

PASBO 48TH ANNUAL CONFERENCE



STATEWIDE BUILDING CODE
IMPLEMENTATION
WORKSHOP

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architects

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Statewide Building Code Implementation for the Uniform Construction Code Pennsylvania's New Building Code

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A How Did We Get Codes? *What Do Codes Accomplish?*

Basic Codes Develop

The primary concern of local and state governments* in developing codes was protecting the physical **safety and lives of people** during fire emergencies. **Life safety codes were developed to deal with this concern.**

Devastating fires with significant loss of life, such as the examples listed below, were catalysts for the creation of life safety codes.

- 1903 - Iroquois Theater fire in Detroit resulted in 602 deaths and brought widespread attention to exit doors and their means of operation.
- 1942 - Coconut Grove Night Club fire in Boston, in which 492 lives were lost, focused national attention upon the importance of adequate exits and related fire safety features.
- 1946 Hotel Fires: Winecoff, Atlanta - 119 Deaths
 LaSalle, Chicago - 61 Deaths
 Anfield, Dubuque - 19 Deaths



Another concern of local and state governments* was the **preservation of property**, (ie. saving the building itself from wide ranging fires). **Building Codes were developed to save both buildings and lives during fire conditions.**

- * In addition to local and state governments, **private groups**, such as the National Fire Protection Association and the American Insurance Association concerned about losses of ***lives and property*** from building fires, also started developing their own codes and regulations involving buildings and structures.



Regional Climates/Health Environments

Added to fire related life safety and property preservation issues, another factor in code development was **regional climates**, which produced localized natural forces such as hurricanes, severe wind conditions, earthquakes and heavy snow conditions. These forces had to be dealt with according to the needs of the geographical areas. For that reason, local and state authorities, as well as regional organizations, began to consider area-wide climatological issues in their regulations.

Local/state governments and private organizations tried to ensure building construction which produced **protective enclosures** and **healthy environments**. Building codes were again expanded to address these issues.

Civil Rights Issues/ADA

Next, the **United States Federal Government** became involved in building regulations with civil rights and access **laws** on fair housing and disability rights. To further ensure accessibility for building used by the public and to encourage accessibility within multi-family type residences, state governments implemented related regulations to the **state codes**.

Model Codes Consolidate Building Issues

These events which transpired during the past century resulted in thousands of state and local life safety and building codes across the country. In addition, the federal laws, which governed building uses through civil rights and accessibility, became enforceable.

To address the various safety, building, climate related and accessibility issues described above, three regionally-based “**Model Building Codes**” also evolved within the United States. These model codes, each designed for adoption by state and local communities and each with their own set of standardized regulations, represented updated thinking on life safety, property preservation, building technology and accessibility.

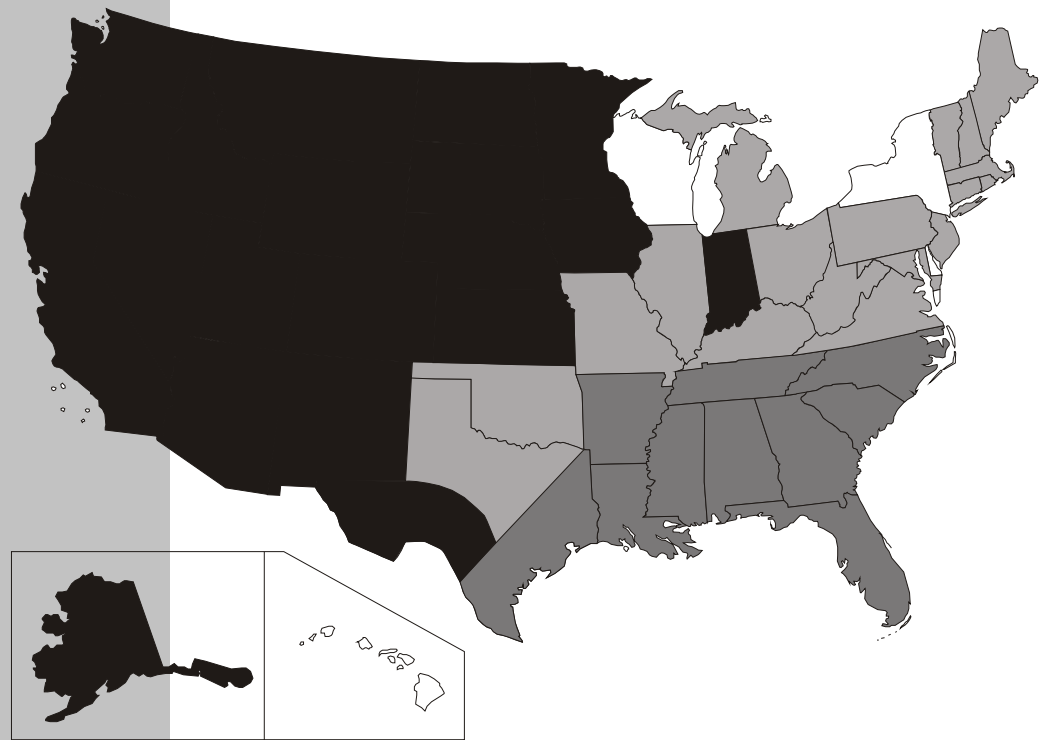
Since the state and local communities may not have had the resources and/or desire to write or change their own regulations, they began utilizing various versions fo the three model codes. The three regional model building codes were, and are even today, widely used in different sections of the United States.





- **BOCA National Building Code** - (Northeast and Midwest) provided by Building Officials and Code Administrators International, Inc.
- **Standard Building Code** - (Southeast) provided by the Southern Building Code Congress Internatinal, Inc. (SBCCI)
- **Uniform Building Code** - (West) provided by the International Conference of Building Officials (ICBO).

Today, these regional codes have been superceded by the **2000 International Building Code (IBC)**. This new model code was the cooperative effort of the three regional code organizations, which joined forces to form the International Code Council (ICC). It is likely that future versions of the IBC will be adopted by most state and local authorities to replace the regional model codes they have used in the past.

Statewide
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for the
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Code

Where the Codes
are In Force
General Area of
Code Influence in the U.S.



-  ICBO Uniform
-  BOCA® Basic/National (includes PA)
-  SBCCI Standard
-  State Written

Information should be verified with state or local building departments. Many areas use different codes for other construction areas.

B. Pennsylvania's Current Code Condition and Plan *A Mix of Codes and No Codes has Led PA to the UCC*

No Local Codes

Today, throughout Pennsylvania, many municipalities have no construction codes to deal with the issues already described—the protection of life safety, property, public health and welfare and accessibility rights.

Many Local Codes

Other municipalities, throughout Pennsylvania, currently have codes, which taken collectively, often create a “mixed bag” of complicated, conflicting, limiting and outmoded regulations.

The State Code

Today, the Pennsylvania Department of Labor and Industry (L&I) enforces the fire and panic code, which has been virtually unchanged for decades. This code is basically a life safety code which regulates all buildings, except private, single-family residences, certain healthcare facilities and federal government buildings. This code is enforced throughout the state, except in Philadelphia, Pittsburgh and Scranton.

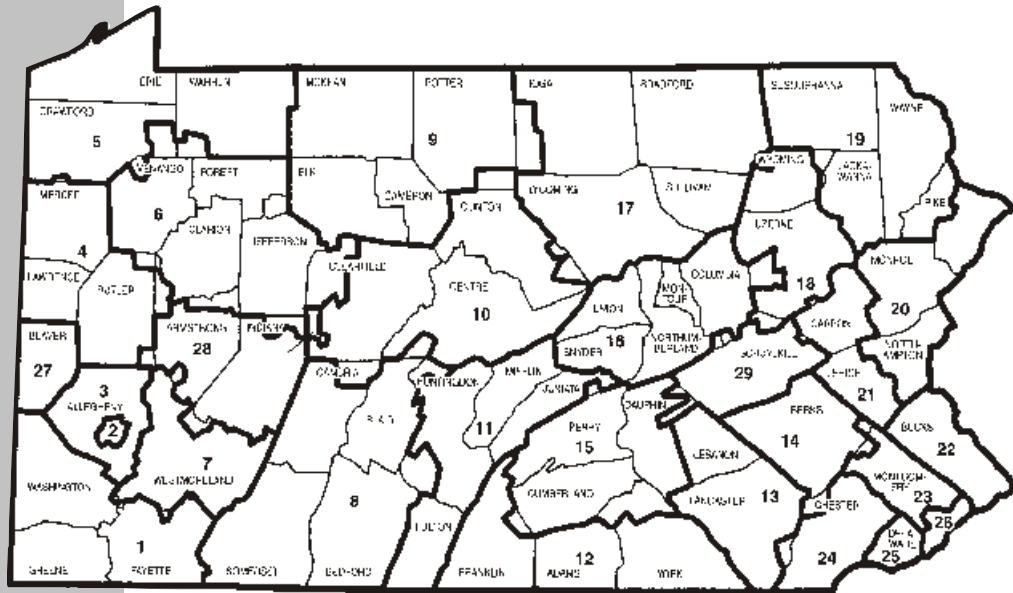
The Pennsylvania Plan

To eliminate the problem of “no codes” or “many codes” and to ensure uniform, modern construction standard and regulations throughout the state, Pennsylvania has adopted the Uniform Construction Code.

Statewide
Building Code
Implementation
for the
Uniform
Construction
Code

2,600 Municipalities

| | |
|-------|---------------------|
| 1,500 | No Codes |
| 1,100 | Some Codes |
| 800 | BOCA, Various Years |



C. The Pennsylvania Uniform Construction Code *UCC Purpose, Content & Enforcement Questions & Answers Discussed*

The Beginning - November 1999

On November 10th, 1999, Governor Ridge signed Senate Bill No. 647 into law creating **The Pennsylvania Uniform Construction Code (UCC)**.

Act 45, which establishes the UCC, imposes powers and duties on municipalities and the Pennsylvania Department of Labor and Industry (L&I) to provide enforcement, impose penalties and make repeals.

What is the UCC?

The UCC is a **mandatory building code** for all municipalities in the Commonwealth of Pennsylvania. To implement this code, L&I must do the following:

- Adopt BOCA's successor codes (currently the **2003 International Building Code**) as the basis of the UCC by December 31 of the year the successor code is issued.
- Provide **accessibility requirements** in accordance with the Uniform Construction Code.
- Provide **energy related standards** in accordance with the Uniform Construction Code.
- Adopt the **International Fuel Gas Code** for the installation of fuel gas piping systems, fuel gas utilization equipment and related accessories.
- Control **elevator and conveying system operations** in accordance with written or modified versions of the International Building Code and reference standards.

What are the Purposes of the UCC?

- To provide **building standards** for the protection of life, health, property and environment.
- To encourage **standardization and economy in construction** through utilization of nationally recognized standards.
- To permit **state-of-the-art technical methods**.
- To **eliminate existing codes** which are restrictive, obsolete and conflicting.
- To **eliminate duplication of efforts** and fees.
- To permit only **adequately trained officials** to enforce the code.
- To ensure existing Commonwealth laws and regulations will be enforced during the transition to the Uniform Construction Code
- To start a process which will lead to the design, construction and alteration of buildings under a uniform, statewide standard.

What Does the UCC Replace or Significantly Modify?

- L&I Fire and Panic Code
- Pennsylvania Universal Accessibility Act
- Pennsylvania Building Energy Conservation Act (Act 222)
- Adopted Local Codes which are Dissimilar to the Pennsylvania Uniform Construction Code.

How Does the UCC Work?

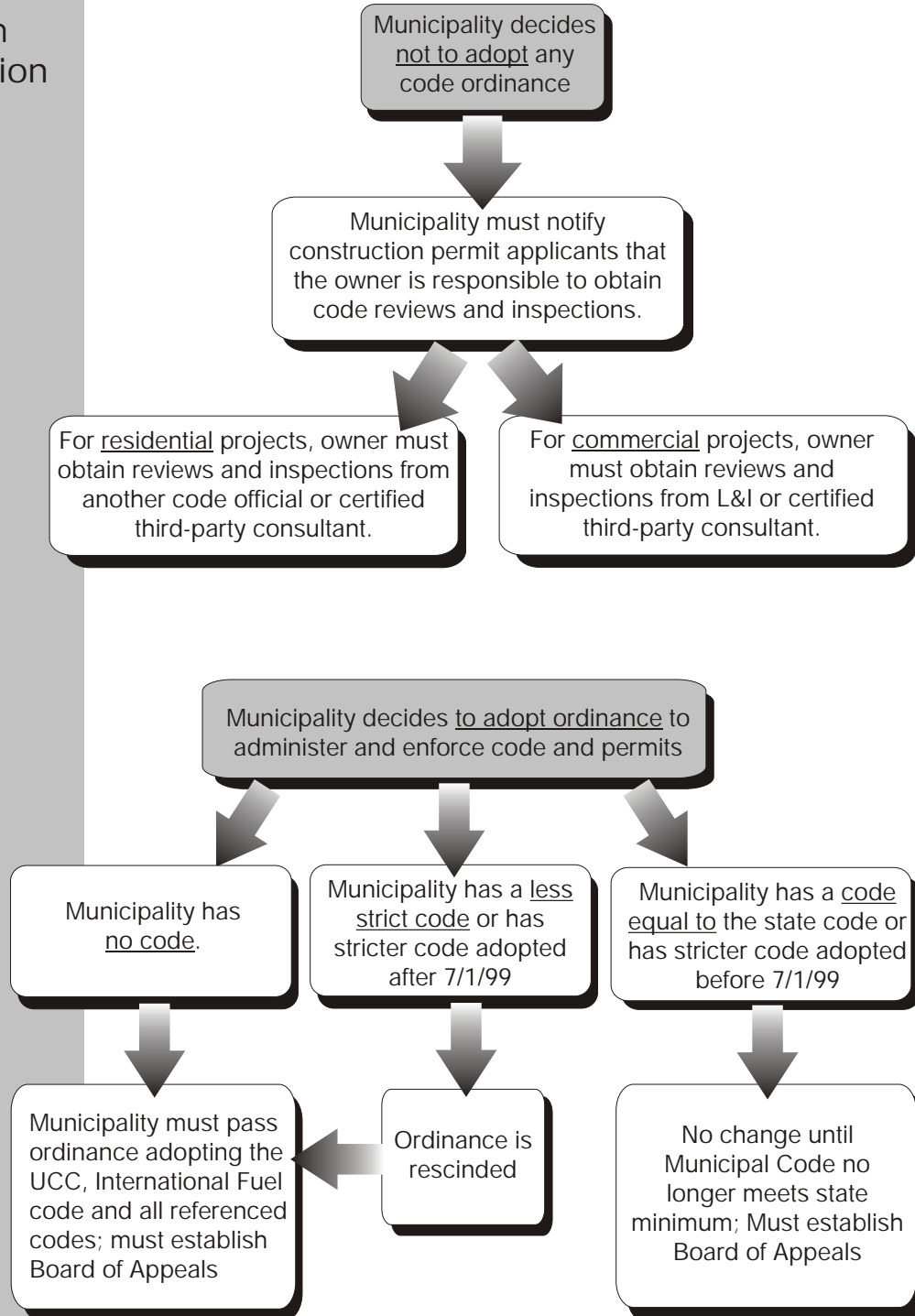
L&I establishes and oversees the administrative and review processes required to enforce the code.

Who Enforces the Uniform Code?

L&I's **certified construction code officials** enforce the code. These officials can be L&I, municipal or third party code officials.

These officials will be certified to perform plan review of construction documents, inspect construction or administer and enforce codes and regulations.

Adoption and Enforcement by Municipalities



When Does the Uniform Code Take Effect?

The statewide building code was signed into law as Act 45 of 1999 on November 10, 1999. Certain sections took effect immediately. These sections included the following directives for L&I:

1. Adopt the 2003 International Building Code as the Uniform Construction Code. Such adoption will require L&I to establish and oversee the administrative and review processes necessary to enforce the code.
2. Permit the latest International Residential Code to be an alternative code to the Uniform Construction Code for certain one and two-family dwellings.
3. Permit waivers for technically infeasible accessibility requirements for individual projects.
4. Require consideration of the comments of the accessibility advisory board on accessibility issues in proposed regulations.
5. Provide periodic accessibility reviews to ensure adequate enforcement of the accessibility requirements of the Uniform Construction Code.
6. Adopt the International Fuel Gas Code as the standard for installation of fuel gas piping systems, fuel gas utilization equipment and related accessories.
7. Promulgate prescriptive methods to implement the energy related standards of the Uniform Construction Code.
8. Establish plan review and inspection fees.
9. Establish standards for the retention and sharing of building plans and other documents by L&I, municipalities and third-party agencies.

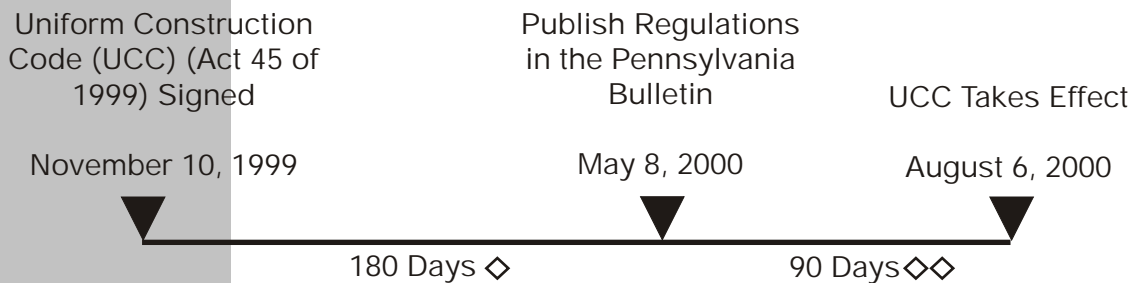
When Does the Uniform Code Take Effect? (continued)

L&I had 180 days from November 10, 1999 to complete all of the preceding directives. Obviously, the 180 days have long since passed. These activities are still ongoing and currently in the final stages of review. Until the activities are completed, the uniform code will not be in effect. The status quo will still reign.

The original question was “when does the uniform code take effect?”. Indications are that L&I will be completing the process and procedures for the Uniform Code sometime in the summer of 2003. The Act will take effect 90 days after the process and procedures are established and printed in the Pennsylvania Bulletin.

Thus, as this point, no one knows for sure when the new code will be enforced. Right now, the best guess is winter 2004.

The Pennsylvania Uniform
Construction Code - Original Schedule
(Subject to Change)



- ◇ During the 180 days, L&I must adopt regulations to implement the Act and provide a certification program for L&I plan examiners and inspectors, municipal officials and third party inspectors.
- ◇◇ The UCC will take effect 90 days after the new L&I regulations are published in the Pennsylvania Bulletin.



D. The PA Code Road Ahead *How will UCC Affect School Construction?*

Future implementation of the new code will have many significant effects on the design and construction approval process in Pennsylvania. Some of these, which will directly affect school construction, are described below.

More Comprehensive Code Requirements

The Model Building Code and other required codes under the UCC umbrella cover many **expanded and added subjects** beyond those of the current L&I Fire and Panic Code. Expanded and added subject items include:

- Fire-resistance rated construction
- Interior environment
- Structural design engineering
- Structural tests and special inspections
- Soil and foundation designs
- Glass and glazing
- Electrical systems
- Mechanical systems
- Plumbing systems
- Special construction (includes temporary structures, canopies, walkways, signs, etc.)
- Existing Structures

Architectural and engineering work on projects will expand in response to new code requirements. L&I officials will need extra time for more comprehensive project reviews. And, very likely, construction costs may increase to meet the added code requirements.

No “Walk-In” Document Code Reviews

An extended, more comprehensive document review process will require additional time for obtaining building permits. This additional time requirement will be most significant in jurisdictions that currently have no BOCA code requirements.

Higher L&I Code Review Fees

An extended and more comprehensive document review process will result in **significant increases in L&I Building Permit Fees**.

These added costs will have the greatest impact in jurisdictions which currently have low permit fees.

| <u>L&I Fee Examples Are:</u> | <u>Old</u> | <u>New</u> |
|---|-----------------|-----------------|
| • Use Group E for New Educational Construction (K through 12) | \$.05/SF | \$.42/SF |
| • Alterations/Modifications | \$.005/\$ cost* | \$.0055/\$ cost |
| • Plan Revisions | \$75 | \$300 |
| • Variance Request | \$0 | \$100 |

* code work only

L&I Fee Calculation Example

Elementary School with 36,000 SF of new area and 36,500 SF of renovated area. Total area is 72,700 SF. Renovation cost is \$3,900,000; total cost of construction is ±\$10,000,000.

| | <u>Old Fee</u> | <u>New Fee</u> |
|--------------------------|----------------|-----------------|
| New Area | \$1,885 | \$15,120 |
| Renovated Area | <u>\$1,550</u> | <u>\$21,450</u> |
| Total L&I Fee | \$3,435 | \$36,570 |



Fire Wall Construction

Fire walls are rated walls that separate buildings. Fire walls have significantly more stringent structural requirements under IBC than under the L&I code.

The IBC requires that rated **fire walls** must have sufficient structural stability under fire conditions to allow collapse of construction on either side without collapse of the wall.

Compliance with this IBC item will require special structural analysis and design to create fire walls which are structurally independent from buildings the walls separate.

Under the present L&I code, however, fire walls must only be rated separation walls. No structural independence from adjacent buildings is currently required for L&I fire walls.

Building Area Limitations

IBC **restricts allowable building areas** according to construction types. Examples of IBC area restrictions are:

| <u>Use</u> | <u>Construction Type</u> | <u>Area (SF per Fl)</u> |
|-------------|--------------------------|-----------------------------|
| Educational | Wood, VB | 9,500* |
| | Noncombustible (NC), IIB | 14,500* |
| | NC, Protected, IIA | 26,500* |

* Note that, under IBC, area increases of 200% and 300% are available for fully sprinklered buildings.

The current L&I code has no comparable restrictions for building areas.

More Requirements for Sprinkler Systems

IBC requires sprinkler systems for new educational occupancies having fire areas over 20,000 SF.** ***

Also, sprinklers may be required for existing schools to permit adding space to an existing building. This will depend upon the size of the addition as well as the size of the existing fire areas being expanded.***

** Depending upon circumstances, this requirement may have the benefit of allowing the use of less fire resistant types of construction, when area increases due to sprinkler systems are taken.

*** See “Building Area Limitations” section.

Sprinkler Cost Estimate

Using the 72,700 SF elementary school as an example:

$\$2.25/\text{SF} \times 72,700 \text{ SF} = \$164,000$ (approximate cost for sprinklers)

Accessibility Scoping Changes for Building Alterations

For existing buildings, alterations of areas containing a “**Primary Function**” will trigger additional spending (up to a maximum of 20% of alteration costs) for providing an accessible route to the primary function.

Currently, the L&I code permits up to 30% of the value of an existing building to be spent on alterations without any additional expenditures being required to improve accessibility to the existing building.



Assembly Space Restrictions

Under IBC, the **total of spaces considered to be assembly occupancies is limited to 10% of the building area**, unless the assembly spaces are separated from other parts of the school by rated fire separation walls. Such assembly spaces include gymnasiums, auditoriums and large meeting rooms (over 50 persons), libraries, media centers, cafeterias and similar spaces.

This IBC assembly space restriction will influence the “openness” of new assembly spaces to other portions of the building. If rated walls are required, wall openings, such as doors and glass areas will need to be rated as well.

The L&I code has no area restrictions or separation requirements for assembly spaces considered to be accessory uses to the school building.

Thoughts on “The Road Ahead”

L&I has recently determined that the **basis** of the new uniform construction code (UCC) will be the **International Building Code (IBC) 2003**.

Certain items, such as those described in this portion of our discussion, will directly impact school building design and construction in Pennsylvania when the UCC, with IBC 2003, is finally implemented.

Since the latest BOCA codes are similar to IBC 2003, the impact of these items, and the new code in general, may be less in jurisdictions that are already enforcing various BOCA codes.

However, for jurisdictions having little experience with BOCA requirements, the impact of PA UCC may be very significant indeed.