



# SUSTAINABLE DESIGN

## USING ALUMINUM

INSENSATION INC.  
349 FIFTH AVENUE  
NEW YORK, NY 10016

[WWW.INSENSATION.COM](http://WWW.INSENSATION.COM)

OFFICES IN NEW YORK, LOS ANGELES ,  
MIAMI, SEATTLE, WASHINGTON D.C.  
SWITZERLAND AND GERMANY



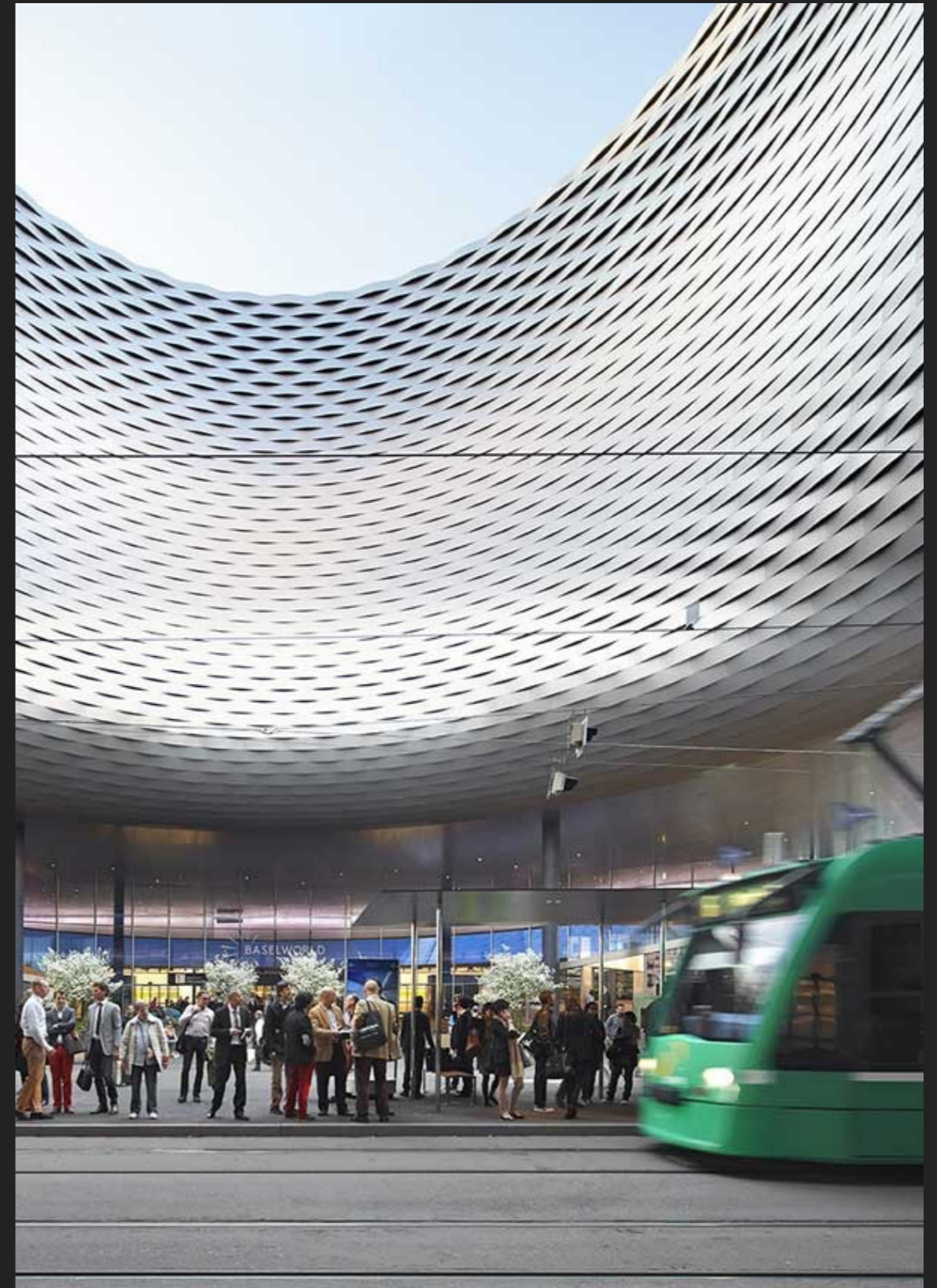
# LEEDERSHIP IN ENERGY AND ENVIRONMENTAL DESIGN



- ▶ LEED is a program of the U.S. Green Building Council designed to provide a framework for identifying and implementing practical and measurable green building design, construction, operations and maintenance solutions.
- ▶ LEED certification provides independent, third-party verification that a building ... was designed and build using strategies aimed at achieving high performance ... sustainable site development, water savings, energy efficiency, material selection and indoor environmental quality.
- ▶ LEED certification is increasingly an objective for a wide range of new commercial buildings and major renovations, it is a requirement for many buildings developed by or for federal, state and local government.

# MATERIAL OF CHOICE: ALUMINIUM

- ▶ Aluminum is the 3rd most abundant element, after oxygen and silicon, and the most abundant metal in the earth's crust
- ▶ 95% of all aluminum used in the building industry is recycled
- ▶ Some of the most beautiful objects in the world are made of aluminum
- ▶ Aluminum in interior design is becoming more prevalent





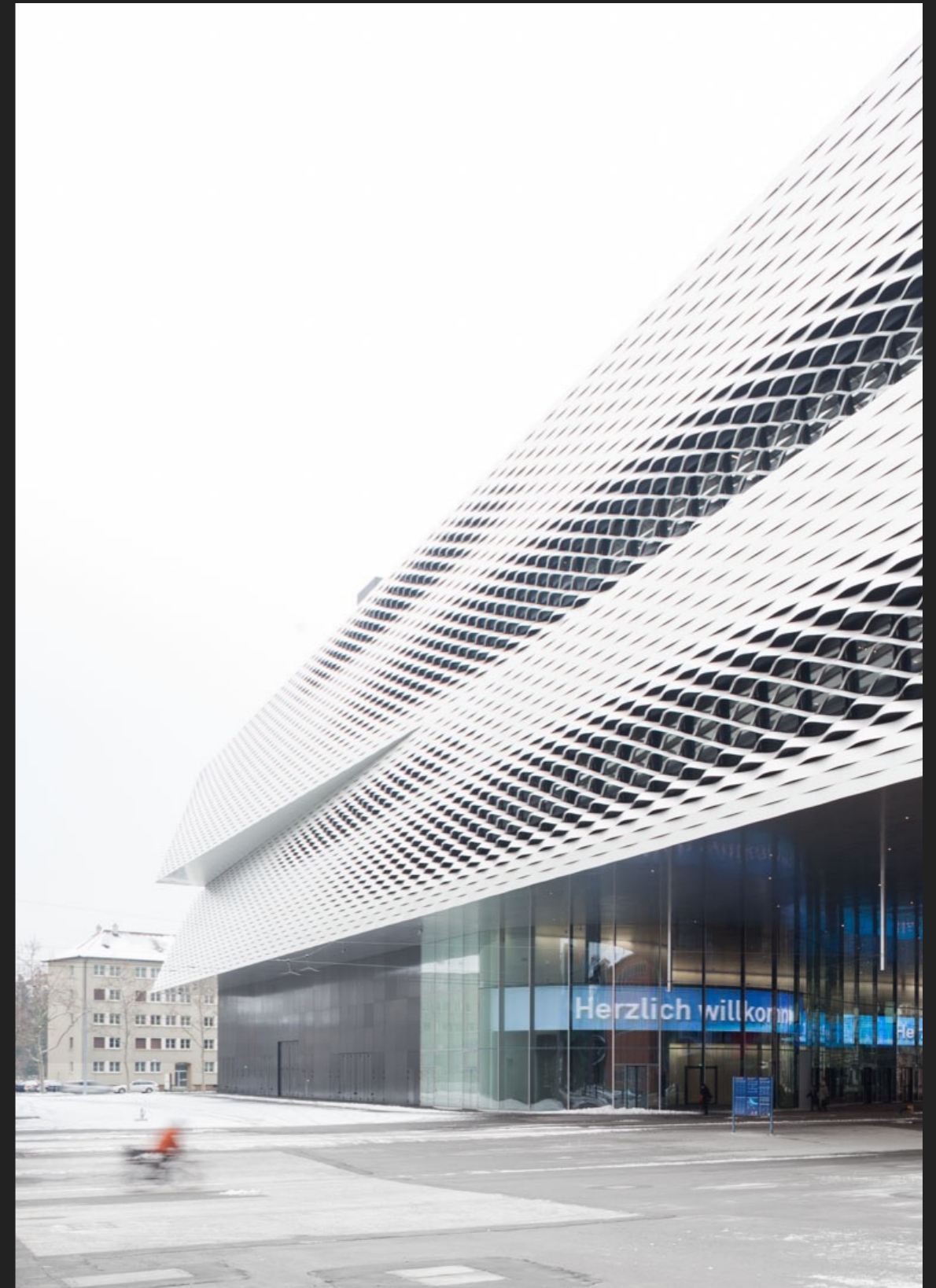
# AMERICA'S NEW INFRASTRUCTURE

- ▶ Thousands of concrete and steel-reinforced bridge decks require rebuilding. Aluminum will be a critical material in this new infrastructure
- ▶ The metal and its alloys are lightweight, durable, corrosion-resistant and infinitely recyclable
- ▶ London's Millennium Bridge (Foster and Partners)



# ROLE IN SUSTAINABILITY

- ▶ Aluminum is considered a vital component of green/sustainable buildings.
- ▶ The metal is easily recyclable and this process reduces energy consumption by more than 90%, as compared to production of new aluminum.
- ▶ Swiss Exhibition Center (Herzog de Meuron)



# THE MODERN SKYSCRAPER

- ▶ Aluminum products are weather-proof and corrosion-resistant
- ▶ Architects can design light structures with greater design flexibility
- ▶ High strength-to-weight ratio makes it useful as a structural material, weighing up to 65% less than steel
- ▶ Anodisation creates a hard, scratch-resistant coating
- ▶ Can be color-anodised or power-coated



# HISTORY IN CONSTRUCTION

- ▶ The first building to make major use of aluminum was the Empire State Building in 1930.
- ▶ Most of the tower structure and spire, entrances, elevator doors, ornamental trim and window spandrels are made of aluminum
- ▶ In 1994, the 5,460 steel windows were replaced with aluminum ones





# POWDER COATING

- ▶ Painted aluminium tends to be more resistant to corrosion, acid rain and mortar staining than anodisation
- ▶ Powder coating offers a larger colour choice
- ▶ Powder coating is hard, but not nearly as hard as anodising
- ▶ In abrasive conditions, anodising will last longer than paint.



## ANODISATION

- ▶ Anodising is an electro-chemical process that hardens aluminium and allows it to be colorised.
- ▶ Anodising changes the microscopic texture of the surface and changes the crystal structure of the metal near the surface
- ▶ Anodised aluminum is stronger, but is susceptible to thermal stress.
- ▶ Anodising emits no ozone producing solvents, and there are no heavy metals involved in the process



# QUALIFYING ALUMINUM

- ▶ Weight: Aluminium weighs significantly less than steel
- ▶ Speed: Prefab elements save time
- ▶ Cost: Aluminium structures usually cost less than steel
- ▶ Fire-rating: Aluminum has a lower melting point than steel
- ▶ Precision: Casting and extrusion are millimeter exact, allowing detailing



## RECYCLING FOR FUTURE GENERATIONS



- ▶ 95% of aluminum in buildings is recycled at the end of life/use
- ▶ Aluminum is infinitely recyclable. 75% of all aluminum ever produced is still in use today
- ▶ Using aluminum can help buildings qualify for green buildings status under LEED.
- ▶ Aluminum building products include: roofs, siding, curtain walls, window and door frames, facades, staircases, interior furnishings





**WE ALL MAKE  
CHOICES, BUT IN  
THE END OUR  
CHOICES MAKE  
US**

**THANK YOU FOR YOUR TIME!**

