

PROPOSAL

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# FALLING WATER

FRANK LLOYD WRIGHT



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Presented by: RADHIKA BANSAL

# *Proposal Overview* ✨

- A** Why upgrade the cladding?
  - B** Why choose glass for cladding?
  - C** Selected glass type for cladding
  - D** Replacing of materials
  - E** Techniques of joining, fixing & finishing
  - F** Issues & their treatment
  - G** Consideration
  - H** Cost Breakdown
  - I** Thankyou
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# *Why Upgrade The Cladding ?*

Upgrading Fallingwater's cladding enhances its longevity, energy efficiency, and resistance to weathering while maintaining its iconic design.

Modern glass technology improves natural lighting, sustainability, and the seamless connection between architecture and nature.

# *Why Choose Glass For* **CLADDING?**

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## **✦ ENHANCE CONNECTION WITH NATURE**

Maintain Frank Lloyd Wright's vision of organic architecture by blending the house with its surroundings.

## **✦ MAXIMIZE NATURAL LIGHT**

Reduce dependence on artificial lighting and create a bright, open atmosphere.

## **✦ PROVIDE UNINTERRUPTED VIEWS**

Allow residents to enjoy seamless views of the forest and waterfall.

## **✦ IMPROVE AESTHETIC APPEAL**

Create a sleek, modern look while preserving the architectural integrity.

# SELECTED GLASS TYPE FOR CLADDING

**Laminated Structural Glass** – This type of glass consists of multiple layers bonded together with an interlayer (such as PVB or SGP) for added strength, safety, and durability. It is suitable for structural cladding applications and enhances transparency while maintaining insulation.



# REPLACING *Of* MATERIALS

- Stone Cladding (Sandstone Panels)

**Why?** Replacing small sections of the native sandstone used on the facade to introduce transparency..

- Concrete Sections (Select Non-Load Bearing Areas)

**Why?** Introducing laminated glass panels in place of concrete to create a lighter, modern aesthetic.

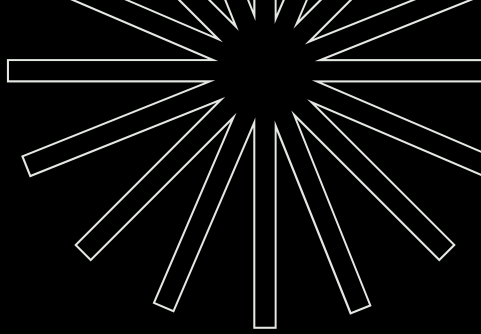
- Wood Panels (Small Decorative Elements)

**Why?** Incorporating glass cladding in select wooden areas to create a contrast between solid and transparent surfaces.

# ORIGINAL *W&S* MODIFIED

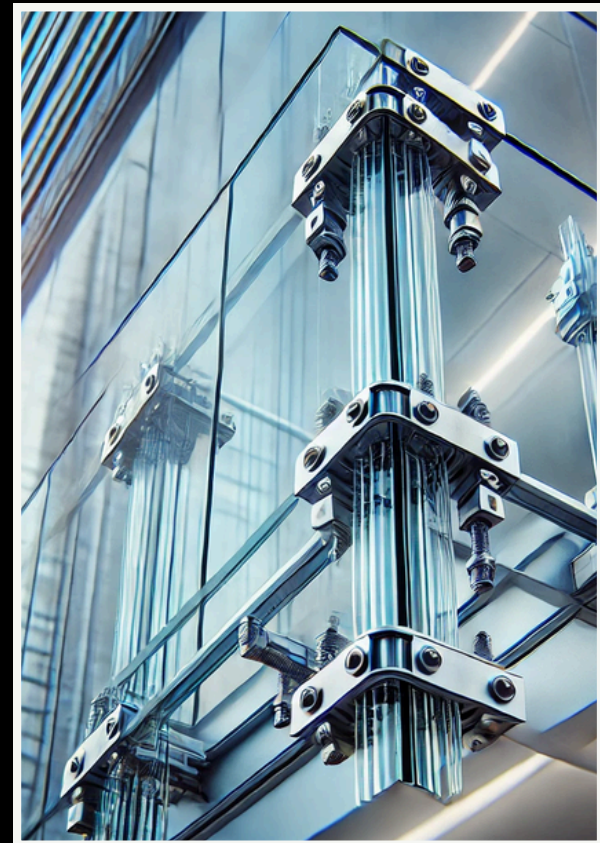
VERSION WITH LAMINATED STRUCTURAL GLASS





TECHNIQUES OF

**FIXING**  
**JOINING**  
**FINISHING**



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## JOINING

- **Silicone Structural Glazing (SSG)**– Adhesive bonding for a seamless, frameless appearance.
- **Butt-Jointed Glass**– Edge-to-edge glass joints without visible metal framing.
- **Glass-to-Steel Connectors**– Stainless steel patch fittings or spider fittings for structural support.

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## FIXING

- **Point-Fixed Bolted Glass**– Small stainless steel bolts hold glass panels to the substructure.
- **Hidden Aluminum Channels**– Glass panels are slotted into concealed U-channels for a clean look.
- **Glass Fin Supports**– Vertical glass fins provide additional structural reinforcement

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## FINISHING

- **Low-Iron Laminated Glass**– High clarity to maintain transparency and reduce distortion.
- **Anti-Reflective Coating**– Minimizes glare for better visual integration with nature.
- **Edge Polishing & UV Bonding**– Ensures smooth, aesthetically refined glass edges.

# OVERVIEW

*Of*

# TECHNIQUES

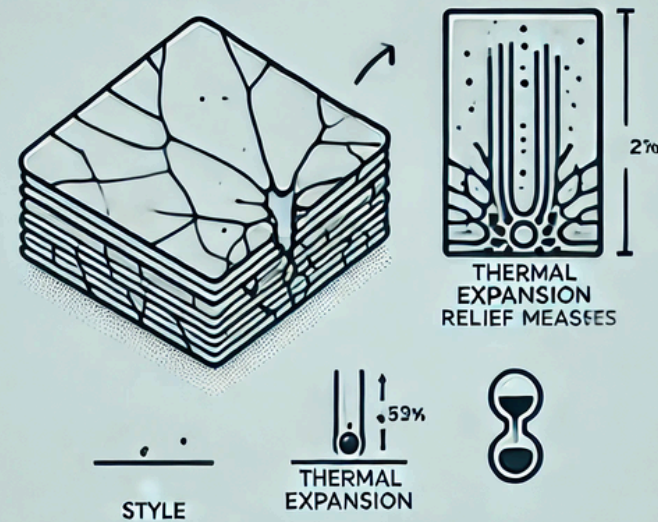
# ISSUES & THEIR TREATMENTS

## *Delamination*



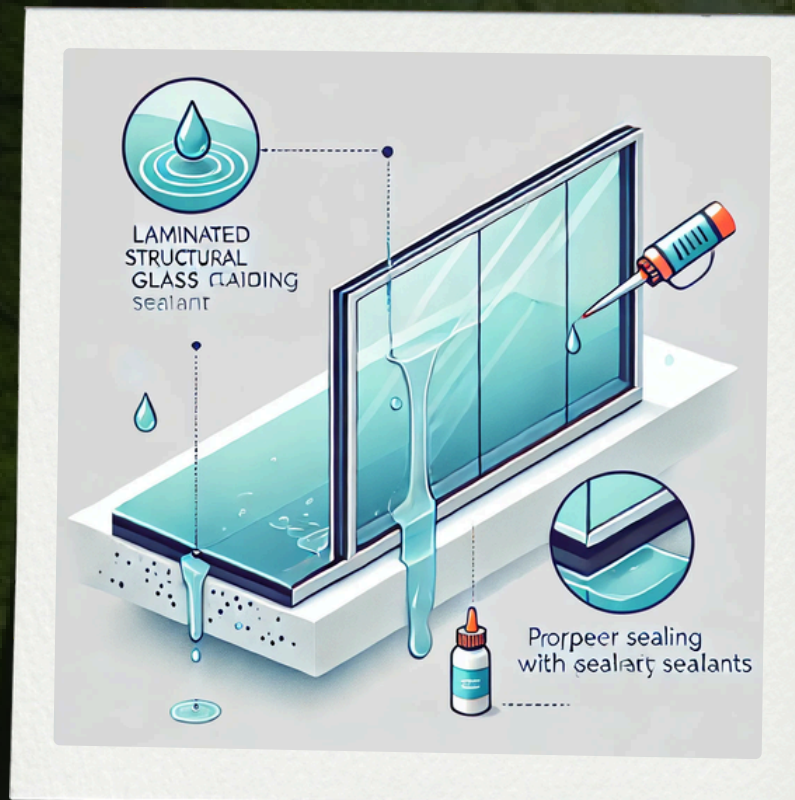
- Issue: Separation of glass layers due to moisture ingress or poor lamination.
- Treatment: Use high-quality interlayers, ensure proper edge sealing, and use moisture-resistant materials.

THERMAL STRESS CRACKS  
IN LAMINATED GLASS CLADDING



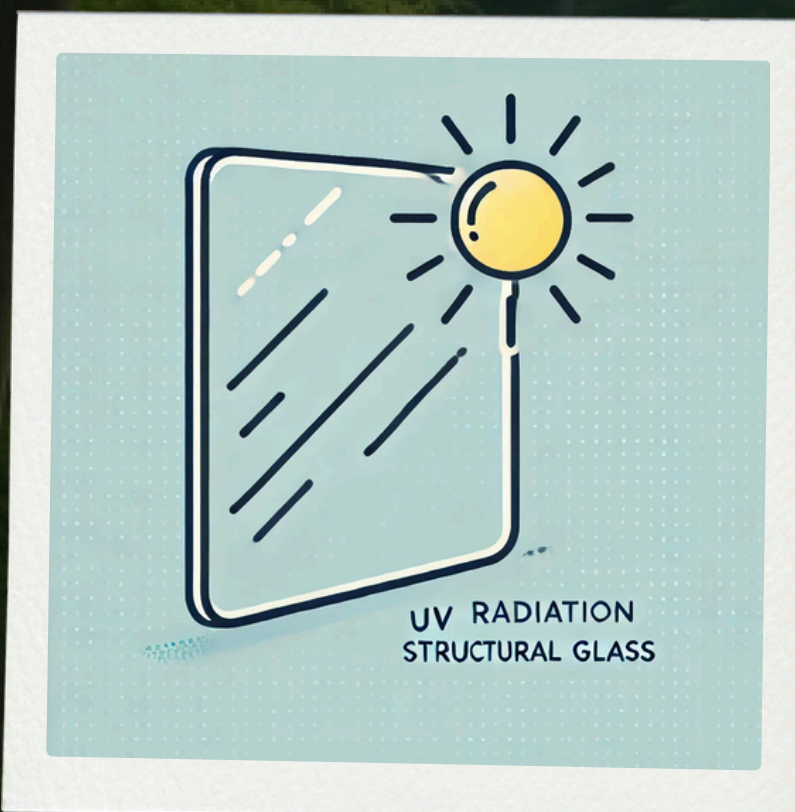
## *Thermal Stress Cracks*

- Issue: Expansion and contraction due to temperature variations causing cracks.
- Treatment: Use heat-strengthened or tempered glass and provide expansion joints.



## *Water Leakage and Sealant Failure*

- Issue: Water seepage through joints leading to staining and structural issues.
- Treatment: Use high-performance weatherproofing sealants and ensure proper drainage system design..



## *UV Radiation Damage*

- Issue: Discoloration or weakening of interlayer due to prolonged sun exposure.
- Treatment: Use UV-resistant interlayers and apply UV-blocking coatings.

# TOP CONSIDERATIONS FOR CLADDING

## TOPOGRAPHY

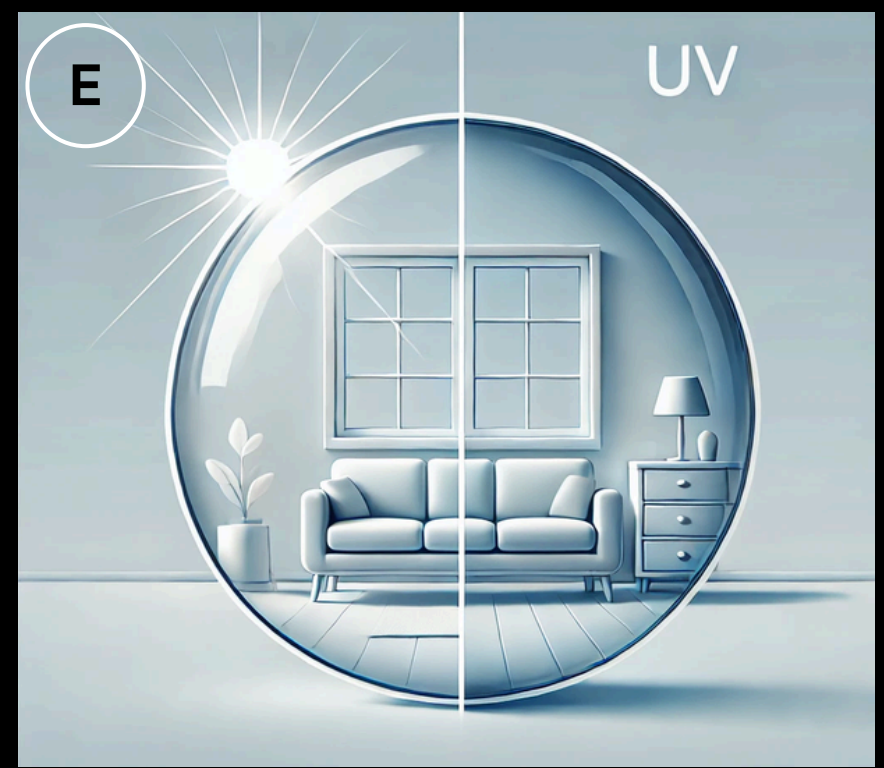
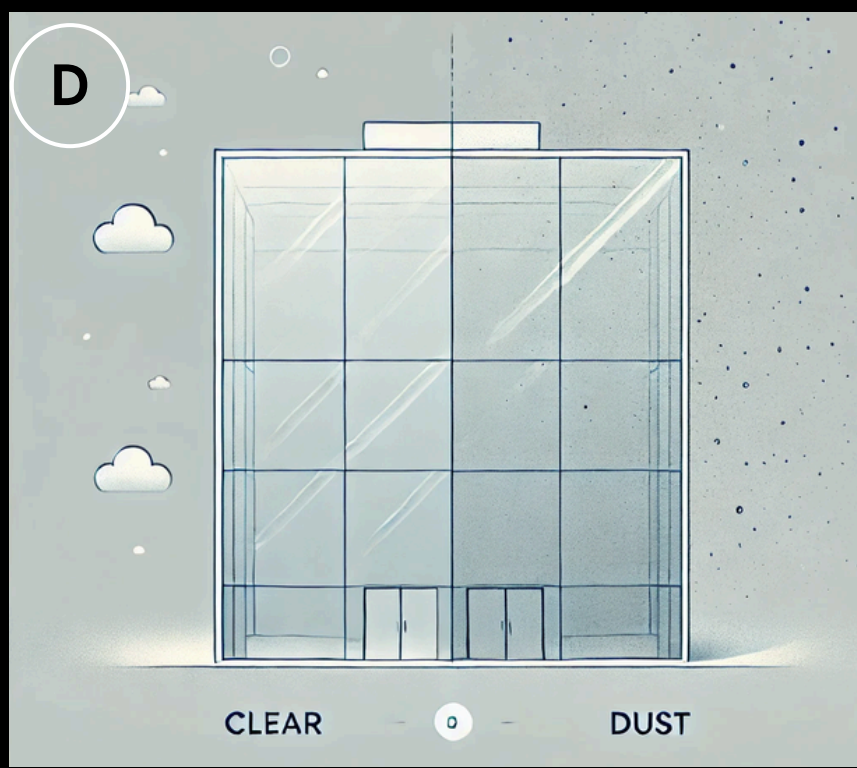
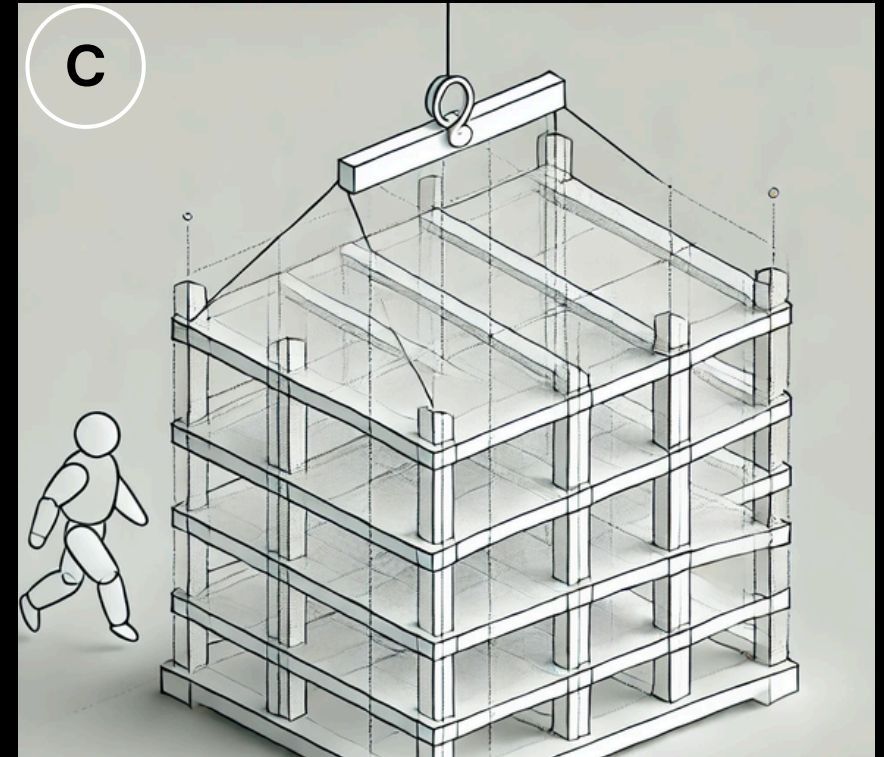
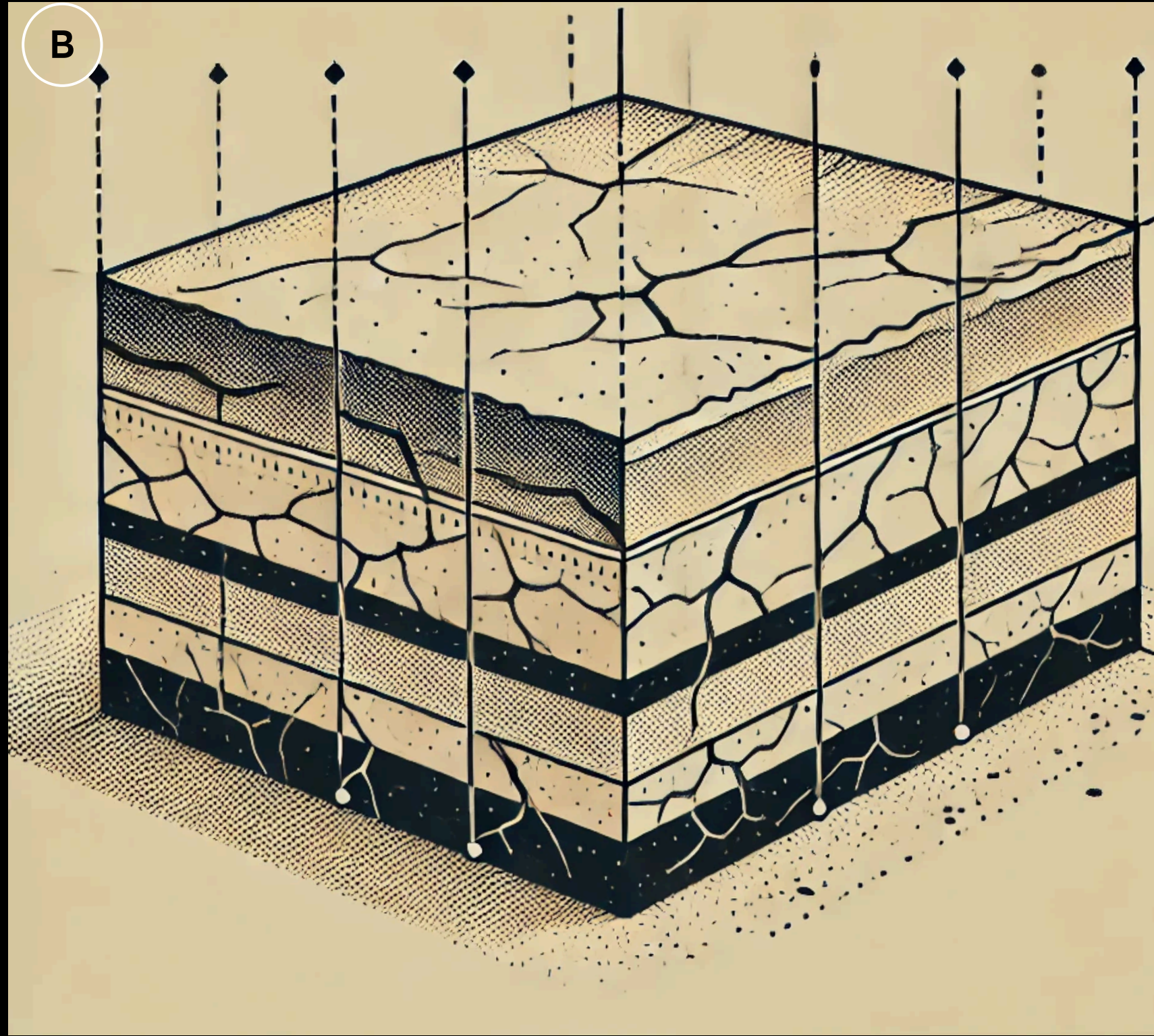
1. Ground Stability – Ensure a strong foundation for sloped or unstable terrains.
2. Slope & Drainage – Ensure proper drainage to prevent water accumulation.
3. Seismic Activity – Install flexible support structures for earthquake-prone zones

## CLIMATE

1. Wind Load – Reinforce fixings for high-wind or storm-prone areas.
2. Temperature Changes – Use thermal-resistant glass to handle expansion/contraction.
3. UV Exposure – Apply UV coatings to prevent fading and overheating.

## EXTERIOR CONDITIONS

1. Structural Load – Ensure building can support glass panel weight.
2. Pollution & Dust – Self-cleaning glass reduces maintenance.
3. Glare & Reflection – Tinted or anti-glare glass minimizes discomfort.



A. WIND LOAD

B. GROUND STABILITY

C. STRUCTURAL LOAD

D. POLLUTION & DUST

E. UV EXPOSURE

# Cost Breakdown

PERCENTAGE INCREASE

(20% - 35%)

## High-cost glass

Low-iron laminated glass is 2x–3x more expensive than regular glass or stone.

## Custom Fabrication Needs

Precision-cutting, edge polishing, and lamination increase production cost.

## Specialized Installation

Requires expert teams for handling, lifting, and fixing glass safely.

## High Transport Costs

Glass panels need padded crating, specialized transport, and careful handling.



*Thank You*