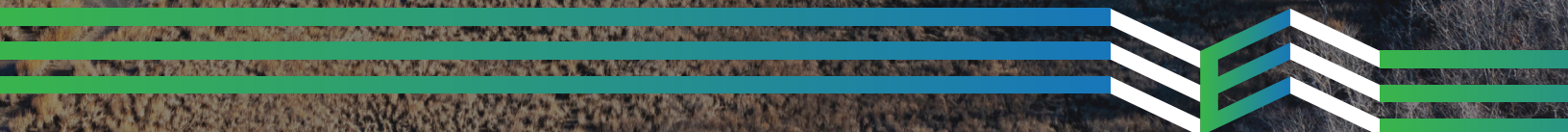




EKHO

INFRASTRUCTURE
SOLUTIONS



TRANSPARENT NOISE BARRIERS

TECHNICAL GUIDE

The logo consists of the letters 'EKHO' in a bold, sans-serif font, followed by a circle that serves as the letter 'O'.

EKHO

INFRASTRUCTURE
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When The View Matters.

EKHO offers innovative, transparent noise barriers that are expertly designed to control noise and wind along bridges, roadways, railways and beyond.

Noise & Wellness

Noise pollution, an increasingly prevalent issue in today's urbanized world, has been shown to have significant detrimental effects on human health. Studies have demonstrated that prolonged exposure to noise above 65 decibels can be linked to a range of physical and psychological health problems.



Elevated stress levels



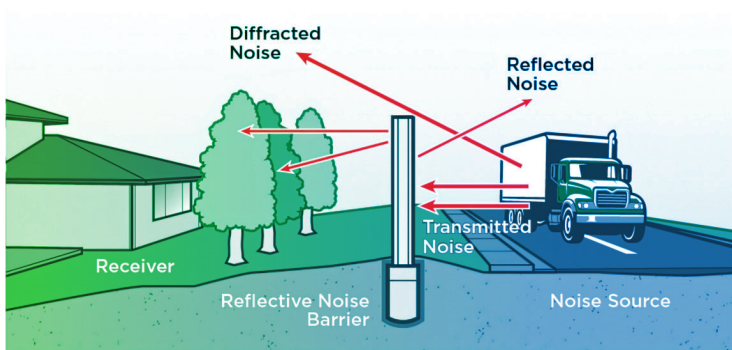
Disturbed sleep patterns



Increased risk of cardiovascular diseases



Impaired cognitive functions
(learning, memory and attention)



EKHO's Transparent noise barrier systems reduce the level of noise pollution by intercepting and reflecting sound, creating a quieter environment for residents and reducing the potential negative health effects associated with prolonged exposure to high noise levels.

Why Use Transparent

EKHO panels have the highest clarity and durability against sun and weather exposure. Using exceptional products like Acrylite® Soundstop offered in clear, colorless, matte finish and a variety of colors, we have the panels to meet your project aesthetic and engineering project requirements.



TRANSPORTATION: ROADS, HIGHWAYS & RAIL



PEDESTRIAN BRIDGES AND RAILINGS



RESIDENTIAL & MIXED USE APPLICATIONS

BENEFITS

- Excellent light transmission and brilliance
- Easy installation
- Durable surface
- Lightweight – half the weight of glass
- Impact resistant – 11X the strength of glass



Improve resident's quality of life



Does not inhibit natural light and therefore encourages growth of vegetation and plant life



Deter from vandalism or graffiti



Increase visibility and safety

COLORS

Transparent	Transparent Blue	Transparent Green	Transparent Brown
Clear	Midnight Blue 5S34	Danish Green 6S50	Smoky Brown 8S75
	Steel Blue 5S31	Forest Green 6S41	
	Sky Blue 5S33	Sea Green 6S44	
	Sapphire 5S09	Spring Green 6S40	
		Emerald 6S56	
Transparent Orange	Transparent Red	Transparent Violet	Transparent Yellow
Topaz 2S01	Ruby 3S02	Amethyst 4S01	Citrine 1S02
Transluscent	Opaque		
Frosted Satinice OS00 SC	Light Grey 7S90		
	White WS531		

Our Systems

No matter the complexity, we provide the necessary support and present the best options to make a project successful. Our systems are custom designed and engineered for real life applications.



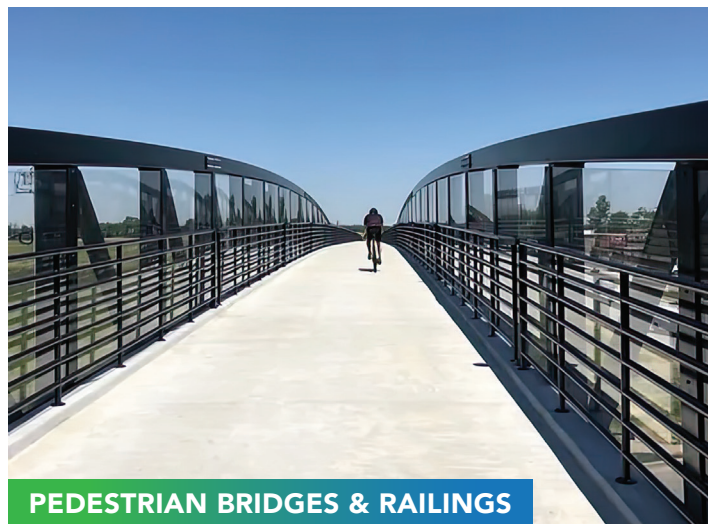
READY FIT FRAMES



WIND BARRIERS AND MBE



3-SIDED/FIELD BUILT



PEDESTRIAN BRIDGES & RAILINGS

TRANSPORTATION

GROUND MOUNTED NOISE BARRIER WITH OPTIONAL BIRDSAFE



STRUCTURE



GROUND MOUNTED NOISE BARRIERS



READY FIT FRAMES

Delivering resilient turnkey solutions, our systems effectively address noise reduction, wind deflection, and safety enhancement along bridges, roads, and highways. For added assurance, our systems can be equipped with an optional safety feature that prevents panel shattering upon collision, ensuring peace of mind.

FEATURES & BENEFITS

- Complete systems weigh as little as 12 pounds per square foot
- Allows natural light onto roadway
- 30-year warranty - panels will not yellow or haze despite decades of outdoor exposure
- Optional EKHO Break Safe Panels prevent panel fragments from shattering or falling if an accident causes panels to fracture in the clear zone
- Optional EKHO Bird Safe stripe and tinted colors available

SYSTEMS

- 3-Sided/Field Build System: Structure or ground-mounted
- Ready Fit Frames

AT A GLANCE

- Preserves the view
- Sound Reflective, STC 32 dB or greater
- Available in various colors and custom design features
- Designed to reduce noise along all types roadways while maintaining views and visibility for motorists

PEDESTRIAN BRIDGES & RAILINGS

FEATURES & BENEFITS

- Optional add-on EKHO Break Safe, available
- Miami-Dade approved - panels can withstand damage from debris caused by hurricane force winds
- Earthquake safe - resistant to edge impacts, unlike tempered glass
- Custom designs and images created with sandblasting

TECHNICAL DETAILS

Typical system weights range from 12 to 25 pounds per square foot. Increasing barrier heights and design wind loads are the main factors affecting system weight.

EKHO structure mounted noise barriers provide effective noise abatement and are an ideal solution to protect the safety of pedestrians from wind and debris while maintaining natural light and views.



AT A GLANCE

- A Superior safety feature that provides transparency of activity, allows for a well lit path, and reduces criminal activity
- Vandalism deterrent; Transparent panels can be reinforced with fragment retention to prevent shattering
- Minimize graffiti occurrences; Transparent panels can be easily washed clean without damage to the surface



MIXED-USE APPLICATIONS

READY-FIT FRAMES & 3-SIDED CMU SYSTEM

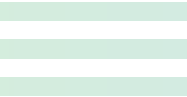
FEATURES & BENEFITS

- Easy to customize sheet sizing to suit smaller transparent applications such as “windows” or visual preservation in a wall system
- No cleaning required- dirt is rinsed away by rain
- Maintains excellent sound insulation properties
- Retains sightlines for businesses, prevent lost views of the surrounding environment (bodies of water, mountains, and other scenic vistas)

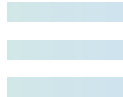
From pickle ball courts to commercial buildings, our transparent noise barriers can be used in many applications to preserve the view while reducing noise concerns.

TECHNICAL DETAILS

- Typically utilizing standard clear sheets, or optional Bird Safe
- Can add a top horizontal rail or center horizontal mullion if needed for large spans



AT A GLANCE

- Preserves the view
 - Sound Reflective, STC 32 dB or greater
 - Criminality is deterred when there is transparency
- 

WIND BARRIERS

Engineered for enhanced wind safety for drivers and pedestrians on bridge structures. Whether the goal is to prevent wind related motor vehicle accidents, or to limit bridge oscillation, wind barriers are a solution that enhance safety and the aerodynamic performance of bridge structures.

Vertical & Horizontal Wind Barriers

Individual shaped transparent panels that are engineered and pre-assembled to deflect and disperse wind speeds hitting the bridge. Panels are secured by custom-fabricated clamps and mounted on either side of the bridge structure.

Our wind barrier systems are:

- Custom fabricated to meet specified requirements
- Drastically reduce wind speeds
- Used to ensure the safety of motorists by reducing wind related rollovers and accidents
- Bridge remains operational during high winds, minimizing disruptions and ensures continuous traffic flow

Median Barrier Extensions (MBE)

Single transparent panels, often utilizing a MASH TL-4 Crash-Tested Barrier, that is mounted on top of the median barrier along a bridge structure to enhance the aerodynamic performance of cable-supported bridges.

- Improve bridge resiliency and performance
- Reduce the risk of instability issues such as vortex shedding or flutter during extreme wind events
- Preserves longevity and minimizes stress on the structure

TECHNICAL DETAILS

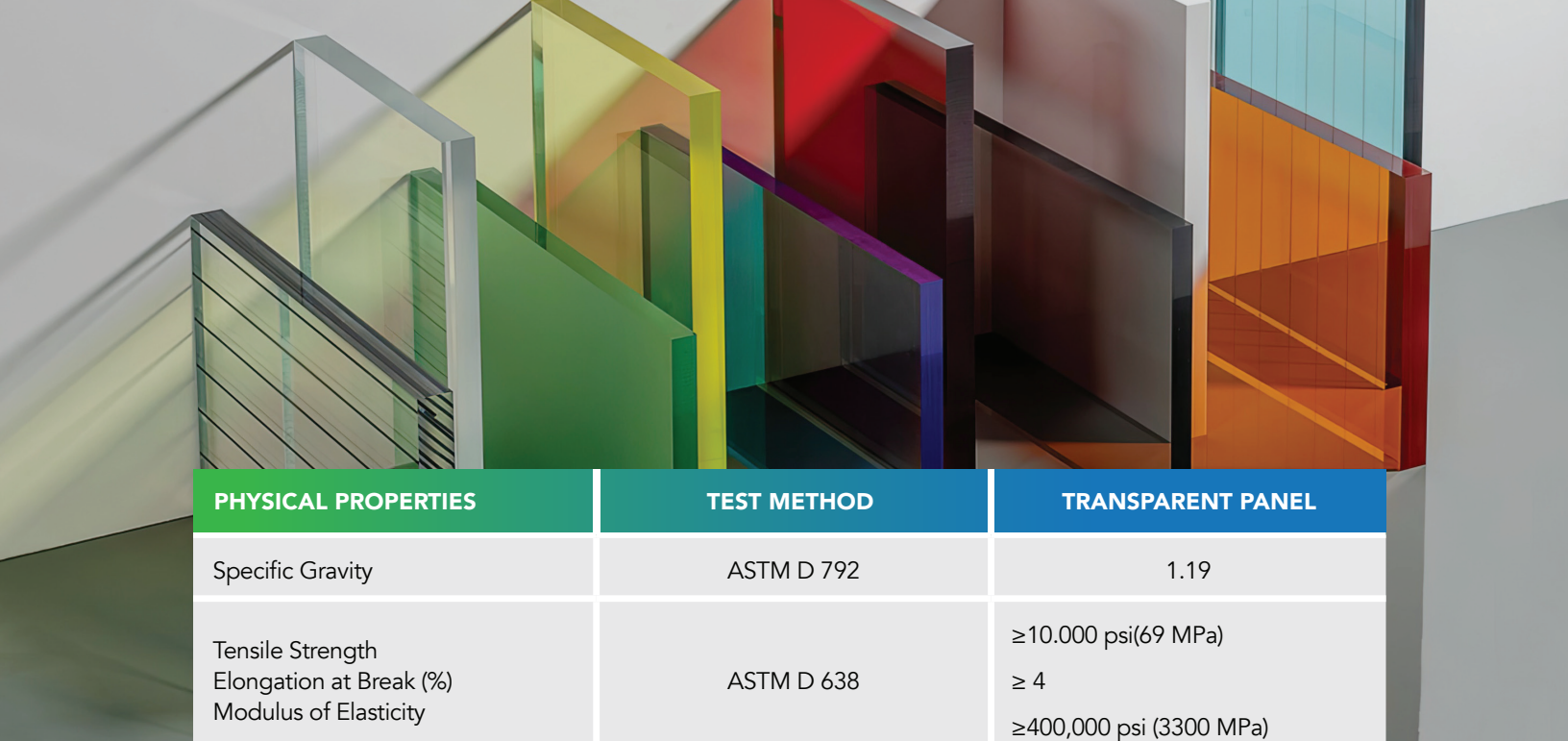
Our transparent noise barrier panels are crafted from a specialized acrylic, meticulously engineered for extended outdoor durability. Supported by an industry-leading 30-Year Warranty, these panels exhibit exceptional impact resistance and are designed for sustained, high-performance use over the long haul.

Large noise barrier elements reduce the need for steel supporting structures and enhance the transparency of the noise barrier. EKHO Structure Mounted Noise Barrier Systems are engineered to meet the most stringent AASHTO and State specific requirements. Standard systems may be customized to fit each specific project and often include PE design calculations and drawings.

PHYSICAL PROPERTIES	TEST METHOD	TRANSPARENT PANEL
Refractive Index	ASTM D-542	1.49
Initial Light Transmission, Total	ASTM D-1003	92%
Initial Haze	ASTM D-1003	1%
Initial Yellowness Index	ASTM E-313	<1
SOUND TRANSMISSION	TEST METHOD	TRANSPARENT PANEL
Sound Transmission Class (STC)	ASTM E90	15mm - 32 dB
		20mm - 34 dB
		25mm - 36 dB

EKHO panels perform under fire. From rooftops to roadways, EKHO panels are fire and burn tested making them a safe noise barrier option from the ground up.





PHYSICAL PROPERTIES	TEST METHOD	TRANSPARENT PANEL
Specific Gravity	ASTM D 792	1.19
Tensile Strength	ASTM D 638	≥10,000 psi(69 MPa)
Elongation at Break (%)		≥ 4
Modulus of Elasticity		≥400,000 psi (3300 MPa)
Flexural Strength	ASTM D 790	≥16,500 psi (115 MPa)
Modulus of Elasticity		≥475.00 psi (3300 MPa)
Compressive Strength (Yield)	ASTM 695 / ISO 604	≥16,000 psi (114 MPa)
Rockwell Hardness	ASTM 785	M-95
Resistance Against Stone Projectiles (15mm)	EN-1794-1	Pass
Small Missile Impact Test	ASTM E 1886/1996	Pass
Large Missile Impact Test	ASTM E 1886/1996	Pass
Resistance to Brushfire (15mm thickness)	EN-1794-2	Class 2
Deflection Temperature Under Load (264 psi)	ASTM D 638	≥119°F (93°C)
Coefficient of Linear Expansion	ASTM D 696	0.000040 in/in/°F (0.072 mm/m°C)
Flammability, Burn Rate (15mm thickness)	ASTM D 635	0.8 in/min (20 mm/min)
Self-ignition Temperature	ASTM D 1929	910°F (490°C)
Smoke Density Rating (15mm thickness)	ASTM D 2843	20%
Service Temperature	-	<180°F (82°C)





TRANSPARENT NOISE BARRIERS

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