



## Cornwall Road – High-performance spectrally selective film

### 1. Solar Heat Gain Control

#### Heat-Reflecting Film

- Reflects and/or absorbs a portion of **shortwave solar radiation** before it enters the space.
- Reduces **Solar Heat Gain Coefficient (SHGC)**.
- Typical reduction in solar heat gain: **50–80%**, depending on film type (spectrally selective, metallic, ceramic).
- Works regardless of sun angle.

**Limitation:** Best results when high-performance spectrally selective film is installed externally.

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#### Brise-Soleil

- Blocks direct solar radiation *before* it strikes the glazing.
- Highly effective for **high sun angles** (ideal for southern façades in the northern hemisphere).
- Can reduce cooling loads significantly when properly dimensioned.

**Limitation:** Far less effective against low-angle morning/evening sun unless vertically oriented fins are added.

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### 2. Energy Performance

| Aspect                 | Heat-Reflecting Film                  | Brise-Soleil                        |
|------------------------|---------------------------------------|-------------------------------------|
| Cooling load reduction | Moderate to high                      | High (if correctly designed)        |
| Winter solar gain      | Reduced (can increase heating demand) | Can be designed to allow winter sun |
| Daylighting            | Slightly reduced                      | Generally preserved                 |



### Key insight:

Brise-soleil can be **passive and seasonally optimized with maintenance costs**, while film is static and slightly reduces solar gain year-round with no maintenance costs.

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## 3. Cost & Installation

### Heat-Reflecting Film

- Low initial capital cost.
- Minimal structural intervention.
- Retrofit-friendly.
- Fast installation.
- No structural engineering required.

### Brise-Soleil

- Higher upfront cost.
  - Requires façade mounting or structural integration.
  - Wind load considerations.
  - Planning/architectural approval often required.
  - Longer installation timeline.
  - Maintenance costs
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## 4. Aesthetic & Architectural Impact

### Film

- Minimal change to façade geometry.
- Can alter exterior reflectivity (mirror effect).
- May create internal glare or change colour rendering.

### Brise-Soleil

- Strong architectural expression.
- Adds façade depth and shadow articulation.



- Can enhance building identity.
- May obstruct views depending on configuration.

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## 5. Maintenance & Durability

| Factor      | Film                      | Brise-Soleil                |
|-------------|---------------------------|-----------------------------|
| Lifespan    | 20 years                  | 25 years + maintenance      |
| Cleaning    | Standard glazing cleaning | Additional cleaning of fins |
| Replacement | Relatively easy           | Structural work required    |

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## 6. Thermal Comfort & Glare

- **Film** reduces glare but also allows visible light transmission (VLT).
- **Brise-soleil** blocks direct beam radiation while allowing diffuse daylight.

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## 7. Structural & Wind Considerations

Brise-soleil systems must:

- Be engineered for wind loads.
- Consider snow loads (in cold climates).
- Address thermal bridging at attachment points.

Film requires none of these considerations.

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## When Film May Be Preferable

- Budget constraints.
- Retrofit of existing buildings.
- Heritage restrictions limiting façade alteration.
- Need for fast deployment.



- Structural limitations.

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## When Brise-Soleil Is Superior

- New-build projects.
- High-performance low-energy buildings.
- Climates with strong seasonal solar variation.
- Where passive solar design strategy is desired.
- Architectural statement required.

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## Technical Summary

- From a **cost-benefit and retrofit perspective**, high-performance spectrally selective film can provide a strong return on investment with minimal disruption.
- **High Performance Heat Reduction:** Selectively filters out heat-producing infrared (IR) light while keeping the room bright.
- **Optimal Transparency:** Unlike dark, reflective tints, these films are designed to be almost invisible or have a very light, natural tint.
- **Energy Efficiency:** By rejecting solar heat gain, these films reduce the reliance on air conditioning, lowering energy costs.
- **UV Protection:** They block 99% of harmful ultraviolet rays, preventing damage to furniture, artwork, and upholstery.
- **Maintains Views:** Perfect for residential or commercial applications where keeping a natural, unobstructed view is essential. can provide a strong return on investment with minimal disruption.

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## **Conclusion.**

For cost effectiveness, ongoing maintenance and overall performance we would recommend high-performance spectrally selective film on this project on all windows most southerly facing, to be installed externally where possible.