DANPAL NORTH AMERICA

Designing with Daylight

A practical architectural guide to high-performance translucent facades

Use translucent polycarbonate as a daylighting, thermal and identity tool
Not simply as a glowing cladding material

ARCHITECT DOWNLOAD | FACADE STRATEGY + DETAILING CHECKLIST

For commercial, civic, education, sports, transportation, housing, retrofit and interior architecture teams.

WHY TRANSLUCENT FACADES NOW

Why Translucent Facades Now

Architects are being asked to make large, simple building volumes do more: bring in better daylight, reduce glare, support energy targets, protect privacy and create an unmistakable public presence. High performance translucent polycarbonate facades give architects a way to turn simple volumes into calibrated daylight instruments rather than sealed boxes or over-glazed elevations.

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The opportunity is not only visual. A translucent facade can diffuse harsh perimeter light, reduce glare, improve privacy, temper solar gain, and create a durable envelope strategy that works in new construction or retrofit. When designed as a layered system, it becomes part of the building performance narrative and the design narrative at the same time.

What “Light Architecture” means in practice

1. Light as material

Daylight is treated as a primary design material, not a byproduct of the opening size, while translucency is used to tune brightness, contrast, privacy, and tte perception of mass.

2. Envelope performance

The facade is tuned with climate, orientation, structure, and envelope performance.

3. Building Identity

The building gains two identities: a soft daylight presence by day and a controlled luminous character after dark.

The aim is not to add a decorative skin late in design. The opportunity is to shape daylight, thermal comfort and architectural identity from the first building section.

Danpal in brief. Danpal develops complete light-transmitting architectural systems - panels, framing and accessories - with a global network, more than 150 million square feet of advanced architectural-grade material installed globally, and US/Canadian market support for more than 40 years.

DESIGN LENS

Start with light - not product

UW Basketball Training Facility, Gensler. Diffused daylight reads evenly across an athletic training facility. © Heywood Chan. YE-H Photography

The strongest translucent facade concepts begin as a luminous brief. Define the quality of light first; select the system, finish, color, and performance values second. Think in plan and section before elevation: a translucent surface is a daylight lens that can tune direction, intensity, diffusion, privacy, and comfort.

Quick light brief:

Where should the space be bright?
Where do occupants need privacy?
Where is thermal performance doing the heaviest lift?
Where should it be soft?
Where do views matter?

01 **Set luminous targets**
Footcandle/lux goals, contrast, privacy, and glare tolerance by space type.

02 **Model early**
Use daylight simulation to size and position translucent zones before details are fixed.

03 **Grow the section**
Study solid zones, sight-glass zones, shading zones, and glowing zones together.

04 **Select the assembly**
Choose U-factor, VLT, SHGC, color, finish, span, and frame strategy around performance intent.

PERFORMANCE CRITERIA

Facade Performance Criteria

Do not evaluate translucent systems by appearance alone. The right question is: how does the full assembly shape daylight, thermal behavior, durability and construction risk?

Toy Market Chungju Store, Novo Architecture / Urban Builders Group. Color plus translucency creates identity at building scale. © Namsun Lee

Move the conversation from a “nice glow” to measurable building-envelope value. Evaluate the system as a complete assembly, not as a loose collection of parts.

DAYLIGHT
Diffuse light, reduced contrast, lower glare potential, and even illumination.

THERMAL + SOLAR
System-level U-factor, SHGC, VLT, color, opacity, air cavities, and frame strategy.

VISUAL
Privacy, silhouette control, color, finish, view strategy, and designed glow level.

BUILDABILITY
Module coordination, spans, support steel, installation access, and transition details.

RESILIENCE
Impact resistance, UV stability, drainage, weathering, maintenance, and durability.

Large, efficient buildings do not have to become windowless boxes. Translucent polycarbonate facade systems help you make daylight, energy performance, privacy, and architectural identity work together.

Specification reminders for architects

- **Use system-level data.** Energy codes and models typically need tested assembly values, not panel-only claims.
- **Coordinate visible light transmission with glare control.** More light is not always better; more usable light is the goal.
- **Ask for verified system-level performance data:** NFRC-listed values where applicable, ICC-ES evaluation reports, Class A fire information, impact testing, air/water performance, and warranty documentation.
- **Model the night mode.** Treat the translucent facade as a lighting surface with a target luminance, not just a backlit wall.

ORIENTATION AND CLIMATE

Orientation, Climate and Section

Orientation and climate should lead the facade strategy. Translucent polycarbonate can behave very differently by exposure, location, section, shading and finish.

Phoenix Mercury Training Facility, Gensler. Desert light calls for filtered, low-glare daylight and strong thermal logic. © Jason Roehner

Welsh National Sailing Academy, Ellis Williams Architect. A coastal envelope captures soft, limited daylight while reducing glare from water. © Hufton+Crow

IPS Eliza Blaker Expansion, Meticulous Architects. Layered clouds incorporated into the facade as an energy and shading strategy ©Danpal

Mt Peter OSHC, Fisher Buttrose Architects. A colorful sense of openness and energy while maintaining privacy and thermal control. ©

Facade orientation	Design strategy	Why it matters
North	Continuous translucent bands, clerestories, and soft daylight.	Low solar penalty; calm, stable illumination.
South	Pair translucency with shading, lower transmission finishes, and strong insulation.	Balances daylight with solar gain and comfort.
East / West	Limit area, add sunshades, and/or lower light transmission.	Low-angle sun increases glare and heat risk.
Hot-arid	Treat the facade as a tuned filter with a thermally efficient assembly.	Diffusion and matte finishes help manage glare and cooling load.
Cold / mixed	Use multi-cavity or double-panel assemblies; reserve glass for views.	Maximizes daylight without sacrificing thermal performance.

Practical takeaway

Start with the compass, then the section. A facade that succeeds in a cool, overcast climate may overheat or glare in a hot, high-sun climate unless the panel, cavity, shading and insulation strategy are tuned together.

SECTION

Layered in section, not a flat skin

The architecture of a high-performance translucent facade lives in the section. The assembly may be a single-glazed facade, a double-panel cassette system, a ventilated rainscreen over insulation, or a layered composition with sunshades, structure, and interior finishes. The goal is to make daylight, weather protection, thermal movement, maintenance, and construction work together.

THINK IN ZONES

Solid zones provide enclosure, structure, and thermal continuity.
Glass zones provide controlled views where outlook is essential.
Translucent zones provide diffuse daylight, privacy, and luminous identity.
Shading zones manage solar exposure and tune facade depth.

Core details to resolve early

Detailing checkpoints: water management, condensation control, thermal movement, expansion connectors, head/jamb/Sill conditions, corner strategy, adjacent cladding transitions, module coordination, and maintenance access.

RETROFIT AND EMBODIED CARBON

Lightweight Skins

Existing shells often have good bones but poor daylight, comfort or identity. Lightweight translucent systems can re-skin, over-clad, upgrade thermal performance or extend buildings with less structural intervention than heavier facade materials.

Grande Nef, Paris. Renovation preserved an iconic luminous profile while upgrading comfort, glare control and energy performance. Architect: Antoine Mercusot-Chatillon Architectes

Pagliacci Pizza, Bellevue. A small commercial footprint gains a durable day/night wayfinding marker. Architect: Flosand Studio Photographer: Rafael Soldi

Re-skin

Use ventilated translucent rainscreen systems over existing walls to improve appearance, add continuous insulation and create a fresh civic presence.

Extend

Add new framed bays or luminous volumes with relatively low facade weight, often around 1-2 lbs/sq ft depending on system.

Revitalize

Preserve the building story while upgrading comfort, daylight quality and code-facing performance criteria.

Design opportunity

Before demolishing a tired shell, ask whether a new translucent envelope can turn it into a bright, energy-conscious and memorable building asset. The embodied-carbon benefit is not only in the material weight; it is also in keeping existing structure, shortening field work and reducing the need for major new framing.

Transferable lesson: When the plan is simple, the envelope can carry light, depth, brand, civic presence, and retrofit value.

COLOR AND TEXTURE

Color as Architecture

Across building types, the strongest projects treat translucent polycarbonate as a daylighting, performance, and identity system, not as decorative cladding. With access to over 350 colors you no longer are limited on your design intent.

Color as architecture
A simple retail box becomes a playful landmark when color, translucency, and scale carry the experience.

Civic lantern
A sports and community facility uses color-tuned panels for daylight, recognition, and night wayfinding.

Small site, big presence
A lightweight rainscreen scrim can extend a compact commercial building into a memorable roadside marker.

Interior facade as media
Translucent panels can diffuse LED grids into a continuous light field for atriums, cores, and lobbies.

System selection
Match facade, Danpatherm, VRS, shading, skylight, canopy, or interior systems to the light brief.

Performance data
Review U-factor, VLT, SHGC, air/water, impact, fire, acoustic, and warranty information at the assembly level.

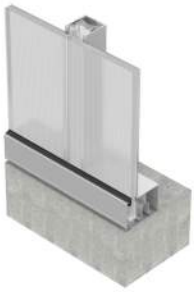
Design support
Request daylight studies, energy simulations, preliminary spans, details, CAD/BIM files, samples, and budget guidance.

Color + finish strategy
Explore Softlite, HP, Low-E/IR, Kinetic, 3DLITE, opaque, translucent, metallic, and custom color effects.

ARCHITECTURAL TAKEAWAY
Use color and translucency as building-scale design tools. They can soften mass, hide visual clutter, create privacy, animate the facade through changing sky conditions, and support a strong night identity.

SYSTEMS

Facade Systems



Single-glazed facade (NM, AirPT)
Flush exterior expression, dry-glazed modular assembly, strong diffusion, impact resistance, and efficient installation.

Double-glazed facade (K12)
Factory cassette strategy for stronger thermal performance, longer spans, clean appearance, and controlled daylight.

Ventilated rainscreen (VRS)
Lightweight over-cladding with a drying cavity; supports continuous insulation and retrofit identity upgrades.

Shading (Aura)
A solar control layer that filters glare and heat while preserving daylight and facade depth.

PROJECT LESSONS

EXTREME SUN
In hot, high-sun climates, a matte or Softlite translucent double-skin facade can filter intense daylight, reduce glare, and support a calmer interior environment for large-volume spaces such as training facilities.

COASTAL & OVERCAST SKIES
In cooler or coastal climates, translucent facades and roofs can capture limited daylight, spread it deeper into the interior, and soften glare from sky or water without relying on large areas of clear glass.

Detailing checkpoints: water management, condensation control, thermal movement, expansion connectors, head/jamb/base conditions, corner strategy, adjacent cladding transitions, module coordination, and maintenance access.

Whats Next?

LIGHT ARCHITECURE SOLUTIONS FOR THE BUILDING ENVELOPE

FACADES | RAINSCREEN | SKYLIGHTS | CANOPIES | SHADING | INTERIOR









Evaluate a Translucent Facade

Bring Danpal in before the elevation is fixed. The earlier the team reviews orientation, span, daylight targets and envelope detailing, the easier it is to protect the design intent and the performance story.

Quick design checklist

- What role is translucency playing: light, identity, privacy, retrofit - or all of the above?
- Does the translucent area align with spaces that benefit from diffused daylight?
- Is the facade resolved in section, not only rendered in elevation?
- Have orientation, climate and glare been tested early?
- Are drainage, movement, condensation and maintenance access detailed?
- Could an existing building be re-skinned instead of rebuilt?

Request project support

- Product and system selection
- Preliminary budgets and span reviews
- Daylight and energy studies
- Samples, color and finish review
- CAD/BIM files, specs and details
- NFRC, ICC-ESR and code documentation
- Installation and sequencing input

SCHEDULE A TRANSLUCENT FACADE DESIGN REVIEW

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Complete architectural systems for facade, cladding, roofing, skylight, shading and interiors.