

# Aon Construction Risk Portal

The Construction Risk Portal is a web-based, interactive tool that hosts two applications essential to identifying risks specific to construction in North and South America. The Construction Risk Map aggregates jurisdiction specific statutory requirements and common case law on a variety of construction risk topics such as anti-indemnity, construction defect and exhaustion of limits. The CAT Risk Analyzer provides a catastrophic risk profile for a specific location, focusing on the perils of flood, earthquake and named windstorm.



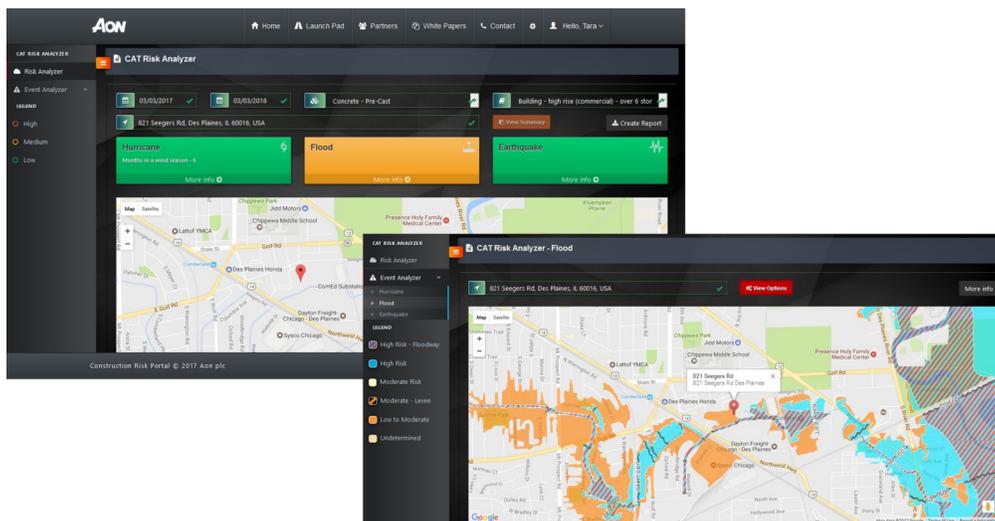
## Risk Maps

The Construction Risk Maps present users with an aggregated view of case law, legislation and hot button issues affecting construction across all jurisdictions throughout North and South America in an interactive format. Aon is able to provide this information on a real time basis through Aon's global subject matter experts as well as alignment with ALFA International and Axco Insurance Information Services.



## CAT Risk Analyzer

The CAT Risk Analyzer is a dynamic, risk analysis tool that provides CRP users with the ability to generate a high level risk profile dependent on risk specific metrics submitted by users. Developed in partnership with Aon Benfield's Impact Forecasting team, the risk analysis focusses on flood, earthquake and named wind perils. This risk profile can be used to better understand the potential natural exposures associated with the project location and can be a useful indicator as to when if a Probable Maximum Loss (PML) study should be conducted by the Impact Forecasting Team.



# Construction Risk Map Categories

## United States

### Liability

- Exhaustion of Limits
- Anti-Indemnity
- Construction Defect
- Warranty Repair – Statute
- Warranty Repair – Notice of Claim Warranty
- Repair – Right to Repair Damage Limitation
- Statute of Repose
- Statute of Limitations
- Negligence Rule
- Insurability of Punitive Damages
- Punitive Damages – Vicariously Assessed
- Punitive Damages – Directly Assessed Trigger of Coverage
- Allocation among Insurers
- Duty to Defend
- Duty to Settle
- Joint and Several Liability
- Sovereign Immunity

### Workers Compensation

- Jurisdiction
- Rate & Loss Cost Filing
- EMR Production
- Proof of Coverage
- Assigned Risk Residual Market
- State Administration
- Employee Notice to Employer
- Employee Claim Filing
- Employer Reporting
- Exclusive Remedy
- Positive Drug Screen
- Choice of Doctor
- Work Comp Act
- Claim Adjudication
- Injury by Co-Employee
- Exposure for Termination
- Third Party Action-Over
- Co Employee’s & Work Injuries Subrogation Available
- Stipulations or Settlements
- Full and Final Settlements Settlement Approval
- Work Comp Insurance Requirements Self-Insurance
- Requirements Undocumented Worker Benefits

### Operations/Contracts

- Union Presence
- Safety & Losses
- Contract Retention
- Choice of Law
- COI Regulations
- Reservation of Rights
- Contingent Payment

### Surety

- Mechanic’s Lien Law
- Mechanic’s Lien - Notice
- Mechanic’s Lien - Claim
- Mechanic’s Lien - Enforcement
- Mechanic’s Lien – Ability to Wave

- Contractor’s License
- Workers Compensation
- DOT Bonds
- Wage & Welfare
- Tax Bond

### Project Delivery

- Design Build
- Wrap Up Private
- Wrap up Public
- P3

### Auto

- No Fault
- Uninsured Motorist

## Latin America

### Country Overview

- Economy
- Currency & Exchange
- Political Risk
- Terrorism Risk
- War Risk
- Corruption Risk
- Expropriation Risk

### Construction - All Risk

- Summary
- Building Contract Conditions
- Limits & Scope of Cover
- Contractor Liability
- Rating & Deductibles
- Distribution

### Professional Indemnity

- Summary
- Limits & Scope of Cover
- Rating & Deductibles
- Professions
- Distribution

### Liability

- Summary
- Limits & Scope of Cover
- Rating & Deductibles

### Insurance Market

- Non-Admitted
- Fronting

- Primary Insurers
- Taxes
- Reinsurance

### Workers Compensation

- Summary
- Regulator
- Conditions
- Limits of Indemnity
- Scope of Cover
- Distribution

## Canada

### Limitation Act

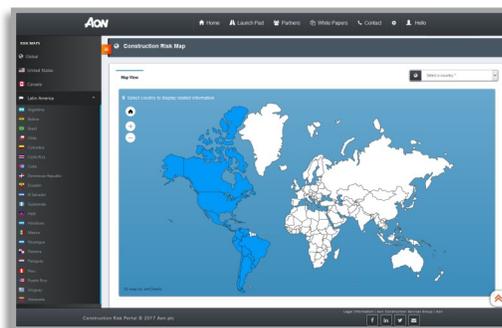
- Basic Limitation Period
- Ultimate Limitation Period
- Triggering Event
- Limitations Act

### Workers Compensation

- Work Comp Act
- Maximum Assessable Earnings
- Experience Rating Program

### Contractor Licensing

- Summary
- Notes
- Requirement



# CAT Risk Analyzer

## Earthquake

### Hazard Map

The hazard map shown in the CRP Event Analyzer refers to an estimate of peak ground acceleration (PGA) that has a 2% probability of being exceeded in 50 years. The earthquake ground motion on the map varies from location to location due to magnitudes, distance from faults, frequencies of occurrence, and soil conditions.

### Shake Effect

The Modified Mercalli Intensity Scale, included below, is used to measure the magnitude of an earthquake. This scale was developed in response to issues with the Richter Scale, which measures energy released by seismic waves, but doesn't effectively describe damage potential for the general public. The scale represents damage done to human structures, as reported by observers, and provides a more straightforward description of the risk potential.

Intensity	PGA†	Shaking	Description/Damage
I	<0.17	Not felt	Not felt except by a very few under especially favorable conditions.
II	0.17 - 1.4	Weak	Felt only by a few persons at rest, especially on upper floors of buildings.
III	0.17 - 1.4	Weak	Felt quite noticeably by persons indoors, especially on upper floors of buildings. Many people do not recognize it as an earthquake. Standing motor cars may rock slightly. Vibrations similar to the passing of a truck..
IV	1.4 - 3.9	Light	Felt indoors by many, outdoors by few during the day. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motor cars rocked noticeably.
V	3.9 - 9.2	Moderate	Felt by nearly everyone; many awakened. Some dishes, windows broken. Unstable objects overturned. Pendulum clocks may stop.
VI	9.2 - 18	Strong	Felt by all, many frightened. Some heavy furniture moved; a few instances of fallen plaster. Damage slight.
VII	18 - 34	Very strong	Damage negligible in buildings of good design and construction; slight to moderate in well - built ordinary structures; considerable damage in poorly built or badly designed structures; some chimneys broken.
VIII	34 - 65	Severe	Damage slight in specially designed structures; considerable damage in ordinary substantial buildings with partial collapse. Damage great in poorly built structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned.
IX	65 - 124	Violent	Damage considerable in specially designed structures; well - designed frame structures thrown out of plumb. Damage great in substantial buildings, with partial collapse. Buildings shifted off foundations.
X	>124	Extreme	Some well - built wooden structures destroyed; most masonry and frame structures destroyed with foundations. Rails bent

\*Data Source: USGS (United States Geological Survey)

† PGA or Peak Ground Acceleration - the maximum ground acceleration that occurs during an earthquake

# CAT Risk Analyzer

## FEMA Flood Map\*

Through FEMA's flood hazard mapping program, Risk Mapping, Assessment and Planning (MAP), FEMA identifies flood hazards, assesses flood risks and partners with states and communities to provide accurate flood hazard and risk data to guide them to mitigation actions. Flood hazard mapping is an important part of the National Flood Insurance Program (NFIP), as it is the basis of the NFIP regulations and flood insurance requirements. FEMA maintains and updates data through Flood Insurance Rate Maps (FIRMs) and risk assessments. The maps include statistical information such as data for river flow, storm tides, hydrologic/hydraulic analyses and rainfall and topographic surveys.

### 1% Annual Chance Flood Hazard

The 1% Annual Chance Flood Hazard (100 Year return period) is considered the base flood for floodplain management and flood insurance purposes. Base flood means there is a 1% annual chance of being equaled or exceeded† in any given year.

### Regulatory Floodway

Channel of a river or other waterway and the adjacent land that must be reserved. Development in these areas is likely to divert flow and may contribute to increased water depths during a flood. Development in these areas will likely require additional studies of the potential flood impact.

### 0.2% Annual Chance Flood Hazard

This zone, sometimes referred to as the 500 year floodplain, has a 0.2% chance of flood being equaled or exceeded in any given year. This area is considered a low to moderate risk area.

### Future Conditions 1% Annual Flood Hazard

Development in this area has the potential to increase flood frequency and flood levels.

### Area with Reduced Flood Risk due to Levee

This is an area protected by a levee however, if the structure were to fail or be overtopped the flood risk potential is high.

### Area of Undetermined Flood Hazard

Areas with possible but undetermined flood hazards; no flood analysis

## Impact Forecasting Flood Map\*\* (Beta)

Impact Forecasting, Aon Benfield's catastrophe model development team, provide a riverine flood model to more precisely quantify flood risk at a much higher resolution compared to other sources. This enables users to better understand the peril and apply insights to risk management decisions through improved data and the latest scientific research. The flood maps, which show the extent and depth associated with key hazard return periods, were developed to compliment and extend FEMA flood plains.

### 50 Year Flood Risk

The 50 year flood risk has a probability of recurrence of 2%, or 1 in 50.

### 100 Year Flood Risk

This zone is comparable to the FEMA 1% Annual Chance Flood Hazard; the probability of recurrence is 1%.

### 500 Year Flood Risk

This zone, comparable to the 0.2% Annual Chance Flood Hazard, is also considered a low to moderate risk area.

\*Data Source: FEMA (Federal Emergency Management Agency)

\*\*Data Source: Aon Benfield Impact Forecasting

†**Exceedance Probability** is a specific probability level, such as 1%, on the loss exceedance probability distribution. Exceedance probabilities can be expressed as **Return Periods**. For example, the 1% annual exceedance probability is the 100 year return period, or average rate of exceedance of 1 in 100 years (Note: it should not be interpreted as occurring regularly every 100 years)

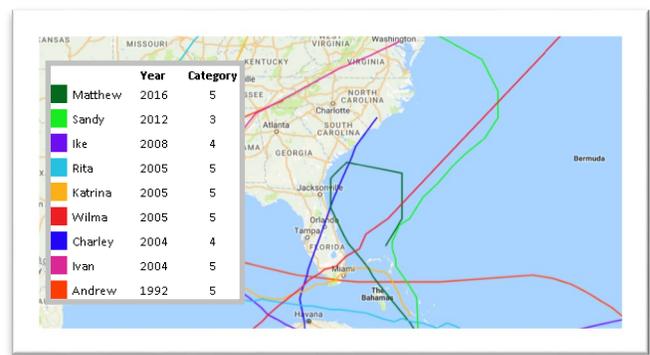
# CAT Risk Analyzer

## Named Windstorm / Hurricane

Developed by the Aon Benfield Impact Forecasting team, the wind hazard map\* represents 3-second gust wind speeds collected at 10 meters (33 feet) above ground. The Hurricane Event Analyzer in CRP demonstrates the 1% probability of a given wind speed being met or exceeded in any given year. This type of map was originally developed by the American Society of Civil Engineers (ASCE) to provide a standard for general structural design.

The hurricane path map displays some of the most destructive and costly hurricanes over the last few decades. Understanding the history of hurricane landfalls is an important step in determining potential vulnerabilities.

The Saffir-Simpson hurricane wind scale, included below, classifies hurricanes based on sustained wind speed (one minute wind speed at ten meters). The scale includes both meters per second and miles per hour for each category and also the potential property damage. It is important to note that while the Saffir-Simpson table classifies and describes damage due to sustained wind speeds generated during a hurricane, the Hurricane Event Analyzer map displays an aggregated average of 3 second wind speeds.



### Saffir-Simpson Hurricane Intensity Scale\*\*

CATEGORY	WIND SPEED 3 SEC	MPH	STORM SURGE	DAMAGE POTENTIAL
1	94 - 121	74 - 95	4 – 5 ft	Dangerous winds may produce some damage. Primarily shrubbery, trees, foliage. Older, unanchored homes. Potential power failure.
2	122 - 140	96 - 110	6 – 8 ft	Extensive damage. Homes could sustain roof and siding damage. Shallow rooted trees may be uprooted. Power outages are expected.
3	141 - 165	111 - 130	9 – 12 ft	Devastating damage. Major damage to homes. Many trees snapped or uprooted. Power outages expected, water service may be effected.
4	165 - 197	131 - 155	13 – 18 ft	Catastrophic damage. Well built homes can sustain severe damage to both roof and exterior walls. Most trees snapped or uprooted and power poles downed. Extensive power outages.
5	>198	>155	> 18 ft	Catastrophic damage. High percentage of well built homes destroyed. Most of the area will be uninhabitable for an extended period of time.

\*Data Source: Aon Benfield Impact Forecasting

\*\*Data Source: NOAA—National Hurricane Center