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PREPARING
TO THRIVE:
**THE BUILDING
INDUSTRY
STATEMENT ON
RESILIENCE**

■

*Helping communities construct
a more certain future.*

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PRIORITIZING RESILIENCE ACROSS THE BUILT ENVIRONMENT

The American Institute of Architects (AIA) and the National Institute of Building Sciences (NIBS) worked together with nineteen industry organizations to lead by action: creating the *Building Industry Statement on Resilience* to represent the whole \$1 trillion dollar design and construction industry, provide continuity, demonstrate leadership by example, and be a banner for the industry to rally around. The effort began through a series of summits with the CEOs of many associations whose members are collectively responsible for the planning, design, construction, ownership, and maintenance of buildings and facilities. Led by AIA EVP/CEO,

Robert Ivy, FAIA, and NIBS President/CEO, Henry Green, to catalyze collective action that would enhance the safety, health, and wellbeing of the nation's communities; these summits identified the long term resilience of the built environment as a prominent concern, with many CEOs expressing interest in the development of a joint industry statement that would serve as a signal to members, policymakers, and the public at large. Recognizing the potential for such a statement, the AIA and NIBS led the development of the *Building Industry Statement on Resilience* together with nineteen founding signatories. To date, forty organizations have signed the Statement; committing to resilience principles and the development of thriving communities.

The *Building Industry Statement on Resilience* has influenced organizational priorities, been an impetus for new initiatives, and has catalyzed action across the industry. As demonstrated later in this summation, signatories have made broad advancements in research, education, advocacy, response efforts, and comprehensive planning for more resilient communities; recognizing that the continued safety of our nation's built environment hinges on the industry's commitment to resilience principles.



01

INDUSTRY STATEMENT ON RESILIENCE

Representing nearly 1.7 million professionals, America’s design and construction industry is one of the largest sectors of this nation’s economy, generating over \$1 trillion in GDP. We are responsible for the design, construction, and operation of the buildings, homes, transportation systems, landscapes, and public spaces that enrich our lives and sustain America’s global leadership.

We recognize that natural and manmade hazards pose an increasing threat to the safety of the public and the vitality of our nation. Aging infrastructure and disasters result in unacceptable losses of life and property, straining our nation’s ability to respond in a timely and efficient manner.

We further recognize that contemporary planning, building materials, and design, construction and operational techniques can make our communities more resilient to these threats.

“

TOGETHER, OUR ORGANIZATIONS ARE **COMMITTED TO BUILD A MORE RESILIENT FUTURE.**

”

Drawing upon the work of the National Research Council, **we define resilience as the ability to prepare and plan for, absorb, recover from, and more successfully adapt to adverse events.**

As the leaders of this industry, we are committed to significantly improving the resilience of our nation’s buildings, infrastructure, public spaces, and communities.

We research materials, design techniques, construction procedures, and other methods to improve the standard of practice.

We educate our profession through continuous learning. Through coordinated and continuous learning, design, construction

and operations professionals can provide their clients with proven best practices and utilize the latest systems and materials to create more resilient communities.

We advocate at all levels of government for effective land use policies, modern building codes, and smarter investment in the construction and maintenance of our nation’s buildings and infrastructure.

We respond alongside professional emergency managers when disasters do occur. Industry experts routinely work in partnership with government officials to survey damage, coordinate recovery efforts, and help communities rebuild better and stronger than before.

**INDUSTRY
STATEMENT ON
RESILIENCE**
(CONTINUED)

We plan for the future, proactively envisioning and pursuing a more sustainable built environment.

The promotion of resilience will improve the economic competitiveness of the United States. Disasters are expensive to respond to, but much of the destruction can be prevented with cost-effective mitigation features and advanced planning. Our practices must continue to change, and we commit ourselves to the creation of new practices in order to break the cycle of destruction and rebuilding. Together, our organizations are committed to build a more resilient future.

“
THE INDUSTRY STATEMENT ON RESILIENCE: A GUIDING DOCUMENT THAT **RECOGNIZES THE CRITICAL IMPORTANCE OF RESILIENT BUILT ENVIRONMENTS AND PROVIDES KEY ACTION ITEMS TO TURN WORDS INTO RESULTS.**
”

CULTIVATORS

Led the effort to establish and implement the Statement with their industry peers

American Institute of Architects
National Institute of Building Sciences

FOUNDERS

United to define the goals and objectives of a resilient built environment

American Council of Engineering Companies
American Planning Association
American Society of Civil Engineers
American Society of Interior Designers
American Society of Landscape Architects
American Society of Heating, Refrigerating, and Air-Conditioning Engineers
American Society of Plumbing Engineers
Associated Builders and Contractors
Associated General Contractors of America
Building Owners and Managers Association
International Code Council
International Facility Management Association
International Interior Design Association
Lean Construction Institute
National Association of Home Builders
National Society of Professional Engineers
Royal Institution of Chartered Surveyors

*The report represents only a portion of the overall resilience actions fulfilled, as reported by those organizations indicated in **bold**.*

**INDUSTRY
STATEMENT ON
RESILIENCE
(CONTINUED)**

US Green Building Council
Urban Land Institute

AMPLIFIERS

Joined the founding signatories in committing to the advancement of Statement goals

The Air Barrier Association of America
American Wood Council
BuildStrong Coalition
Congress for New Urbanism
Concrete Reinforcing Steel Institute
Construction Specifications Institute

EcoDistricts

Federal Alliance for Safe Homes

Green Building Initiative

Illuminating Engineering Society

Insurance Institute for Business & Home Safety

International Association of Plumbing and Mechanical Officials

National Association of Mutual Insurance Companies

National Concrete Masonry Association

National Fire Protection Association

National Insulation Association

National Ready Mixed Concrete Association

Portland Cement Association

U.S. Resiliency Council

02

CONVENING & COALESCING AROUND COMMUNITY HEALTH & SAFETY

The *Building Industry Statement on Resilience* serves as an actionable framework for what those in the building industry have long recognized: the best way for a community to survive – and ideally thrive – in the face of adversity is to be well-prepared in advance. With hazard mitigation, public safety, and thriving communities in mind, building industry CEOs identified resilience as a key topic requiring collective actions during one of their regular convenings.

To turn this recognition into an actionable framework, the American Institute of Architects and the National Institute of Building Sciences led a coalition of twenty-one building industry organizations in defining the goals and objectives of a resilient built environment. This work ultimately led to the Industry Statement on Resilience; a guiding document with key action areas to enhance the resilience of the built environment. Embodied in the broad signatory representation is an inclusive system-approach that encourages enhanced resilience from the beginning of the planning and design processes and throughout the service life of the building.

03

CATALYZING COORDINATED GOALS & RESPONSE

The *Building Industry Statement on Resilience* has catalyzed the integration of resilience goals into existing organizational frameworks. The majority of signatories report that they have “become more aware of their unique role in achieving resilience” since committing to the statement. More than half of the signatories have used the Statement to “advance their organizational mission statement/values” as well as “provide support and/or validation for moving forward on organization initiatives”.¹ This shift in organizational priorities has led to concrete action.

“
 THE *BUILDING INDUSTRY STATEMENT ON RESILIENCE* HAS CATALYZED THE INTEGRATION OF RESILIENCE GOALS INTO EXISTING ORGANIZATIONAL FRAMEWORKS.
 ”

¹ According to the 2016 Signatory Survey

04

FRAMEWORK FOR PROACTIVE RESILIENCE

As leaders of the built environment industry, signatories committed to significantly improve the resilience of the nation’s buildings, infrastructure, public spaces, and communities. Five actionable commitment areas are identified in the statement:

- **Research** materials, design techniques, construction procedures, and other methods to improve the standard of practice.
- **Educate** the profession through continuous learning. Through coordinated and continuous learning, design, construction, and operations professionals can provide their clients with proven best practices and utilize the latest systems and materials to create more resilient communities.
- **Advocate** at all levels of government for effective land use policies, modern building codes, and smarter investment in the construction and maintenance of our nation’s buildings and infrastructure.
- **Respond** alongside professional emergency managers when disasters do occur. Industry experts routinely work in partnership with government officials to survey damage, coordinate recovery efforts, and help communities rebuild better and stronger than before.
- **Plan** for the future, proactively envisioning and pursuing a more sustainable built environment.

**THE RESILIENCE
BUILDING COALITION
IS COMMITTED TO
REDUCING PENDING AND
POTENTIAL NEGATIVE
IMPACTS ON PEOPLE AND
THE ENVIRONMENT.**



05

ACHIEVEMENTS & MILESTONES

The coalition further developed a vision and set of guiding principles for their work. Signatories have taken significant action on each of the five commitment areas:

01 RESEARCH

- **AMERICAN SOCIETY OF LANDSCAPE ARCHITECTS**

ASLA co-wrote/produced *Banking on Green: A Look at How Green Infrastructure Can Save Municipalities Money and Provide Economic Benefits Community-Wide*. The report has been helpful in green infrastructure advocacy with public agencies/owners. ASLA is currently in the planning stages to conduct additional research.

- **ECODISTRICTS**

EcoDistricts researched the application of resilience thinking at a district and neighborhood scale; which will cumulate in a tool for application on urban regeneration projects.

- **FEDERAL ALLIANCE FOR SAFE HOMES**

FLASH released its latest building code commentary paper, *Disaster Resilience Rising Means the Time is Right*, with innovative, actionable recommendations on how to incorporate resilience measures to strengthen the U.S. building code system.

- **ILLUMINATING ENGINEERING SOCIETY**

IES implemented a new 5-year research plan that will examine resilience outcomes related to lighting for outdoor public spaces and lighting of transportation infrastructure.

- **INSURANCE INSTITUTE FOR BUSINESS & HOME SAFETY**

IBHS continues testing to support resilient construction at the IBHS Research Center and produced the *Rating the States* building code report. IBHS research intends to produce actionable results for use by insurers, policyholders and public policymakers.

- **INTERNATIONAL CODE COUNCIL**

ICC examined their codes to find overlap



between resilience and the building and life safety codes.

- **NATIONAL READY MIXED CONCRETE ASSOCIATION**

NRMCA conducted research with the MIT Concrete Sustainability Hub on community resilience using environmental life cycle assessment and life cycle cost analysis to demonstrate the benefits for building resilient structures and communities.

- **NATIONAL INSTITUTE OF BUILDING SCIENCES**

NIBS produced multiple reports on the value of mitigation and resilience, including a business management process for critical infrastructure that supports

resilience planning, and identification of incentivization pathways to realize resilience.

02 EDUCATION

- **AMERICAN SOCIETY OF CIVIL ENGINEERS**

ASCE develops publications, conferences and webinars focused on resilience in their respective disciplines. They also launched the Infrastructure Resilience Division in January 2015 with the purpose of addressing the need of community resilience.

- **AMERICAN SOCIETY OF LANDSCAPE ARCHITECTS**

ASLA produced educational

materials and training for landscape architects and other design/planning professionals on resilience-related topics including: green stormwater infrastructure, stormwater best management practices, ecological restoration, coastal flooding adaptation and environmental planning.

- **BUILDING OWNERS AND MANAGERS ASSOCIATION**

BOMA is incorporating resiliency into their Emergency Preparedness Guide for building owners and facility managers which assists building owners in preparing buildings and occupants for natural disasters and provides practical steps to ensure buildings and business recover quickly after disaster.

- **ECODISTRICTS**

EcoDistricts is advancing a course on district and neighborhood-scale resilience.

- **FEDERAL ALLIANCE FOR SAFE HOMES**

FLASH produced and distributed educational assets and trainings

including: a collegiate building code course piloted at Clemson University; multi-hazard mitigation and rebuilding techniques for National VOAD construction managers; tornado safe room construction best practices for contractors; business continuity and resilience workshops specific to seismic regions, and a seismic mitigation assessment and education program in partnership with fire departments.

- **GREEN BUILDING INITIATIVE**

GBI has updated its mission and principles to include resilience. GBI is revising tools and education to promote integrated design processes that encourage community input, site selection that considers regional climatic impacts, materials selection through use of life cycle assessment, building service life analyses, and moisture control analyses.

- **INTERNATIONAL FACILITY MANAGEMENT ASSOCIATION**

IFMA is offering online and live resilience education sessions.



ACHIEVEMENTS & MILESTONES (CONTINUED)

- **INSURANCE INSTITUTE FOR BUILDING AND HOME SAFETY**
IBHS has produced videos (live and animations) and infographics.
- **ILLUMINATING ENGINEERING SOCIETY**
The IES Resilience Committee has recently formed and will be developing educational material and initiating communications with members and other industry entities.
- **INTERNATIONAL CODE COUNCIL**
ICC provides training on the International Green Construction Code, International Existing Building Code, and the International Energy Conservation Code, all of which enhance the resilience of a community.
- **NATIONAL INSTITUTE OF BUILDING SCIENCES**
The NIBS Annual Conference has focused on the concept of resilience for several years. The conference brings together thought leaders and industry participants to discuss emerging issues in resilience and advance implementation of resilience strategies across the industry. Additionally, the *Whole Building Design Guide (WBDG)* promotes resilience through content on safety/security. WBDG receives over 600,000 unique visitors a month. Lastly, the Multihazard Mitigation Council has hosted regular webinars on topics related to resilience, attracting 50-100 participants.

- **NATIONAL READY MIXED CONCRETE ASSOCIATION**
The NRMCA Building Green with Concrete course includes a section on resilience which has educated about 80 engineers and architects.

03 ADVOCACY

- **AMERICAN INSTITUTE OF ARCHITECTS**
The AIA participates in the BuildStrong Coalition and supports the Safe Building Code Incentive Act and the PREPARE Act. The AIA also submitted recommendations to FEMA on effective mitigation measures for the proposed disaster deductible program. Assisting more than 17 cities throughout the US, the AIA is a platform partner in the 100 Resilient Cities Initiative to incorporate resilient design strategies.
- **AMERICAN SOCIETY OF CIVIL ENGINEERS**
ASCE produces advocacy related documents including the Infrastructure Report Card;
- **AMERICAN SOCIETY OF INTERIOR DESIGNERS**
ASID participates in the International Federation of Interior Architects/Designers (IFI) Blue Sky Task Force, a targeted envisioning or strategy subgroup tasked with retooling the operational and practical planning of the IFI and identified Resiliency as a key IFI Advocacy Platform.
- **AMERICAN SOCIETY OF LANDSCAPE ARCHITECTS**
ASLA works on supporting green infrastructure for stormwater management, applying SITES to federal buildings, and Complete Streets advocacy.
- **BUILDING OWNERS AND MANAGERS ASSOCIATION**
BOMA is developing policy that will act as a guide for BOMA staff to advocate at the federal level and assist in BOMA's codes and standards program.

Failure to Act Economic Studies; and conducts legislative visits; and *Innovative Technology Game Changers.*

- **FEDERAL ALLIANCE FOR SAFE HOMES**

Supports the BuildStrong Coalition and the Safe Building Code Incentive Act, and provides subject matter expertise on resilience in local, national and international forums.

- **INSURANCE INSTITUTE FOR BUSINESS & HOME SAFETY**

IBHS provides technical support to various public policy efforts and participates in a wide range of forums.

- **INTERNATIONAL CODE COUNCIL**

Many states and localities have updated ICC-based codes based on post-Sandy disaster resilience.

- **NATIONAL INSTITUTE OF BUILDING SCIENCES**

NIBS supports the BuildStrong Coalition and advocates for several strategies including the adoption and enforcement of building codes, the update of design criteria to address changes in climate and evolving hazard threats.

NIBS also participated in the “Resilient Cities Summit” to build capacity at the local level for implementation of resilient programs. In support of that effort, the Institute developed “Six for the City: Recommendations to Advance High-Performance Communities.”

- **NATIONAL READY MIXED CONCRETE ASSOCIATION**

With strong support from NRMCA, earlier this year, Rep. Tom Reed (R-NY) introduced bipartisan legislation – H.R. 3397, The Disaster Savings and Resilient Construction Act of 2015 – a business-related tax credit for a portion of the cost of commercial and residential buildings that comply with resilient construction requirements in a federally-declared major disaster area.

04 RESPONSE

- **AMERICAN INSTITUTE OF ARCHITECTS**

Trained members of the AIA

“
TOGETHER, WE WILL PURSUE SYSTEMS-LEVEL SOLUTIONS THROUGH AN INTEGRATED, MULTI-DISCIPLINARY APPROACH TO PROBLEM SOLVING.
”

provide post-disaster building safety assessments as volunteers for municipalities. Instructors provide this training to architects, engineers and building officials as part of AIA’s Disaster Assistance Program. Lessons learned are captured to improve design guidance for building performance and have led to innovative policy initiatives and resilient design guidelines.

- **AMERICAN SOCIETY OF CIVIL ENGINEERS**

ASCE regularly deploys Post Disaster Assessment Teams domestically and internationally. Data collected is used to update existing standards, and lessons learned knowledge

is disseminated in technical publications, and presented in conference sessions.

- **BUILDING OWNERS AND MANAGERS ASSOCIATION**

BOMA has organized fundraising and communications support following Hurricanes Katrina and Sandy as well as post 9-11 recovery in New York and D.C.

- **FEDERAL ALLIANCE FOR SAFE HOMES**

FLASH provides consumer materials on topics including clean-up, rebuilding, and insurance to disaster-affected areas. Resources are typically distributed in FEMA disaster recovery centers (DRCs).

**ACHIEVEMENTS
& MILESTONES
(CONTINUED)**

- **INTERNATIONAL CODE COUNCIL**
ICC provided training and technical support for localities affected by Hurricane Sandy and other natural disasters.

05 PLANNING

- **AMERICAN INSTITUTE OF ARCHITECTS, AMERICAN SOCIETY OF CIVIL ENGINEERS, NATIONAL INSTITUTE OF BUILDING SCIENCES, AND NATIONAL READY MIXED CONCRETE ASSOCIATION**
Participated in the development of NIST’s “Community Resilience Planning Guide for Buildings and Infrastructure Systems” and continue to do so with the Expert Panel on Community Resilience.
- **AMERICAN INSTITUTE OF ARCHITECTS**
Members and components of the AIA have spearheaded and contributed to the development of resilience design credits and rating systems including the USGBC LEED resilience pilot credits, US Resiliency Council and RELi Resiliency Action List and Credit Catalog. AIA members have advised on climate adaptation planning in Washington DC, California and Virginia, to name a few.
- **AMERICAN SOCIETY OF LANDSCAPE ARCHITECTS**
ASLA co-led/developed the Sustainable Sites

Initiative for Sustainable Land Design and Development, including the SITES v2 Rating System. SITES addresses resilience and hazard mitigation and emphasizes the critical need for site planning in land design and development.

- **NATIONAL INSTITUTE OF BUILDING SCIENCES**
NIBS develops tools that help communities and facility professionals incorporate resilience: The Integrated Rapid Visual Screening program is designed to determine initial or relative risk and resilience for facilities based on visual inspection only. It is currently available in versions for Buildings, Mass Transit Stations and Tunnels. NIBS is also working with the SAFETY Act office to develop a program whereby facilities can implement best practices for facility operations and receive recognition for such actions.
- **UNITED STATES GREEN BUILDING COUNCIL**
USGBC launched a 3-credit pilot suite on Resilience, including Assessment and Planning for Resilience; Design for Enhanced Resilience; Passive Survivability & Functionality During Emergencies. The pilot credits serve as an entry point for clients and project teams who design for hazard and climate risk.

06

FUTURE ENDEAVORS

Signatories will continue to advance the resilience of the built environment by engaging and supporting individual and collective efforts. Signatories working together as the Resilience Building Coalition have made initial commitments to the following topics: code development, high performing buildings, climate data-informed design standards, existing building retrofits and regulations, financial incentives for resilience, and business continuity in the built environment. We recognize that the challenges that lie ahead are complex and require “all hands on deck” to generate integrated solutions that will allow communities to thrive and prosper for generations to come.

The Resilience Building Coalition is committed to reducing pending

and potential negative impacts on people and the environment as a minimum obligation to ensure health, safety, and welfare of the public as regulated through licensure. Incorporating design, construction practices, plans and programs and systems and materials, signatories recognize that current practices may not be effective in solving future problems. Because we understand that individuals and communities face challenges and vulnerabilities beyond natural disasters and the changing environment, we also anticipate and avert future adverse environmental, economic, and social effects. Together, we will pursue systems-level solutions through an integrated, multi-disciplinary approach to problem solving.

- *Report edited and designed by statement cultivator, the **American Institute of Architects**, with the **National Institute of Building Sciences**.*
- *Report content contributed by statement signatories.*