Background of Codes and Standards for Design in the United States

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How Many Different Documents?
- Building Codes
  - Load Standards
  - Material Design Standards
  - Prescriptive Standards
  - Design Guides
  - Material Manufacturing Standards
- Equivalency Documents
- Resource Documents

Building Codes
- Building Codes are **NOT** Law Until the Local Jurisdiction (City, County, or State) Adopt the Code **WITH** Local Amendments
- Once Adopted, the Building Code Specified the Required Performance (Loads, Deflections, Fire, Construction Type, Electrical, Plumbing, Etc.)
Until 2000, there were 3 model building codes for engineered construction:
- Uniform Building Code (International Conference of Building Officials)
- BOCA National Building Code (Building Officials and Code Administrators)
- Standard Building Code (Southern Building Code Congress International)

As of 2000, there was one national building code:
- International Building Code Published by the International Code Council

In 2002, there are now two national model building codes:
- ICC's IBC
- NFPA 500 by the National Fire Prevention Association.

Two Building Codes
Two Building Codes

Prior to 2000, there was One Prescriptive Building Code for Residential – Council of American Building Officials CABO One- and Two-Family Dwelling Code
- Did not address seismic, high wind, heavy snow.

After 2000 – ICC International Residential Code - References SSTD-10 and WFCM for High Wind

Prescriptive Construction Code
Prescriptive Construction Code

Building Codes

- ICC Process is Open to Public Participation, but Final Control Rests with the Building Officials

- NFPA 5000 is a Consensus Committee Structure. Public Can Make Proposals for Change, but Control Rests in Committee Membership, Which is Controlled.

ICC Code Process

- 18 Month Cyclic With a Full Update Every 3 Years
  - Public Makes Proposals for Change to the Technical Content of the Code
  - Proposals are Published for Public Review for Approximately 1-2 months.
  - A Technical Committee of 6-12 "Experts" Hear Arguments For and Against the Proposed Changes and Votes to Accept or Reject
ICC Code Process

18 Month Cyclic With a Full Update Every 3 Years
- Results of Technical Committee Decision are Published for Public Review
- Public is Given 2-3 Months to Challenge Decisions the Technical Committee Made
- All Public Challenged Proposals are Reheard at the Building Official’s Annual Convention

ICC Code Process

18 Month Cyclic With a Full Update Every 3 Years
- Membership Hear Arguments and Votes on Proposals Challenged
  - Need Simple Majority to Uphold Technical Committee Action
  - Need 2/3 Majority to Accept Change Over Technical Committee’s Rejection
  - Need Simple Majority to Reject a Change that Technical Committee has Accepted

Interim Supplements
NFPA Process

- Technical Committees are Formed with Special Expertise to Deal With Sections of the Code
- Public or Committee Make Proposals for Change
- The Technical Committees Meet (Several Times) to Discuss and Word Change if Desired

NFPA Process

- Technical Committee’s Changes are Published in Report on Proposals
- Public Has 1-3 Months to Challenge and Suggest Amendments to Proposals for Change
- Technical Committee Meets to Deliberate Comments From Public

NFPA Process

- Technical Committee’s Decision is Published in Report On Committee
- Public is Given 1-2 Months to Challenge Changes
- Full Membership of NFPA Hears Arguments at Building Safety Conference
NFPA Process

- Full Membership Votes to Accept or Reject Change
  - Simple Majority Decides Final Position
- Technical Coordinating Committee Can Over-Rule Process

State of City Building Codes

- Florida, New York, New York City, Chicago, and other Cities and States Write Their Own Building Codes.
- Some State Prohibit Building Codes and Many Do NOT Require Them.

Performance Codes

- Performance Codes are Being Introduced
- Historically These Have Been Used in Las Vegas, Orlando, Southern California (Disney)
- Requirements Are Strictly Performance Rather Than Prescriptive.
Existing Building Code

- Sets Requirements for Renovations, Modifications, and Maintenance of Existing Buildings


Reference Standards

- NFPA 5000 and the Trend in ICC is to Adopt Design and Material Standards by Reference, (i.e., the material is not even printed in the Building Code.)

- The Reason is that the Technical Content of the Building Code Changes are Becoming Too Complex to Argue to a Conclusion in a Matter of Minutes.
Reference Standards

- The Principle Documents that Affect All Design Are:
  - The NFPA 101 Fire Code (until 2003 when ICC will use the ICC International Fire Code)
  - ASCE-7 Minimum Design Loads for Buildings and Other Structures

Load Standard for United States

- ANSI Accredited Process
- Similar to NFPA Process in that Committee Controls Outcome
- Not Supported by ASCE for Answering Questions

Commentary and Guides

- Commentary and Design Guides Are very Helpful in Understanding the Details of the Legal Requirements of Standards
Material Design Standards
- Adopted by Reference by the Building Codes
- Developed Following ANSI Accredited Process
- Completely Controlled by Committee Membership (Often Difficult to Become Member of Committee.)

Wood Design Standards
- Soft Conversion of ASD Manual
- Mandatory for Compliance with NEHRP
- Effort to Keep LRFD & ASD Linked

Wood Design Standards
- Alternative for Residential Design
- National Edition Includes High Wind and High Seismic
- Required as Alternative for High Wind Design by IRC
National Evaluation Reports

- These are Documents that Describe Proprietary Products and How They Are To Be Designed and Constructed In Order To Comply With The Intent of the Building Code.

- Reviewed by the International Evaluation Service to Determine Design Values and Installation Restrictions.

National and International Test Standards

- American Society for Testing and Materials (ASTM)
- International Standards Organization (ISO)
- Community of European Nations (CEN)
- Canadian Standards Association (CSA)

These Provide Consistent Test Results for Quantifying the Performance of Materials and Products.

Allows Comparisons to be Made Between Different Manufacturers, and Different Products.
Pre-Code or Resource Documents

- These Include Documents That May Be Essentially Consensus Documents Such as the NEHRP Provisions, or They May Be Simply Industry Documents that Provide Guidance or Requirements for the Product to be Used Correctly.

Conclusions

- Prepare to Purchase More and More Documents In Order To Do Design
- The Detail Requirements Will Continue to Become More Complicated
- Learn to Simplify Design Problem to Apply Code Requirements Properly

Questions?