flashing: Aluminum, included
- Recommended unit spacing is 15 ft.

OPTIONAL FEATURES

- Damper
 - Motorized
 - Manual
- Screen – Located in bottom of turbine.
 - Bird Screen
 - Insect Screen
- Powder Coated Paint (standard white color)
 - Epoxy
 - Urethane
- Curb Cap Base- Curb SQ. O.D. dimension required.

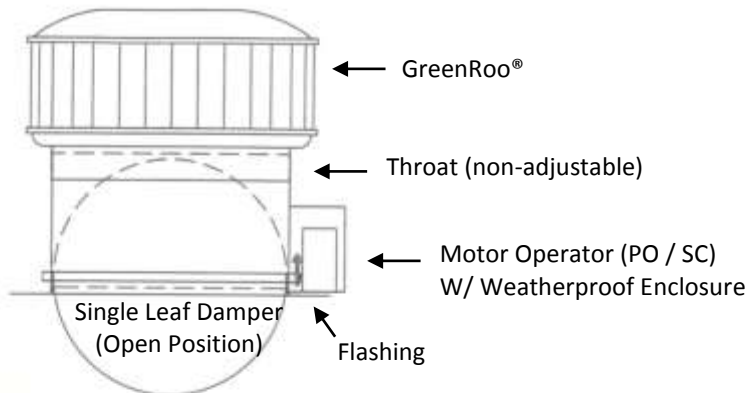
NOTES

- Non-Adjustable throat with curb cap design

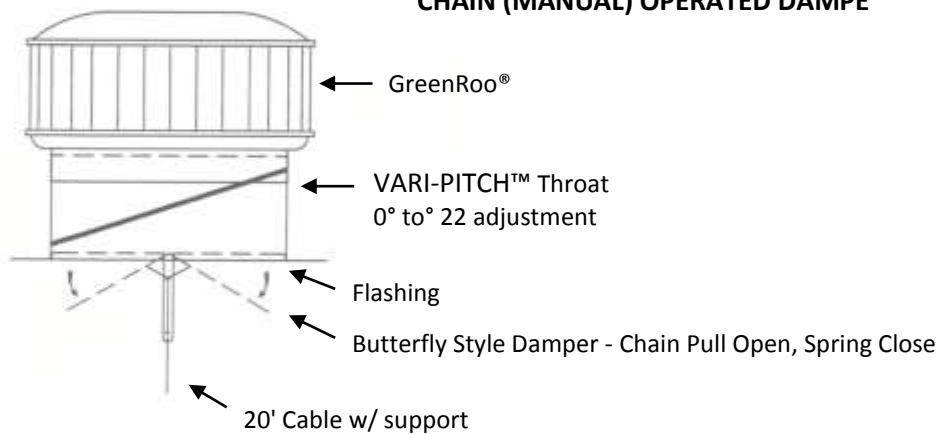
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GreenRoo™ Damper Options

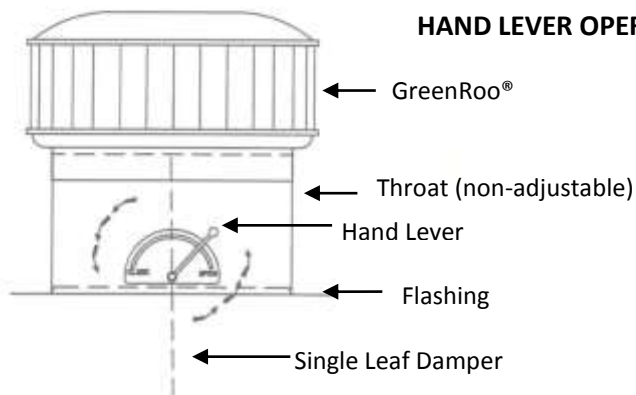
MOTOR OPERATED DAMPER



CHAIN (MANUAL) OPERATED DAMPER



HAND LEVER OPERATED DAMPER



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GreenRoo™ Cost Comparison

Example:

36" Upblast Axial Fan vs. 36" GreenRoo™ turbine vent. 6 air changes per hour for a 100' wide × 100' long × 26' high general manufacturing plant. Total CFM required is 26,000 CFM. Plant is located in Fairfield, CA. Achieve a 10°F temperature rise above ambient.

Fan Option (26,000 CFM Total)		GreenRoo® Option (26,000 CFM Total, 9mph wind)	
(2) 36" dia. 1.5 HP Upblast Fans	\$2,600	(4) 36" dia. GreenRoo®	\$5,600*
(2) Sloped roof curbs	900	Self Flashing Base	0
Starter/ Pushbutton, Conduit, Wire	4,200	Starter/ Pushbutton, Conduit, Wire	0
Install Framing/curb/fan	6,760	Install Framing/curb/fan	4,800
Install electrical	8,950	Install electrical	0
1 st year electrical	1,200	1 st year electrical	0
1 st year Maintenance – 2 hrs.	<u>100</u>	1 st year Maintenance – 2 hrs.	<u>0</u>
	\$24,710		\$10,400
"Out of Warranty"		"Out of Warranty"	
1st year cost**	1,300	1st year cost**	0
2nd year cost**	1,500	2nd year cost**	0
3rd year cost**	1,500	3rd year cost**	0
4 th year cost**	1,500	4 th year cost**	0
5 th year cost	<u>1,500</u>	5 th year cost	<u>0</u>
Total cost after 5 years**	\$32,010	Total cost after 5 years**	\$10,400
Equipment Payback	None	Equipment Payback	Immediate
Sound	85 dba	Sound	Absolutely None
Warranty	1 year	Warranty	1 year
Weight (approximate)	500 lbs. each	Weight (approximate)	60 lbs. each
**Yearly cost includes electrical consumption.		*Equipment price is budgetary, call for firm price	

Summary

- Immediate equipment cost payback
- Lower installed initial cost
- No electrical required
- Better exhaust distribution
- The GreenRoo™ costs an average of 67% less to install than fans on retrofit applications!

Note: The performance of the GreenRoo™ vent is based on a 9mph wind flew, which is the daily average for Fairfield, CA. Afternoon is when most ventilation is required and often performance will exceed level. Operating expense is based on 7 cents per KW/HR and 24/7 operation. No freight is included in either scenario. Installation costs will vary based on labor area. Estimate is based on normal conditions.

GreenRoo™ Assembly and Installation Instructions

STEP 1:

Select the position on the roof. Lay the base flashing in place and mark the position of the opening. Always consider the method of weatherproofing for the opening; installing close to the ridge or apex is the easiest way to weatherproof. Cut the hole. If the roof cladding is metal "turn up" the corrugations or pans.

Ridge or apex
Best position for
weatherproofing

Turbine

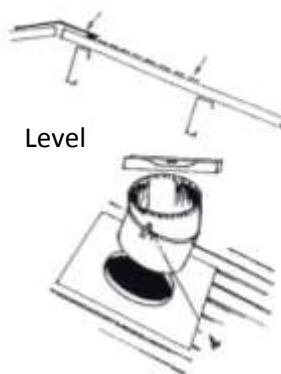


Throat Section

Base Flashing

STEP 2:

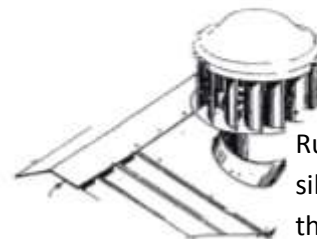
Sit the throat section on the roof and rotate the top half until the throat is horizontal. It is best to use a level for this purpose. When satisfied, secure the two halves of the throat section together to prevent further rotation. This is done by drilling through the existing lugs and inserting a screw or rivet.



Insert screw when level

STEP 3:

Place the throat section on the base and recheck for level. Fix the throat section to the base flange with at least four fasteners. Slide the base flashing into its final position. Apply an unbroken bead of silicone or other sealant to all lap areas, and fasten the base flashing securely to the roof cladding. Fit corrugation closure strips to all open corrugations on the low side of the base flashing.



Run bead of
silicon around
throat joint

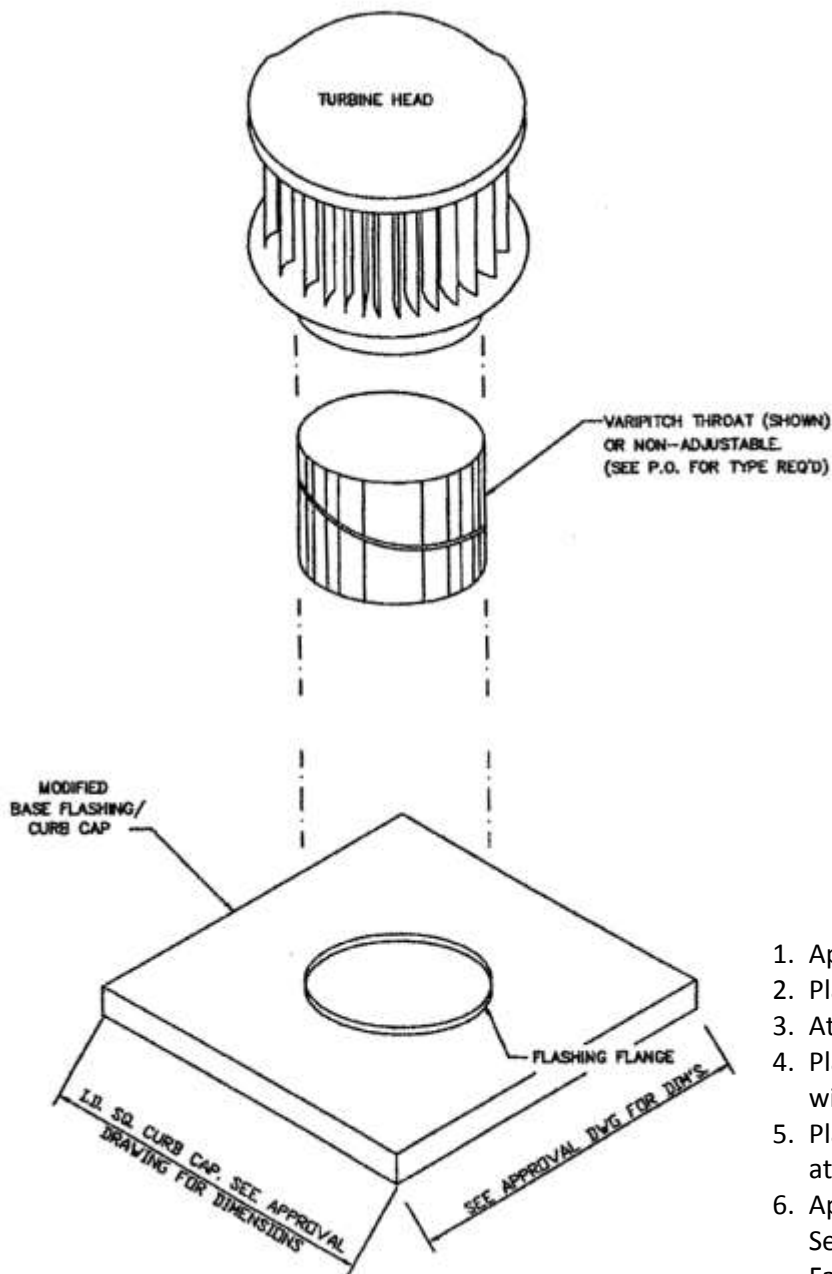
Fit corrugation
closure strips

STEP 4:

Fit the turbine to the base. Check that it is level and adjust by tilting the turbine as necessary. Fasten the turbine to the top of the throat section with at least four fasteners. Coat all exposed fasteners with silicone and apply an unbroken bead of silicone around the slip joint of the throat section.

**Available from Stock in
12", 24" & 36" sizes**

GreenRoo™ Assembly and Installation Instructions cont. With Base Flashing/Curb Cap



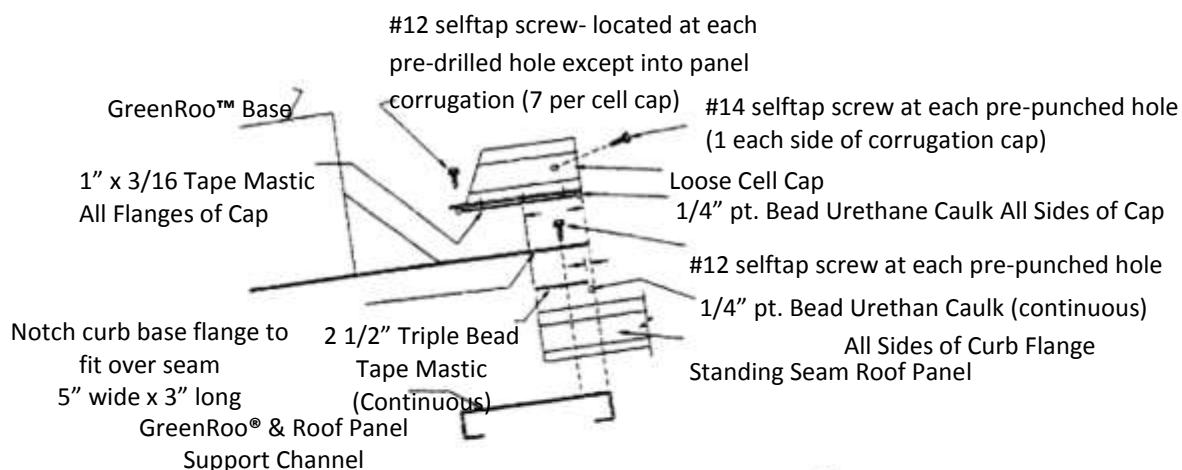
GreenRoo® Isometric Layout

Installation Instructions

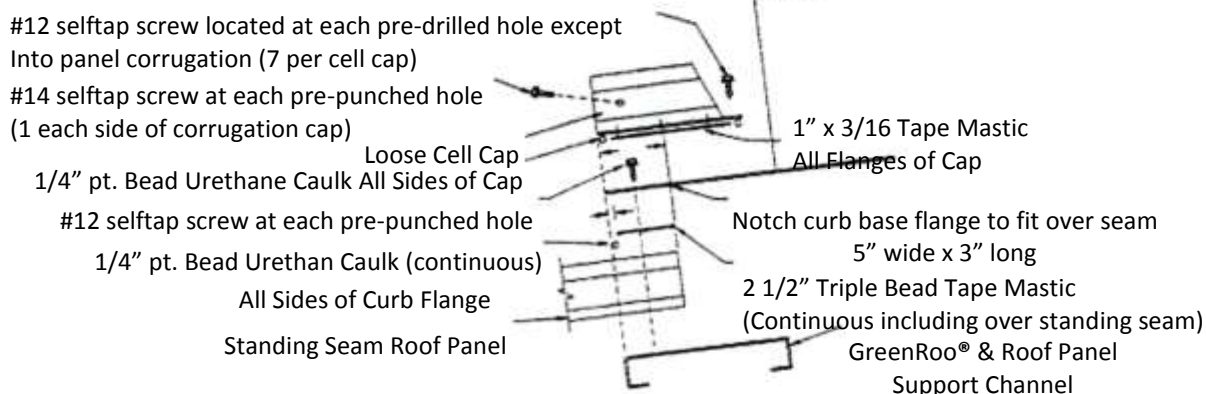
1. Apply Sealing tape to Curb (*if required*)
2. Place base flashing/curb cap on to curb
3. Attach to curb as needed
4. Place Throat Over Flashing Flange and Secure with at least (4) Fasteners- *Space Equally*
5. Place Turbine Head Over Throat and Secure with at least (4) Fasteners- *Space Equally*
6. Apply an Unbroken Bead of Silicone or Other Sealant to all Lap Areas & Coat all exposed Fasteners with Silicone or Sealant
7. Tape, Silicone & Hardware by Others

GreenRoo™ Assembly and Installation Instructions cont.

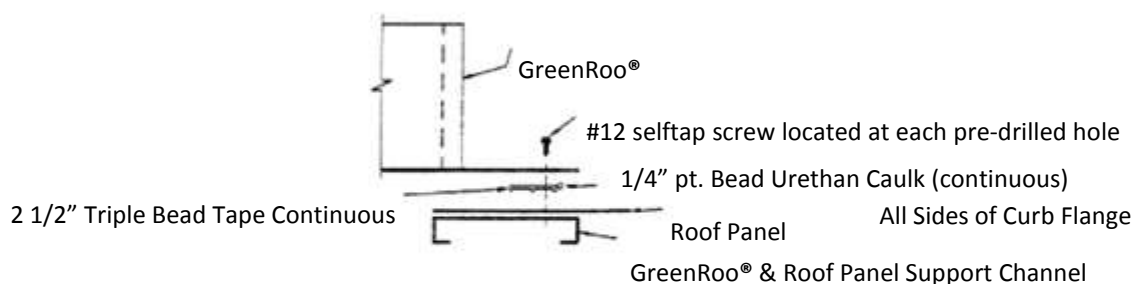
STANDING SEAM ROOF PANEL ERECTION DETAILS- LOOSE CELL CAPS



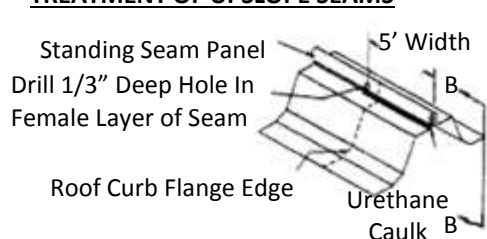
GreenRoo® BASE UPSLOPE FLANGE



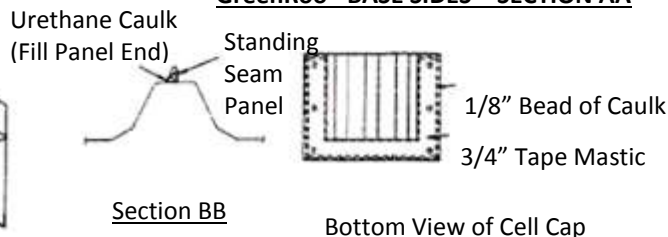
GreenRoo® BASE DOWNSLOPE FLANGE



TREATMENT OF UPSLOPE SEAMS



GreenRoo® BASE SIDES – SECTION AA



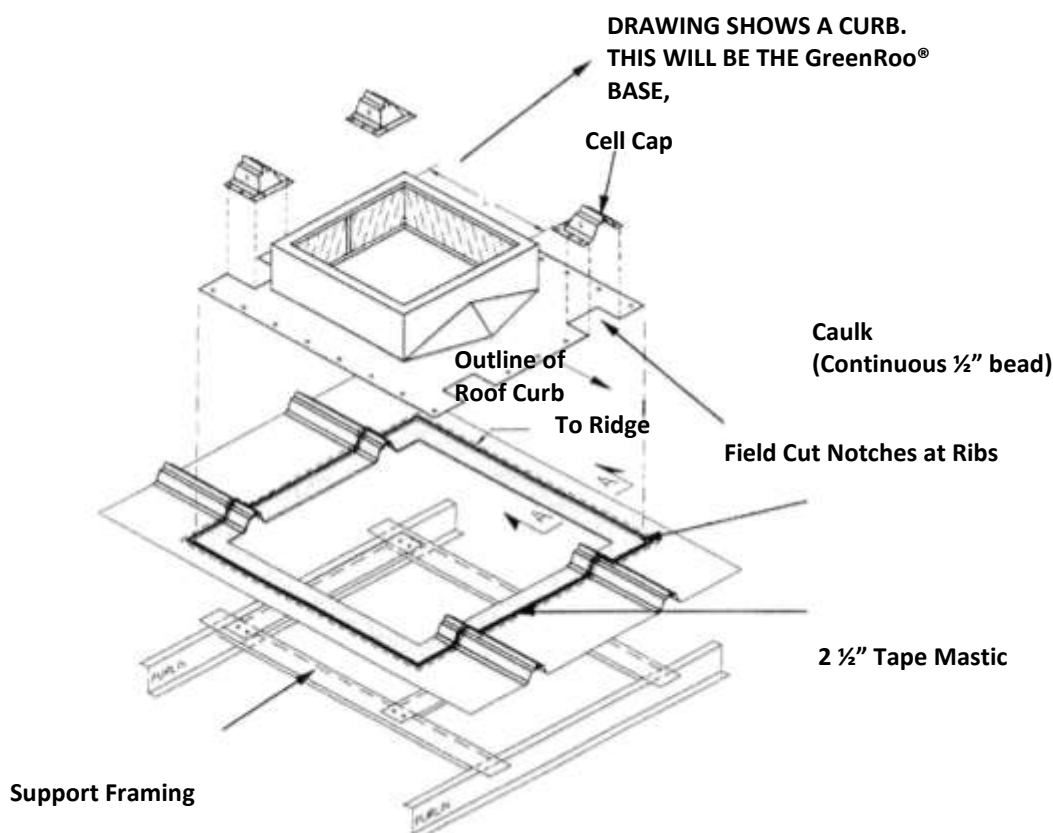
GreenRoo™ Assembly and Installation Instructions cont. Trapezoid Seam Roof Panel Loose Cell Caps

- Measure and cut hole in roof panel. (Width = I.D. × length - I.D. + 15")
- Measure base for field notches in flanges at ribs 5" wide × 3" deep front and back (do not oversize notches).
- Mark base flange location on roof panel then remove base and install 2 1/2" tape mastic 1/2" inside of mark.
- Apply 1/4" bead of urethane caulk between tape mastic and mark at all 4 sides.
- Place base over opening and attach to roof with self-drill screws.
- Finger tool all caulking to form caulking to provide proper seal and drainage.
- Do not reverse steps 5 and 6.
- Follow separate instructions given for cell caps, screws, tape mastic, and caulk.

General Notes

Cutting holes in roof panel should be done with an electric shear, nibbler, or Reciprocating saw. The use of an abrasive saw will damage the finish of the roof panel.

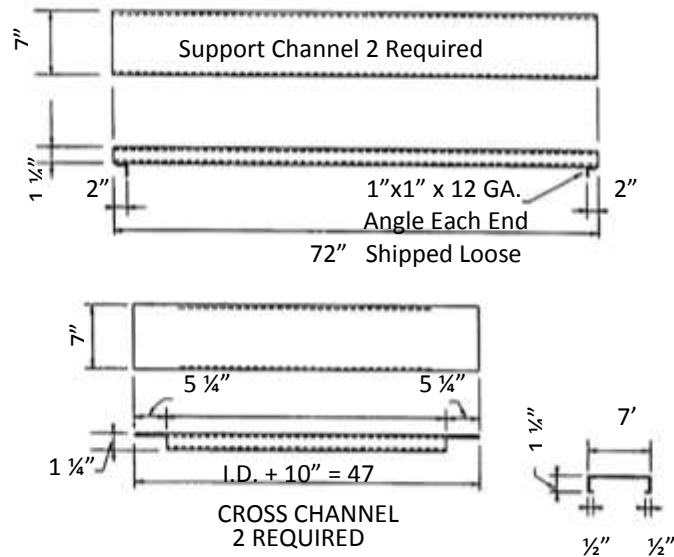
Deburr all field cut edges at panel ribs. Cut (do not tear) tape mastic at 45° angle at corners.



GreenRoo™ Base Framing System – Single Purlin Space Frame Shop Drawing: Thermal Block System

Model No. SPSHT

14 GA. Galvanized Material

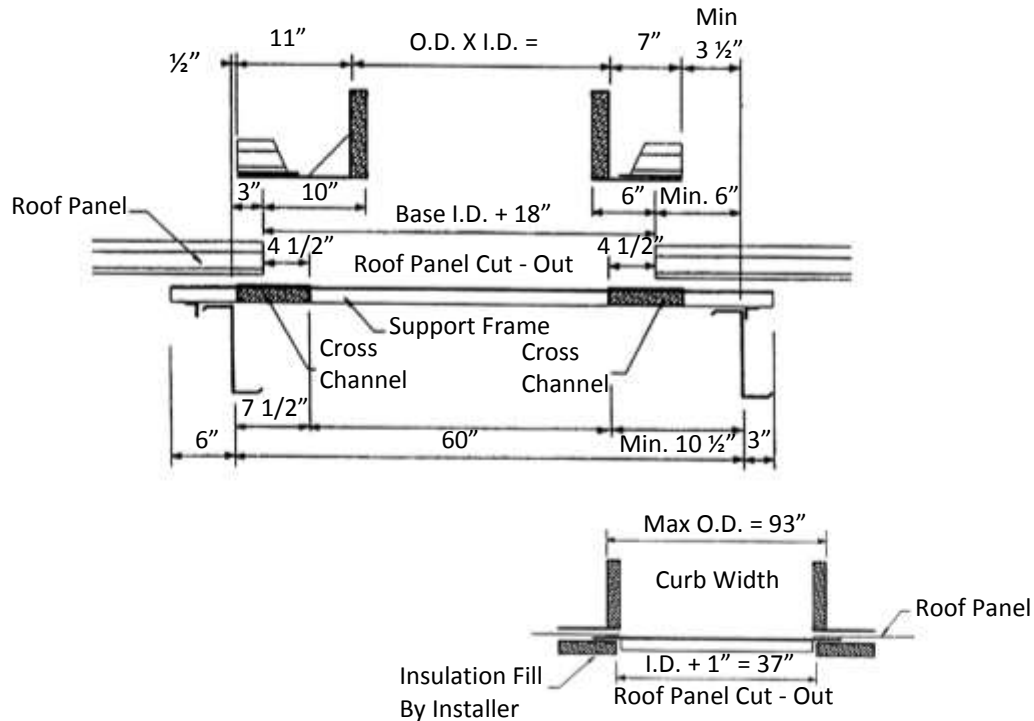


BASE O.D. _____
SETS REQ'D _____
TAG _____

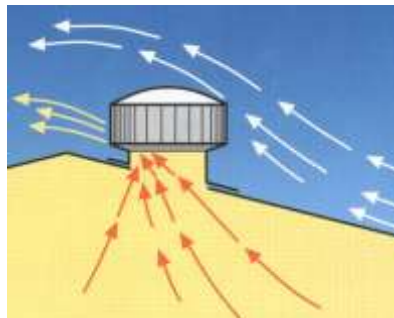
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GreenRoo™ Base Support System – Single Purlin Space Frame Erection Sheet: Thermal Block System

Model No. SPSHT



GreenRoo™ Pictures



GreenRoo™ Wind Driven Turbine Ventilator Guide Specification

1.1. DESCRIPTION

Furnish and Install GreenRoo™ wind driven ventilators as manufactured by Moffitt Corporation, Jacksonville Beach, FL of the sizes and with accessories as indicated on drawings.

1.2. QUALITY ASSURANCE

Moffitt Corporation GreenRoo™ units establish the standard of quality required. Manufacturer shall demonstrate a min. of 5 years of experience in the supply of the unit. The manufacturer shall have a written Quality Assurance and Quality Control procedure in place, which follows.

1.3. SUBMITTALS

Furnish approval drawings prior to fabrication.

2.1. DESIGN

The GreenRoo™ shall be manufactured of aluminum and shall consist of a turbine head section, a VARI-PITCH™ throat section, and self-flashing base section. The turbine head shall consist of vertical vanes and a spun aluminum head cover. The vane section shall rotate using a stainless steel shaft, a top double row ball bearing isolated from the air stream, as well as a bottom single row ball bearing supported by an anodized steel spider on the 36" throat size. The VARI-PITCH™ throat shall rotate allowing the unit to adjust to any single slope pitch level up to 22°. The base shall be flat to allow for flashing to the roof. Attachments shall be riveted.

2.2. OPTIONAL ACCESSORIES

- 2.2.1. Manual butterfly type damper, operable from ground, provided with 20' of cable for a direct drop.
- 2.2.2. Manual single disc damper, operable from the roof with a hand quadrant.
- 2.2.3. Motorized single disc damper, operable with a 115V/1ph power open spring close actuator mounted on the vent throat in a weatherproof enclosure.
- 2.2.4. Urethane powder paint coated, standard white color (or color to match).
- 2.2.5. Epoxy powder paint coated, standard white color (or color to match).
- 2.2.6. Extended throat and special base fabricated to match a roof slope in excess of 22 degrees. Roof slope is _____.
- 2.2.7. Bird screen, 1/2" galvanized mesh mounted in the unit throat. NOTE: Bird screen is not required for normal operation as the spinning head prevents the ingress of birds. Option only offered for special circumstances.
- 2.2.8. Insect screen, mounted in the unit throat. NOTE: Insect screen is not required for normal operation. Option is only offered for special circumstances.
- 2.2.9. Curb cap base to fit a curb mount connection.
- 2.2.10. Roof curb, galvalume construction, insulated, fabricated to match roof slope and type.

3.1. EXECUTION

Inspect unit for damage before installation. Assure free rotation of turbine head. Repair or replace any damaged material.

3.2. INSTALLATION

Install unit in accordance with the manufacturer's instructions and in accordance with best roofing practices.

3.3. WARRANTY

Manufacturer shall warrant this equipment to be free from defects in materials and workmanship for five years from date of shipment.