The role of International Code Council (ICC) in addressing Fire & Life Safety Practices

Global Message & Regional Presence

Vision: Creating safe, affordable, and sustainable buildings and communities

Mission: Provide the information, tools and resources that members rely on, building safety professionals turn to and the public trusts

The International Code Council (ICC) is a member focused not-for-profit association with over 64,000 Members.

Global leader in offering building safety solutions & an International SDO accredited by ANSI

Assists governments and organizations with the necessary regulatory framework to maintain a resilient infrastructure through technical support, plan review and consulting service.

Develops partnerships with key partners to add value to the community and works towards having its codes adopted/referenced regionally.

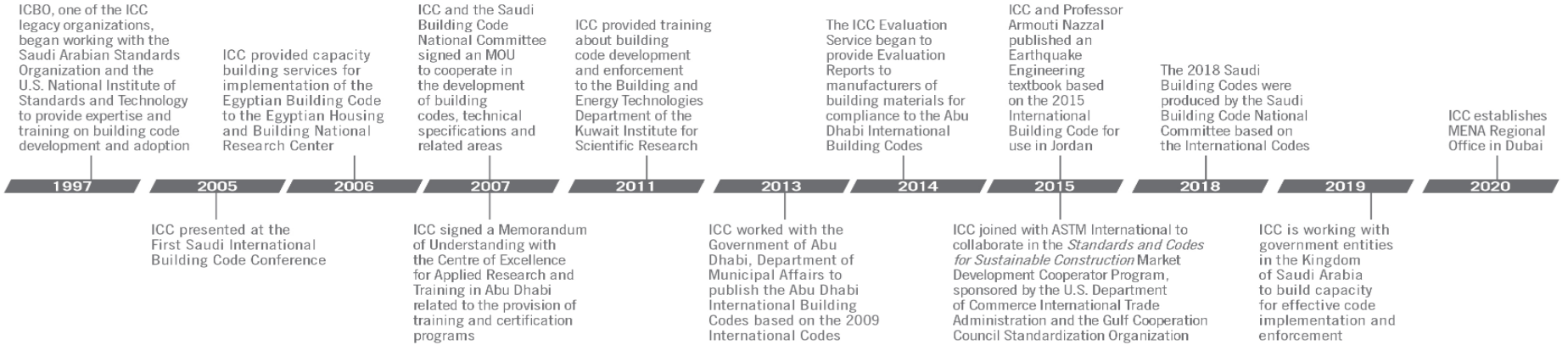
ICC Organization

- Self-funded, non-governmental association
- Committed to making buildings safe, protect people and preserve properties
- Provides a complete suite of integrated building safety solutions for jurisdictions around the world
- Widely recognized as publisher of the International Codes
- Staff of more than 500 engineers, architects and administrators
- 64,000+ members and 388 Chapters

ICC in MENA – Contribution to Building Safety

- ICC's family of solutions provide added value
- Increase market outreach to better serve our partners/clients
- Knowledge sharing with local AHJs and key stakeholders to ensure regulatory requirements are met to overcome compliance issues.
- Maintain close relationship locally to increase company's response to market changes / challenges

ICC's 20+ year Commitment to Building Safety in the Middle East



ICC Model Building Codes

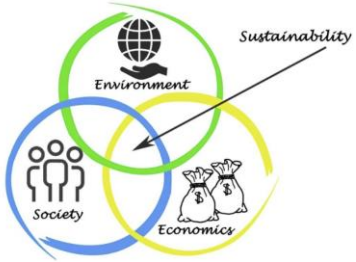
ICC Codes cover:

- Structural/Life Safety
- Plumbing, Mechanical & Fuel Gas
- Energy
- Fire Safety
- Property Maintenance
- Zoning
- Green Construction
- Swimming Pool & Spas

International Building Code (IBC)
International Fire Code (IFC)
International Mechanical Code (IMC)
International Plumbing Code (IPC)
International Residential Code (IRC)
International Energy Conservation Code (IECC)
International Existing Building Code (IEBC)
International Fuel Gas Code (IFGC)
International Property Maintenance Code (IPMC)
International Private Sewage Disposal Code (IPSDC)
International Zoning Code (IZC)
International Wildland-Urban Interface Code (IWUIC)
ICC Performance Code (ICCPC)
International Green Construction Code (IgCC)
International Swimming Pool and Spa Code (ISPSC)

Why are building codes important

- Ensure structures are built in a safe manner
- Model codes embody minimum safety requirements
- Take your time in incorporating safety aspects before it is too late!
- Importance of code adoption/mandating



- **Environmental:**
  1. Better indoor air quality
  2. Usage of sustainable building materials
  3. Improve quality of life – saves lives

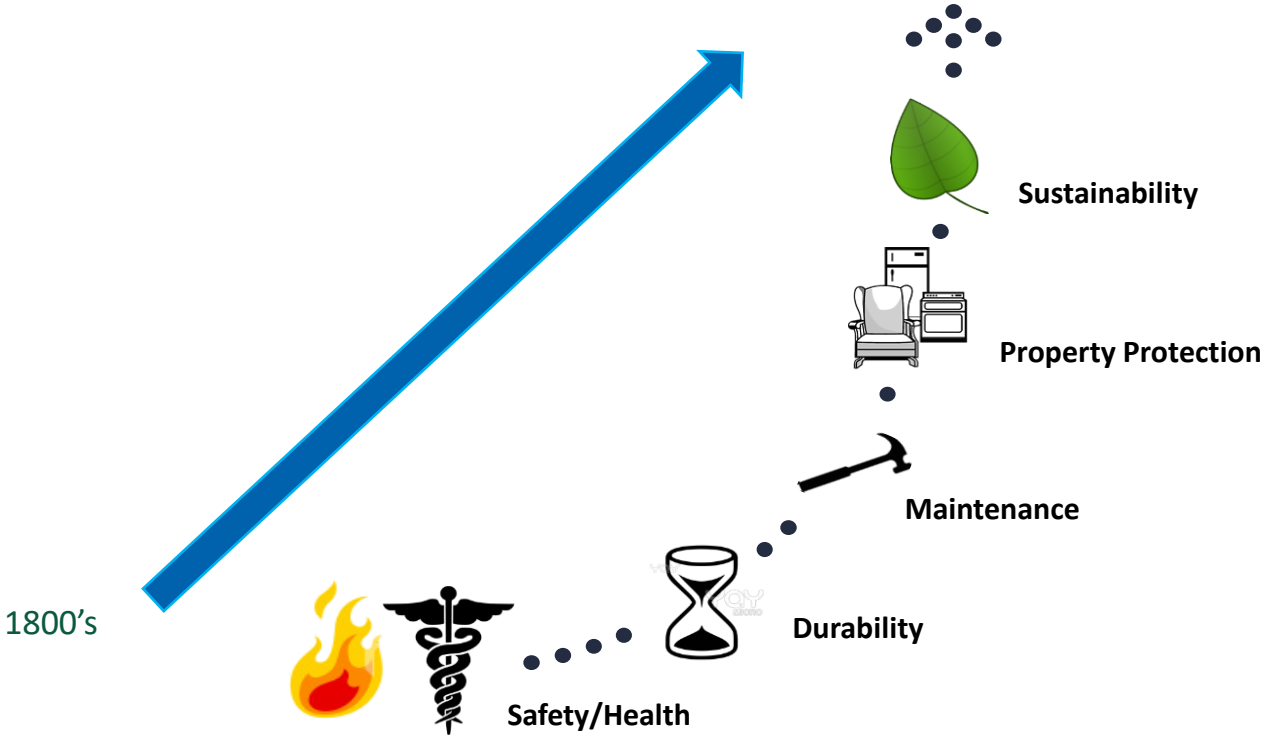
- **Engineering:**
  1. Building safety from all aspects
  2. Approved referenced standards for all stakeholders in the construction business
  3. Enhanced design/construction through adopting latest construction practices

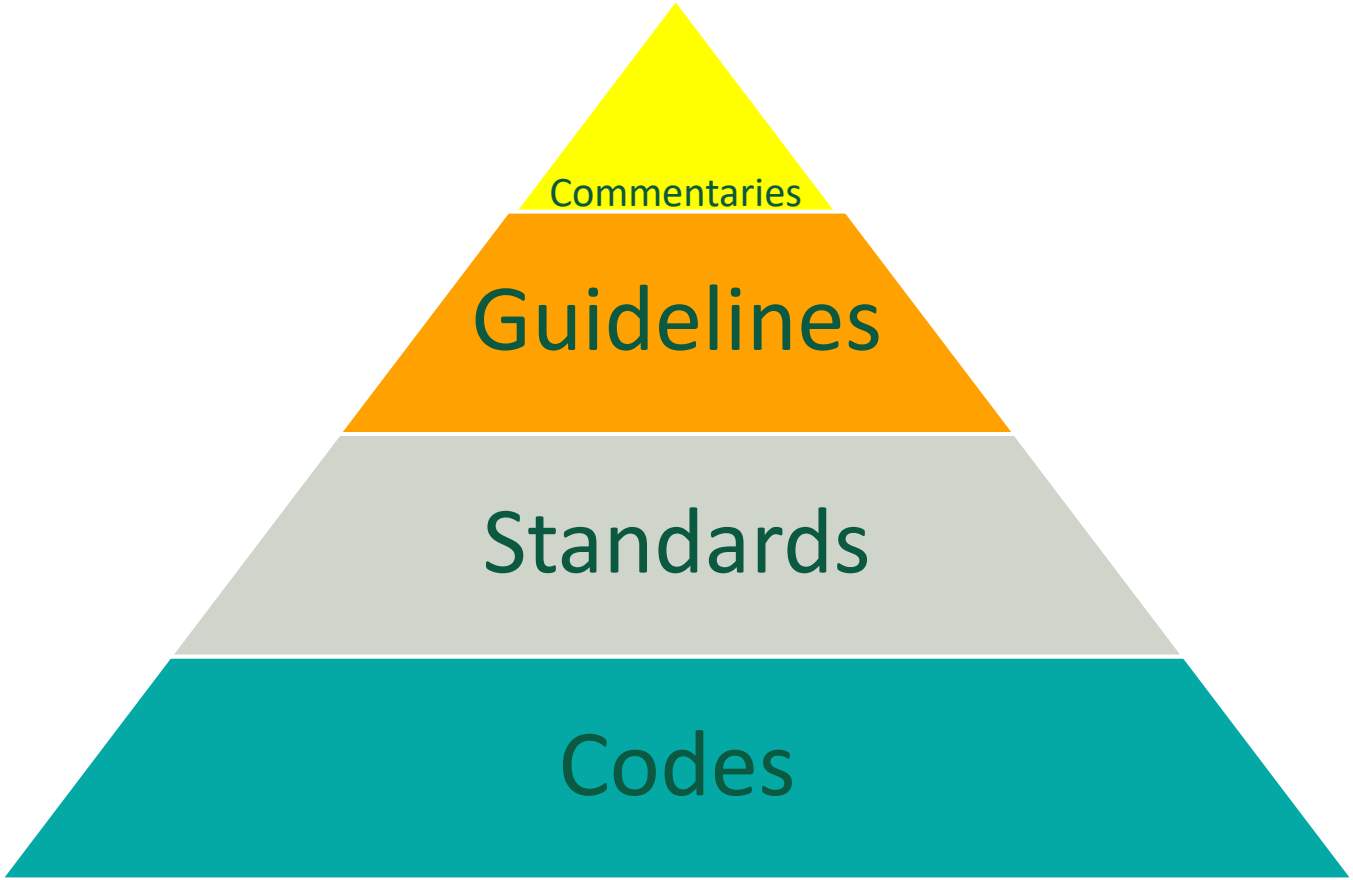
- **Economic:**
  1. Minimize operational and maintenance cost hence extending lifetime of buildings
  2. Optimize building materials for greater safety to help reduce insurance cost

Benefits of IBC/IFC

- Provide protection for public health, safety and welfare from the hazards of fire, explosion or dangerous conditions in buildings, structures and premises.
- Flexible in that it allows for the use of alternative and innovative materials and performance-based methods in achieving code compliance.
- References nationally developed consensus standards
- Correlation – This code is specifically correlated to work with ICC's family of codes.

Model Code Layers and Evolution




Commentaries
Guidelines
Standards
Codes

Prescriptive vs Performance

- *Prescriptive* code requirements:
  - Detail how to comply
  - Must be specifically met

Example:

> "Handrail height, measured above the stair tread nosing, or finish surface of ramp slope shall be uniform, not less than 750 mm and not more than 850 mm."

Prescriptive vs Performance (continued)

- *Performance* code requirements:
  - Describe the desired outcome
  - Allow the design professional to come up with a design
  - Design must comply with the intent

Example:

> "Fire walls shall have sufficient structural stability under fire conditions to allow collapse of construction on either side without collapse of the wall for the duration of the time indicated by the required fire-resistance rating."

Role of Standards

- ICC Codes reference over 1,400 standards including > 500 ASTM's
- Standards referenced in ICC codes developed through a WTO-compliant consensus process such as ASTM or ANSI
- Standards cover design, installation, testing and materials
- Codes prescribe "What and When", Standards prescribe "How"

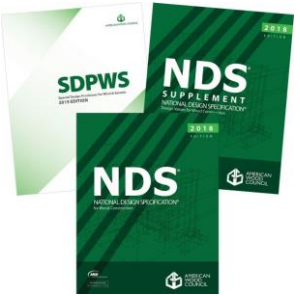
ASTM INTERNATIONAL

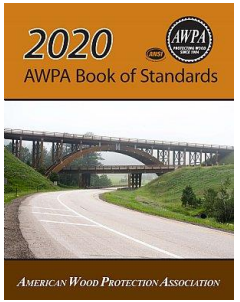
ASHRAE

aci

American Concrete Institute

Always advancing





Existing ICC Standards

- ICC A117 - Accessible and Usable Buildings and Facilities
- ICC 300 – Bleachers, Folding & Telescopic Seating, and Grandstands
- ANSI/RESNET/ACCA/ICC 310 – Grading the Installation of HVAC Systems
- ICC 400 – Design & Construction of Log Structures
- ICC 500 - Storm Shelters
- ICC 600 – Residential Construction in High Wind Regions
- ICC 700 – Green Building
- ASABE/ICC 802 - Landscape Irrigation Emission Devices
- CSA B805/ICC 805 - Rainwater Harvesting Systems
- ICC 900/SRCC 300 - Solar Thermal System
- ICC 901/SRCC 100 – Solar Thermal Collector
- ICC 902 - Solar Pool & Spa Heating
- BSR/ICC 1100 – Spray-applied Polyurethane Foam Plastic Insulation
- ICC 1200 – Off-Site Construction: Planning, Design, Fabrication & Assembly
- ICC 1205 - Off-Site Construction: Inspection & Regulatory Compliance

Some ICC Standards Under Development…

- ICC/MBI Standard 1210-202X: Standard for Mechanical, Electrical, Plumbing Systems, Energy Efficiency and Water Conservation in Off-site Construction
  - Standard committee has been established
- ICC 1150 – Standard for 3D Automated Construction Technology for 3D Concrete Walls (IS-3DACT)
- ASHRAE/ICC Standard 240 – Evaluating Greenhouse Gas (GHG) and Carbon Emissions in Building Design, Construction, and Operations (IS-CBC)
- ICC 1300 – Standard for the Vulnerability-Based Seismic Assessment and Retrofit of One- and Two-Family Dwellings (IS-RSARC)

Critical components of building/fire safety – fire resistance and protection requirements in the IBC/IFC

The International Codes Address All Critical Components of Building Safety

- Sets of regulations
- Code administration and enforcement
- Ensure that buildings are built in a safe manner
- Safety first

Minimum standards to protect and safeguard

- Public health
- Safety
- General welfare

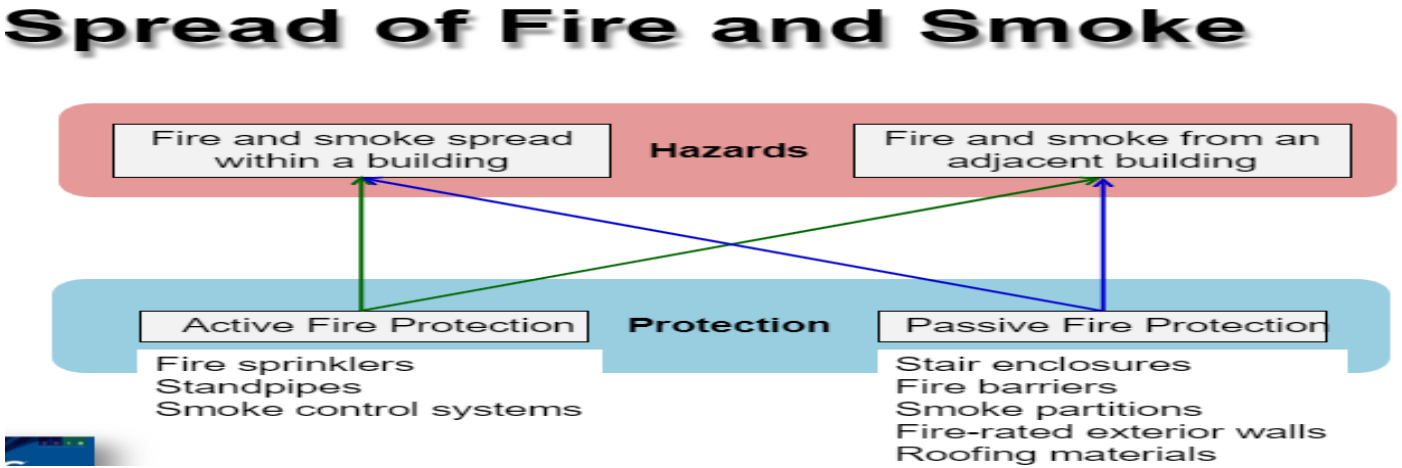
- 1,500 international standards are referenced in the I-Codes
- Building planning
- Fire and Life Safety
- Structural Safety
- Chapter 7 – requirements to maintain required fire-resistance rating

International Fire Code

Major themes of the IFC
- Protection of the occupants
- Protection of the public
- Protection of the emergency responders

The IFC addresses various hazards
- Building use and operation
- Storage and use of combustible materials
- Storage and handling of hazardous materials
- Fire department access
- Water supplies

- Provides a reasonable level of life safety and property protection from the hazards of fire, explosion or dangerous conditions in new and existing buildings and facilities.
- Addresses design, construction, installation, testing and maintenance of fire protection systems
- Contains regulations for the safety of firefighters and emergency responders during emergency operations



Chapter 7 – Fire and Smoke Protection Features

701.2 Fire-Resistance-Rated Construction

Wall assemblies such as fire walls, fire barriers, fire partitions, smoke barriers and exterior walls must be provided with fire-resistance ratings as determined in accordance with:

- *ASTM E119 or UL 263 – fire tests of buildings construction and materials*
- *ASTM E814/UL-1479 – fire tests (penetration firestop systems)*

Examples of the fire-resistance rating of the following fire-resistance-rated construction shall be maintained:

1. Fire walls, fire barriers, and fire partitions

2. Smoke barriers and smoke partitions

4. Penetrations and opening protectives

5. Maintaining protection and unprotected openings

Chapter 7 – Fire and Smoke Protection Features (Cont. 1)

Fire Walls

A fire-resistance-rated wall having protected openings, which restricts the spread of fire and extends continuously from the foundation to or through the roof, with sufficient structural stability under fire conditions to allow collapse of construction on either side without collapse of the wall.

Fire Barriers

A fire-resistance-rated wall assembly of materials designed to restrict the spread of fire in which continuity is maintained.

Fire Partitions

A vertical assembly of materials designed to restrict the spread of fire in which openings are protected.
Fire partitions are required to be a minimum of 1-hour fire-resistance-rated construction.

TABLE 706.4
FIRE WALL FIRE-RESISTANCE RATINGS

GROUP	FIRE-RESISTANCE RATING (hours)
A, B, E, H-4, I, R-1, R-2, U	3[a]
F-1, H-3[b], H-5, M, S-1	3
H-1, H-2	4[b]
F-2, S-2, R-3, R-4	2

a. In Type II or V construction, walls shall be permitted to have a 2-hour fire-resistance rating.
b. For Group H-1, H-2 or H-3 buildings, also see Sections 415.6 and 415.7.

TABLE 707.3.10
FIRE-RESISTANCE RATING REQUIREMENTS FOR FIRE BARRIER ASSEMBLIES OR HORIZONTAL ASSEMBLIES BETWEEN FIRE AREAS

OCCUPANCY GROUP	FIRE-RESISTANCE RATING (hours)
H-1, H-2	4
F-1, H-3, S-1	3
A, B, E, F-2, H-4, H-5, I, M, R, S-2	2
U	1

TABLE 1018.1 CORRIDOR FIRE-RESISTANCE RATING

OCCUPANCY	OCCUPANT LOAD SERVED BY CORRIDOR	REQUIRED FIRE-RESISTANCE RATING (hours)	
		Without sprinkler system	With sprinkler system[c]
H-1, H-2, H-3	All	Not Permitted	1
H-4, H-5	Greater than 30	Not Permitted	1
A, B, E, F, M, S, U	Greater than 30	1	0
R	Greater than 10	Not Permitted	0.5
I-2[a], I-4	All	Not Permitted	0
I-1, I-3	All	Not Permitted	1[b]

Chapter 7 – Fire and Smoke Protection Features (Cont. 2)

Smoke barriers.

1-hour fire resistance-rated walls and/or floors that form a continuous membrane, either vertical or horizontal, such as a wall, floor, or ceiling assembly, that is designed and constructed to restrict the movement of smoke. The fire-resistance rating and smoke-resistant characteristics of smoke barriers shall be maintained.

Smoke partitions.

A wall designed to limit the movement of smoke from one area to another. Openings must be sealed, and the smoke-resistant characteristics of smoke partitions shall be maintained. Openings in smoke partitions must be tested in accordance with UL 1784

Horizontal assemblies

A fire-resistance-rated floor or roof assembly of materials designed to restrict the spread of fire in which continuity is maintained. It can serve as an occupancy separation and have a fire-resistance-rating, as required in the IBC. When a floor/ceiling assembly provides a separation between dwelling units or guest rooms, it must have a 1-hour fire-resistance rating just like a fire partition

Chapter 7 – Fire and Smoke Protection Features (Cont. 3)

Penetrations

Materials and firestop systems used to protect membrane and through penetrations in fire-resistance-rated construction and construction installed to resist the passage of smoke shall be maintained. The materials and firestop systems shall be securely attached to or bonded to the construction being penetrated with no openings visible through or into the cavity of the construction. Where the system design number is known, the system shall be inspected to the listing criteria and manufacturer's installation instructions. through penetrations and membrane penetrations must be recognized in approved fire-resistance-rated assemblies complying with ASTM E119 or UL 263 or ASTM E814 or UL 1479. the penetration firestop system must have an F-rating not less than the wall penetrated or an F-and T-rating not less than the rating of the floor penetrated.

Opening Protectives

Doors and windows installed in fire-resistance-rated assemblies are required to have a fire protection rating. Fire door assemblies include the door, frame and all associated hardware.

Fire window assemblies are required to be tested to a different standard. Fire windows are not permitted to be installed in fire walls or in any fire barriers having a required fire-resistance rating greater than 1 hour.

Methods for Determining Fire Resistance

- Fire-resistance designs documented in approved sources
- Prescriptive assemblies using fire-resistance-rated designs in section 721
- Calculation of fire-resistance as per section 722
- Engineering analysis
- Alternative protection methods as per section 104.11
- Fire-resistance designs certified by approved agency

International Fire Code: 2024 changes

Some of the changes highlighted in the 2024 code edition include:

- Expanded fire protection requirements for facilities using or storing lithium-ion batteries.
- Mandatory CO alarms or detection systems for all occupancy types – not only to residential buildings & schools.
- New safety provisions for the use of A2L (flammable) refrigerants.
- Exception to eliminate floor-level exit signs in fully sprinklered Group R-1 occupancies.
- New requirements for fire barriers and sprinkler protection in incidental use areas of ambulatory care facilities.

How can ICC Help?

- Plan review service for projects of any size
- Technical opinions on codes (member benefit)
- Webinars/certification/training
- TIC (Testing, Inspection and Certification) services from ICC-ES and ICC-NTA accredited to the requirements of ISO/IEC-17020, -17025, and -17065

ICC EVALUATION SERVICE

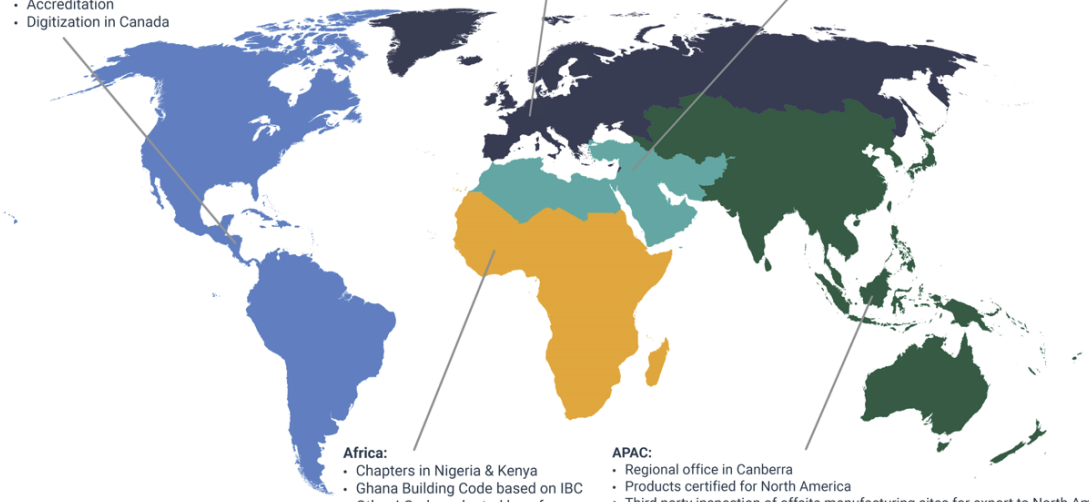
Global Use of International Code Council Family of Solutions

The use of the ICC Family of Solutions has wide relevance on a global scale.

Americas:
- I-Codes dominate in USA – full suite of solutions
- I-Code use in Mexico, Colombia and Caribbean, and referenced throughout the region
- CARICOM custom codes
- Chapters in Canada, Mexico & Cayman Islands
- Product Certification to USA, Canada & Mexico standards
- Product certification reports accepted throughout the region
- Accreditation
- Digitization in Canada

Europe:
- Products certified for North America
- Third party inspection of offsite manufacturing sites for export to North America
- Collaboration with certification & standards bodies
- Accreditation

MENA:
- Regional office in Dubai
- Custom codes in Saudi Arabia & Abu Dhabi, base codes accepted throughout region
- Training, certification on I-Codes & SBC
- Product certification reports accepted in UAE
- Accreditation throughout region



Africa:
- Chapters in Nigeria & Kenya
- Ghana Building Code based on IBC
- Other I-Codes adopted by reference
- Accreditation

APAC:
- Regional office in Canberra
- Products certified for North America
- Third party inspection of offsite manufacturing sites for export to North America
- Capacity building in Bangladesh
- Marshall Islands custom code
- Base codes referenced throughout region
- Product certification reports accepted in Australia & NZ
- Chapters in Australia,NZ & Bangladesh
- Accreditation

Learn more: www.iccsafe.org/global-services/

Conclusion & Take-aways…

- Building codes play a key role in supporting safe and sustainable deployment of building safety.
- Dynamics in today's world will continue to cause rapid new introductions on a global scale (modular construction, 3D printing, etc.…).
- Standards development will need to move at a faster pace to proactively support critical attributes to building safety.
- Standards adoption is key to avoid re-inventing the wheel and emerge into new trends.
- ICC through its family of solutions will continue to work its partners to develop/maintain/benchmark building safety in the region.
- Develop/Support standards awareness programs (Building Safety Month)
- Support harmonization and standards adoption to overcome duplication efforts
- ICC additional resources:
  - MENA Building Safety Journal MENA BSJ Quarterly
  - Membership (https://www.iccsafe.org/membership/about-membership/)
  - Global Building Codes Tool (Global Building Codes Tool - ICC Global (iccsafe.org))

ICC in the MENA

هيئة التقييس
لدول مجلس التعاون لدول الخليج العربية
GCC Standardization Organization

كود البناء السعودي
Saudi Building Code

الهيئة السعودية للمواصفات والمقاييس والجودة
Saudi Standards, Metrology and Quality Org.

بلدية دبي
DUBAI MUNICIPALITY

وزارة الإسكان والتخطيط العمراني
Ministry of Housing and Urban Planning

وزارة الداخلية
Ministry of Interior

دائرة البلديات والنقل
DEPARTMENT OF MUNICIPALITIES AND TRANSPORT

Snapshots of ICC MENA Journey…

جانب من اجتماع #كود_البناء_السعودي
مع مجلس الكودات الدولي (ICC)
بهيئة المواصفات السعودية برئاسة معالي الدكتور سعد القصبي، وذلك لتعزيز سبل التعاون في مجالات الكود المختلفة وتطوير أساليب اعتماد تقنيات المباني الحديثة وتدريب مفتشي المباني بمجالات الكُود المختلفة.

Translate Tweet

ME CONSTRUCTION NEWS NEWS - FEATURES - VIDEO/WEBINAR - MAGAZINE

Big Project ME speaks to Dominic Sims and Shahin Moinian from the International Code Council to hear about the organisation's plans for the region

Innovation has been a driving force for growth in the construction industry, and to ensure that products and materials used in construction meet the relevant

Thank you!

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