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SPACE FRAME TECHNOLOGY

BRIEF 1.3.2

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Today, Bear ly sleeping



Tomorrow, It will be less n ice

DOOMSDAY GLAZIER

A study showed the Thwaites Ice Shelf, which helps to stabilise the glacier and hold the ice back from flowing freely into the ocean, could shatter within five years. 6 Sept 2022

Thwaites, 'doomsday glacier' is holding on 'by its fingernails'. The complete collapse of the Thwaites itself could lead to sea level rise of one and a half feet (45 centimetres), which would be enough to devastate coastal communities around the world. 15 Feb 2023

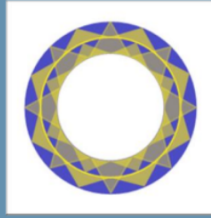


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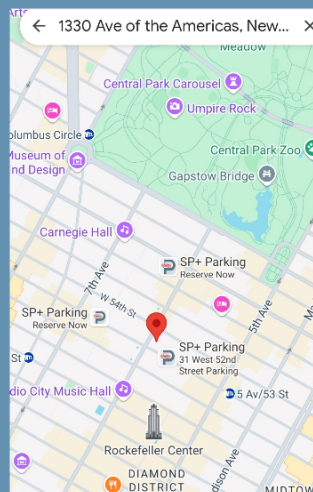
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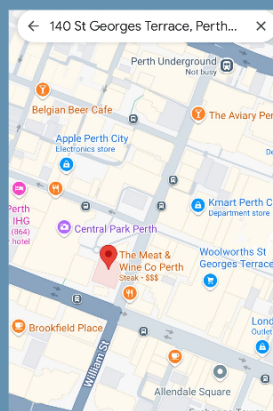
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Application Enquiries for TECHNOLOGIES

info@solarinstitutelcaceo.com

SPACE FRAME TECHNOLOGY BRIEF 1.3.2

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for

—
II

Space FrameTechnology

for

*supply chain participation including
emission reducing efficient technology*

Applications
for

SOLAR INSTITUTE'S
BUSINESS TO BUSINESS
COLLABORATION
for

GREEN TECHNOLOGY
of

—
II
—

SPACE FRAME TECHNOLOGY
AUTOMATED MANUFACTURE
ADVANCED CONSTRUCTION

~ ~ ~

SOLAR INSTITUTE
☆☆☆ Opportunities ☆☆☆

1. Executive training - Technologies' project management

2. Sales workforce

3. Available Technology's Access

For Application Enquiries - Contact email:
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4. Business Collaboration - Contact email:
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Construction - Installation

Machinery Automation Production

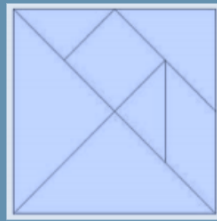
Solar Energy Thermal Break science

Training, Educational Institutions for SFT Workforce

Enquiries Contact
info@solarinstitutelcaceo.com

Factors affecting Adoption of SFT Technology

1. Initial cost	cost efficient
2. Continuing cost	cost efficient
3. Rate of cost recovery	fast, high,
4. Pay off	high
5. Observability	optional branding
6. Social approval	high
7. Saving of time	major
8. Saving of discomfort	major
9. Regularity of reward	continual
10. Relative advantage	significant
11. Risk	low, better technology
12. Divisibility - Trial	trialable for parts
13. Complexity	simple, easy
14. Clarity of results	value, cost efficient
15. Compatibility	universal integrated
16. Mechanical attraction	automated processes



Space Frame Technology

BRIEF 1.3.2

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SPACE FRAME TECHNOLOGY

APPLICATIONS EXAMPLES

Images below, examples

1. Addition of 2 dwellings to existing double brick cottage
2. Two Storey addition as Space Frame Brick Veneer large dwelling
3. Space Frame 4 storey addition to brick cottage on West Coast location with very high wind conditions.

Space Frame Technology Environ



SPACE FRAME – MULTILEVEL STRONG, FAST, AESTHETIC BUILD HIGH VALUE REAL ESTATE

Universal Space Frame Precision Horizontal & Vertical Engineered Structures
-Domestic & Commercial Infrastructure Sectors, Commercial & Private Sales -



STEEL STRUCTURE INTEGRATED WITH MASONRY
AT EXPRESSED EXPANSION JOINT
MASONRY FENESTRATION LOOK IS CONSISTENT
RIGID SUPERIOR STRENGTH STRUCTURE
IS INHERENTLY ENGINEERED FOR
RESISTANCE TO EARTHQUAKE, CYCLONE,
GROUND MOVEMENT, PASSIVE SOLAR BUILDING.

Aesthetic inset windows with deep rendered reveals to external walls.



SPACE FRAME TECHNOLOGY PRODUCTS ADVANTAGES

1.0 GENERAL DESCRIPTION

2.0 ASSEMBLY - FAST, SIMPLE, EASY, NO WASTE, PRECISION

3.0 STRUCTURAL PERFORMANCE - SUPERIOR ENGINEERING FOR:

3.1 Structural Versatility

3.2 Frame Stiffness

3.3 Cyclonic Conditions

3.4 Seismic Conditions

3.5 Ground Movement

4.0 AVAILABILITY OF MATERIALS - STANDARD ROLLED STEEL

5.0 SIMPLICITY IN DESIGN

6.0 PORTABILITY

7.0 SERVICES INSTALLATION

8.0 THERMAL INSULATION

9.0 NOISE INSULATION

10.0 PSYCHOLOGICAL QUALITIES - STRENGTH, STABILITY

11.0 ECONOMY - COST EFFICIENT PRODUCTION, CONSTRUCTION

11.1 Energy / Running - Efficient

11.2 Initial Cost - known Ex-Factory Cost

11.3 Continuing cost - minimises Energy running cost

12.0 ARCHITECTURAL & AESTHEIC ADAPTABILITY - high value

THE RISE OF SPACE FRAME TECHNOLOGY

BRICK, BRICK, BRICK, BRICK, BRICK, BRICK, BRICK, BRICK, BRICK,
BRICK, BRICK, BRICK, BRICK, BRICK, BRICK, BRICK, BRICK, BRICK, BR

SOME BUILDING MATERIALS HAVE BEEN AROUND FOR SO LONG YOU
BEGIN TO WONDER WHY SOMEONE HASN'T GIVEN IT ANOTHER THOUGHT
..... WE HAVE.



SPACE FRAME TECHNOLOGY RECORD OF ROLLOUT



SPACE FRAME TECHNOLOGY

OFFERING SOLUTIONS TO COMMERCIAL OPERATORS AND GOVERNMENT BODIES

DEVELOPMENT AGREEMENTS WITH INTERNATIONAL COMPANIES AND GOVERNMENT BODIES

SPACE FRAME TECHNOLOGY SOLUTIONS

INVESTMENTS & EMPLOYMENT

- **BILLION DOLLAR MARKETS GLOBALLY**
- **MILLION NEW JOBS WORLDWIDE**
- **THE DIFFICULTY OF ECONOMY TRANSITION OVERCOME**
- **THE INDUSTRY HAS HISTORICALLY INVESTED LESS THAN 1% OF REVENUE IN INNOVATION, BUT NEVER HAS INNOVATION BEEN NEEDED MORE.**
- **THE QUESTIONS WE ANSWER - AEC TECHNOLOGY, WITH SOLUTIONS**
- **HOW DOES ONE SUCCESSFULLY INNOVATE FOR BETTER BUILDINGS?**

CLIMATE CHANGE

- **THE US BUILDING INDUSTRY ACCOUNTS FOR 70% OF THE NATION'S POWER PLANT ELECTRICITY CONSUMPTION AND 39% OF THE NATION'S TOTAL ENERGY USE.**
- **BUILDINGS ACCOUNT FOR NEARLY HALF OF ALL GREENHOUSE GAS EMISSIONS IN THE US – MORE THAN TRANSPORTATION AND INDUSTRY.**
- **TODAY, A STAGGERING 34% OF THE ENERGY CONSUMED BY BUILDINGS IS LOST DIRECTLY THROUGH BUILDING ENVELOPES, MUCH OF IT THROUGH UNNECESSARY INTEGRATION INEFFICIENCIES.**

Emissions Reduction Technologies' Potential



SPACE FRAME TECHNOLOGY
SCIENCE
DATA

THERMAL BRIDGING

Non Space Frame Technology Construction

Energy Conservation Considerations

Thermal Bridging

Light Gauge Steel Framed Wall

- 50% reduction in R-Value due to thermal bridging
- Solution: Continuous rigid insulation

Actual Cavity Depth, inch	Rated R-Value	Effective R-value
3.5 inch depth	R-11	R-5.5
	R-13	R-6.0
	R-15	R-6.4
6.0 inch depth	R-19	R-7.1
	R-21	R-7.4
3.5 inch depth	R-11	R-6.6
	R-13	R-7.2
	R-15	R-7.8
	R-19	R-8.6
6.0 inch depth	R-21	R-9.0

Source: ASHRAE 90.1



HIGH PERFORMANCE BUILDING ENVELOPES

BCRA

HIGH PERFORMANCE BUILDING ENVELOPES

Dave Seifert

Design

Construction

Commissioning

BCRA

THERMAL BREAK INHERENT IN SPACE FRAMES TECHNOLOGY

for

EMISSIONS REDUCTION POTENTIAL OF SPACE FRAME TECHNOLOGY BUILDINGS

Emissions Reduction Potential of SFT buildings

To Reduce in use 1 house3 Metric Tonnes CO₂/house/Year
Per Million Buildings (houses)...3 Million Metric Tonnes CO₂/Year
To produce 1 house1.85 Metric Tonnes CO₂/house

Space Frame Technology Advanced Thermal Break & Insulation U - VALUES

U Value .9W/m²k
+Insulation of
R3.5, R30, R49, R60
Provides --> *U Values*

R3.5 +SFT= *0.2857142857*

R30 +SFT= *0.0321428572*

R49 +SFT= *0.0199556541*

R60 +SFT= *0.0163636364*

The best insulating materials have a U-Value of close to zero; the closer to zero the better. Under LABC guidelines, the retrofitting of insulation to existing buildings requires the following U-Value targets: Wall – 0.3 W/m²k. Roof – 0.18 W/m²k.

<https://www.greenandheritage.uk> > ...
U-Values Explained | What Are They? - Green and Heritage Roofing Ltd

Space Frame Technology has the Thermal Break space structure not like -
Metal studs do not contribute towards energy-efficient structures due to thermal bridging. Thermal bridging allows heat to flow from the inside of the building along the most conductive path, which is the metal studs. Thermal bridging makes a structure drafty and cold. 8 Oct 2019

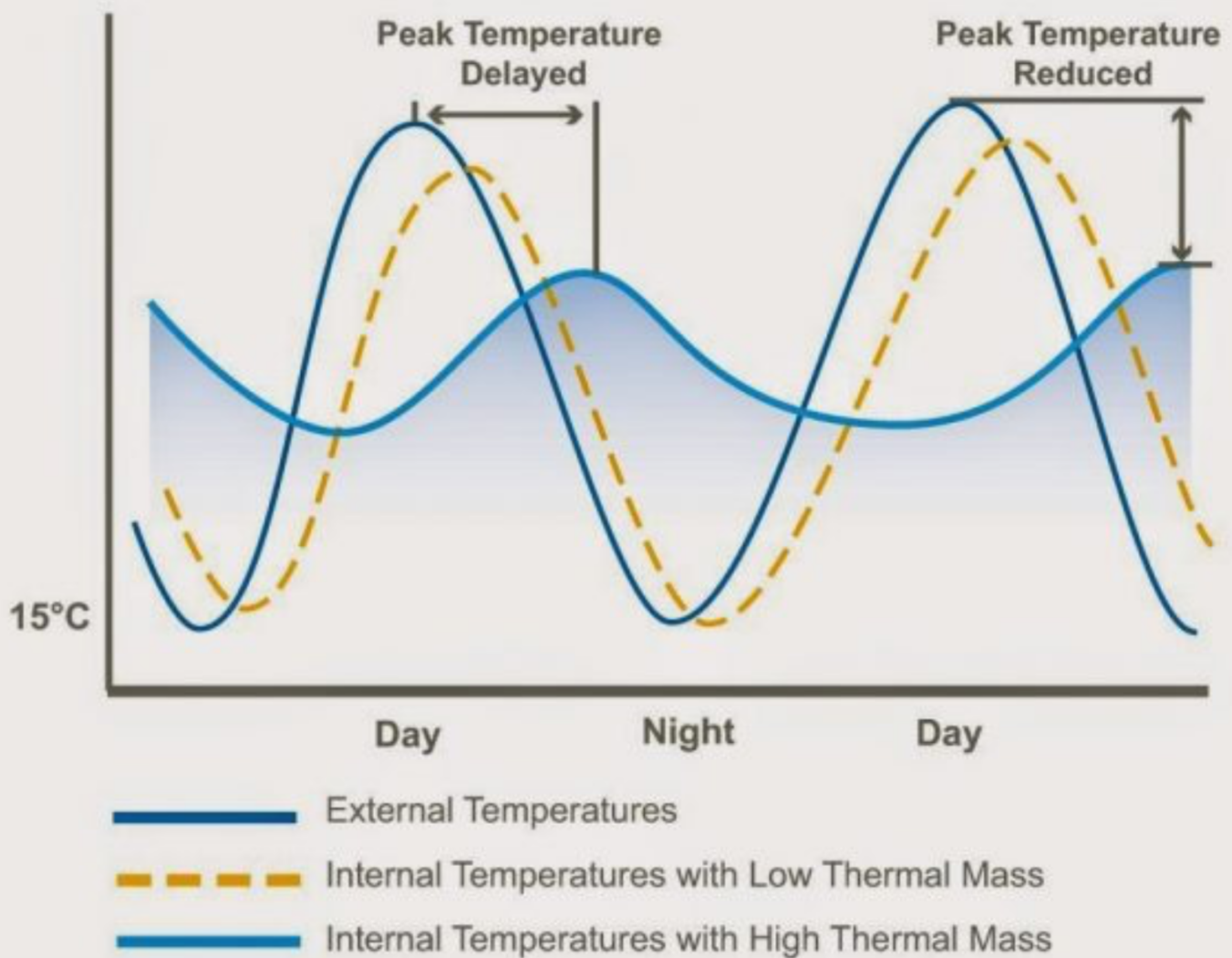
<https://www.foxblocks.com> > b



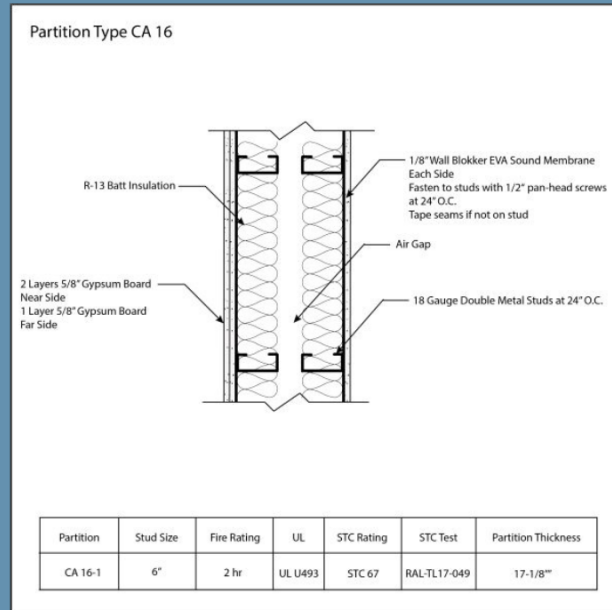
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Dampening temperatures from External to Internal



Sound Transmission Class (STC) & Fire Rating

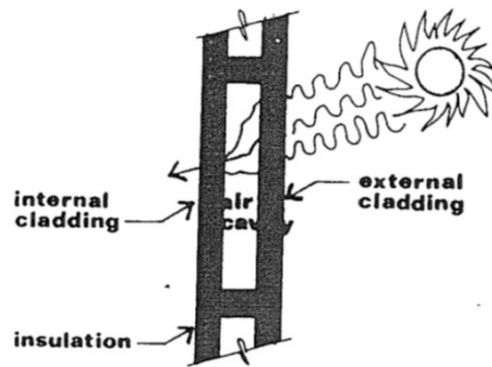


Not Space Frame Technology

Standard steel stud configuration for larger sectional space with air gap
(like Space Frame).

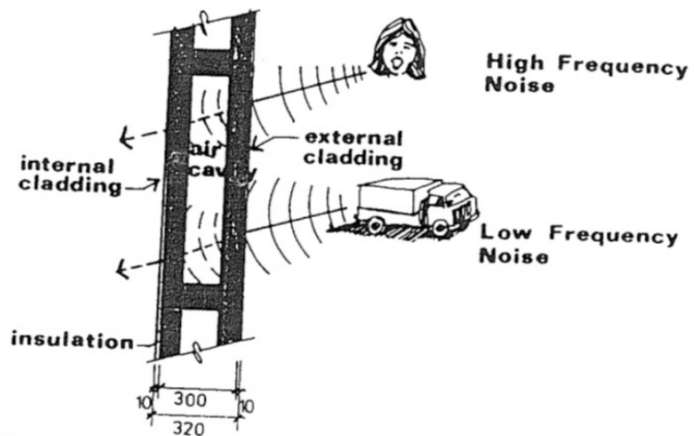
Cladding with double layer gypsum to achieve
STC 67 (Sound Transmission Class),
Fire Rating 2 hours.

Space Frame Technology achieves same & better STC with less Steel,
less onsite labour, less time thus less cost & greater performance.



THERMAL INSULATION

'U' value : $0.9 \text{ W/m}^2\text{K}$



NOISE INSULATION



Space Frame Technology

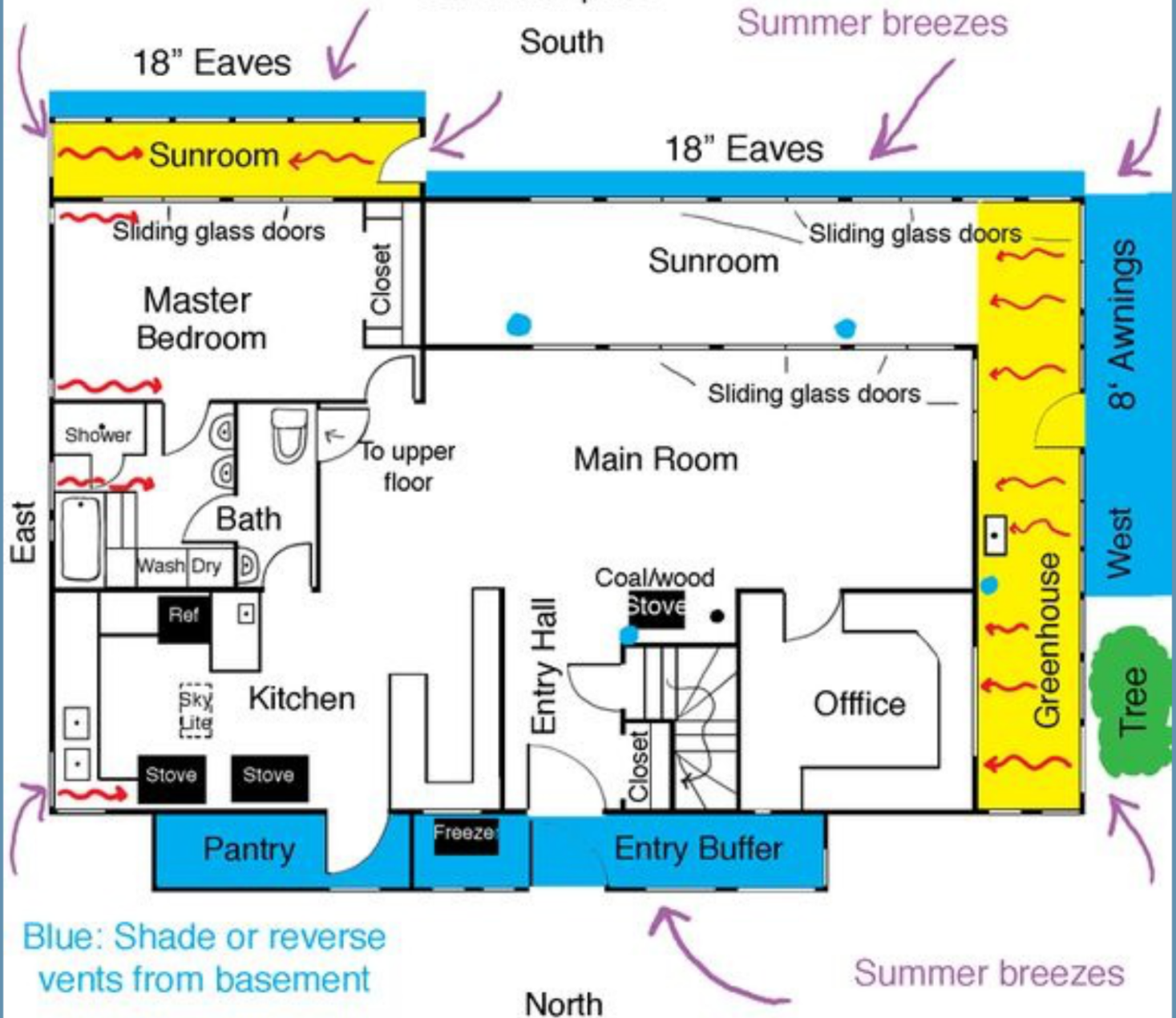


Passive Solar Home Plan

Summer plan

South

Summer breezes



Designed and Built by Elaine Meinel Supkis 2000

For northern hemisphere site locations



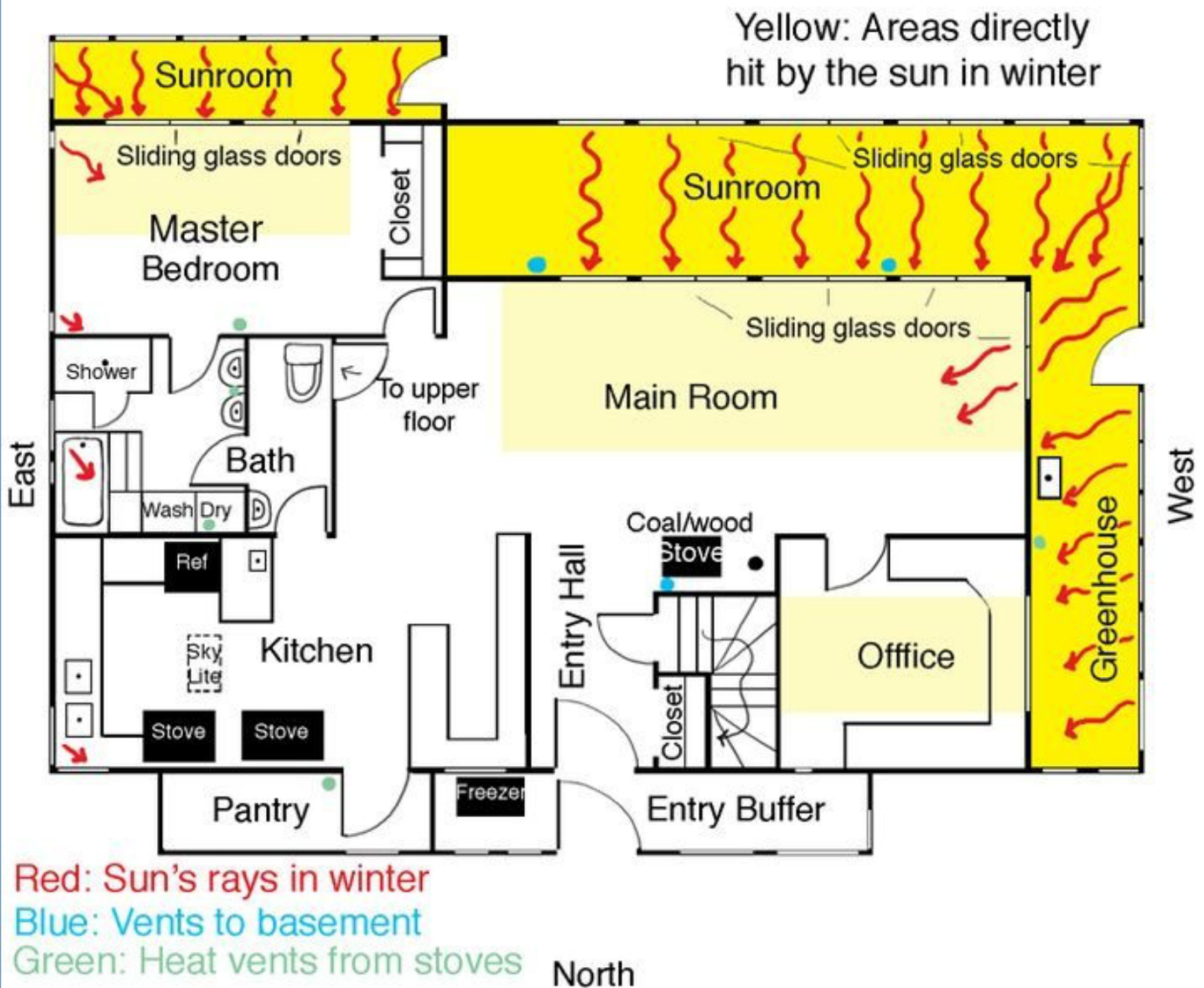
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fairconditioning.org

Passive Solar Home Plan

Winter Plan

South



Designed and Built by Elaine Meinel Supkis 2000

For northern hemisphere site locations



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fairconditioning.org

The background of the slide is a vibrant tropical beach scene. In the upper left, the green fronds of a palm tree hang down. The sky is a clear, bright blue. Below the sky, a layer of white, fluffy clouds stretches across the horizon. The bottom half of the image shows a turquoise ocean with gentle waves. The entire scene is framed by a thin white border, which is itself set within a larger blue border.

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