INSURANCE and BUILDING CODES

A RELATIONSHIP AS OLD AS TIME

How This Relationship Can Impact Your Adjustment

TRAGEDY ENCOURAGES CODE DEVELOPMENT

At times we may become so deeply involved in the tools and methods of our individual trade that we tend to overlook the impact on our work from outside influences. Insurance and building codes are two professions which have had an underlying connection for almost as long as man has been constructing structures to occupy. As the title says, there is a connection between insurance and building codes that is as old as time.

This connection may not extend to early cave dwellers since they did not generally dig the cave. They just found a hole to hide in or huddled below an outcropping. The first people that started building their own shelters soon discovered that poorly built structures didn't survive the elements for long.

To exam this connection, a quick trip through history demonstrates man's interest in insuring the safety and durability of his built environment through construction regulation. Current regulations are examples of how a solid knowledge in building codes along with a sound approach to property loss adjusting can help resolve property damage and more completely recover from a catastrophic loss.

CODE OF HAMMURABI

The beginning of time may not be 1760 B.C., but it is a long time ago. About 1760 B.C. Hammurabi, First Dynasty King of Babylon, issued a set of 282 Laws. He ordered that these Laws be carved into an eight foot tall slab of stone.

There were six Laws related to building construction. A quick look at these Laws makes it quite clear that being a contractor in Ancient Babylon could be a life and death profession. These Laws had the loss settlement built right into the code.

228. If a builder build a house for some one and complete it, he shall give him a fee of two shekels in money for each sar of surface.

229 If a builder build a house for some one, and does not construct it properly, and the house which he built fall in and kill its owner, then that builder shall be put to death.

230. If it kill the son of the owner the son of that builder shall be put to death.

231. If it kill a slave of the owner, then he shall pay slave for slave to the owner of the house.

232. If it ruin goods, he shall make compensation for all that has been ruined, and inasmuch as he did not construct properly this house which he built and it fell, he shall re-erect the house from his own means.

233. If a builder build a house for some one, even though he has not yet completed it; if then the walls seem toppling, the builder must make the walls solid from his own means.

LAW OF MOSES

The Law of Moses includes a building construction reference. Deuteronomy 22:8 tells the builder or owner *" When you build a new house, make a parapet around your roof so that you may not bring the guilt of bloodshed on your house if someone falls from the roof."*

No real direct insurance connection here, but there is a clear indication of liability if the construction is not safe.

SOCRATES

Archeological records recovered from the time of Greek Philosopher Socrates indicate certain specific requirements for construction and inspection of a building. *"He shall set the joints against each other, fitting, and before inserting the dowels he shall show the architect all the stones to be fitting, and shall set them true and sound and dowel them with iron dowels, two dowels to each stone…"*

NERO'S URBAN RENEWAL

The Great Fire of Rome, 64 A.D., impacted almost ¾ of the entire city. Even prior to the fire, Nero, had created a Development Master Plan which required construction to be fire resistive as well as identifying methods to improve community sanitation. There was much speculation that the Fire was Nero's effort at Urban Renewal.

FIRE OF LONDON

Leaping ahead to 1166 the Courts of Assize were established in London. The ordinance served more to arbitrate complaints between neighbors but also included requirements related to


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sanitation and building construction. In spite of this ordinance much of London's population was consumed by plague in 1665. The plague was ended when much of the city was destroyed by fire in 1666. Following the fire, Parliament enacted a series of building regulations. The new regulations included requirements for surveyors to inspect work and assure compliance with the new laws to create a healthier and more structurally durable built environment.

TO THE NEW WORLD

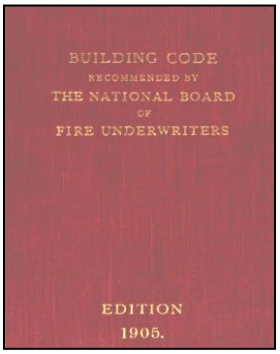
Founding fathers, Washington and Jefferson, encouraged development of building regulations to ensure health and safety in the colonies. Many early fireplace chimneys were constructed incorporating wood, regularly resulting in the chimney and dwelling burning. Requirements were eventually issued mandating that chimneys were to be constructed only of stone or other non-combustible materials in an effort to reduce the fire losses.

CHICAGO

Everyone learned in school how Mrs. O'Leary's cow started the fire that destroyed Chicago. The Chicago Fire of 1871 caused financial ruin for the Chicago insurance industry leaving 60 companies bankrupt. Even with the remaining insurance companies threatening to leave the city there was resistance to enacting stronger controls on building construction. In spite of this resistance stronger regulations controlling building construction and fire prevention were finally enacted by 1875. The reporter that wrote the original story confessed in later years that the cow starting the fire was a fabrication. He felt it would make for a more interesting story.

TWENTIETH CENTURY

The first decade of the Twentieth Century included significant events on both East and West coasts of the United States.



About 1905 one of the first building codes was developed on the East Coast by the Fire Underwriters Association. The edition, published in 1905, was called the National Building Code and was more focused on property protection, than life safety and safe building exiting. Today's codes have much more focus on life-safety and the ability of occupants to exit a building in event of hazard.

SAN FRANCISCO - 1906

On April 18, 1906 San Francisco was rocked by a significant earthquake. When the fire that followed the quake was finally extinguished more than 80% of the city had been destroyed or significantly damaged. It was impossible to control and extinguish the fires because the quake had damaged the community water delivery infrastructure to the extent it could no longer provide the water needed to combat the blazes.

The quake and fire are considered among the worst natural disasters in United States history, alongside the Galveston Hurricane of 1900. Reports indicated the quake was felt from southern Oregon to south of Los Angeles and into central Nevada. More stringent building standards were initially instituted following the disaster but were subsequently reduced by as much as 50%. Building Standards were not fully returned to even 1906 levels until the 1950's.

At least 137 insurance companies were involved in paying fire claims. Most companies, at the time, excluded shake damage claims. Twenty companies were bankrupt following the quake and fire. When the flames had finally been extinguished the scientific community gathered to evaluate what had occurred.

At about the same time groups were developing which became the predecessors to the International Code Council. As a result of the San Francisco quake, along with review and input from the regional scientific community, codes in the western United States (particularly California) developed significant focus on earthquake resistant design.

MGM FIRE –LAS VEGAS

On November 21, 1980 fire smoldered in a restaurant area before spreading into the Casino of the MGM Grand in Las Vegas, Nevada.

In addition to the damage to the structure 84 persons died, most through smoke inhalation. Damage from the fire was primarily limited to the second floor restaurant and casino areas yet most of the deaths occurred on the upper floors of the hotel. Numerous code changes were quickly proposed and eventually incorporated into the Uniform Building Code as a result of lessons learned from the investigation of the fire and the ease with which smoke and products of combustion spread throughout the complex. Many of the fire stopping and shaft protection provisions in the code today can be linked to these changes.

HURRICANE ANDREW

Hurricane Andrew caused destruction and devastation in the Bahamas and across Florida before moving on to Louisiana. In Dade County Florida more than 90% of all homes sustained roof damage. There were 117,000 homes that sustained major damage or were destroyed. Lessons learned, discoveries made and data analysis following Andrew was used to develop many of the wind design requirements that exist in the current International Code Council codes and subsequently the Florida code. Today, Miami-Dade County and the State of Florida enforce some of the most

comprehensive, stringent code requirements related to windstorm design in the nation.

These provisions were incorporated into the Florida and Dade County Codes to provide protection to both life and property in the event of future wind storms.

HOW BUILDING CODES DEVELOPED

Down through history and continuing today, following any significant property loss, whether the event is man-made or an act of nature, people interested in the science of building construction and those that insure buildings have studied these events and pressed to implement improvements in construction to minimize future destruction and loss.

As this capsule history review indicates, building codes have been developing almost since the beginning of time. For the past century there has been a more structured, deliberate approach to code development. Until 1994 there were three Model Code Organizations, in the United States. Each group, developing, publishing and selling codes utilized in respective regions of the country. Each organization was similar in structure and in the manner in which their respective codes were updated and published. The Building Officials and Code Administrators International (BOCA) codes were primarily utilized in the Northeast and North-central U.S. The Southern Building Code Congress International (SBCCI) codes were adopted throughout much of the Southeast and South-central part of the country. The International Conference of Building Officials (ICBO) published codes that were used in large part west of the Mississippi River. Each group held annual meetings to receive debate and vote on proposed modifications to each of their codes. While anyone was allowed to submit a proposed change only designated members were allowed to vote whether to incorporate the changes into the next edition. Each group adopted a practice of publishing a new code edition on a triennial cycle.

In 1994 the three organizations agreed to form the International Code Council. In 2000 the new organization issued the freshly published International Building Code. Since that time the three have fully merged and have expanded to offer a full family of complimentary codes. The maintenance process is similar to what each of the groups had previously followed. The ICC encourages wide participation in proposing and debating modifications to the codes but voting is still only allowed by the governmental members. The National Fire Protection Association has, for years, promulgated and published fire safety standards for use by the fire services. The organization has also published NFPA 70, which is widely adopted as the National Electrical Code. The NFPA 101 Life Safety Code is widely referenced and the organization has, in recent years, developed their NFPA 5000, Building Construction and Safety Code.

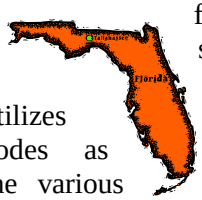
CODE OR STANDARD?

Standards can be and in some cases are adopted as codes. Standards however tend to lack some key elements of codes, standards do not generally include any administrative language; they are all technical information. There is however, one Standard that is regularly adopted as a code, the NFPA National Electrical Code. Some jurisdictions have also started adopting the Standard 90.1 published by American Society of Heating and Air-Conditioning Engineers (ASHRAE) as their Energy Code. Standards tend though to work better in the support role by supplementing the base language of the model codes. The American Society for Testing and Materials (ASTM) issues Standards/Specifications for many materials used in construction and is referenced throughout the ICC codes. The American National Standards Institute (ANSI), American Concrete Institute (ACI) and American Forest and Paper Association (AF&PA) are just three of the nearly fifty Standards Developing Organizations with more than 600 standards referenced in the IBC.

There is another area to be considered that has the potential to result in upgrade. The Americans with Disabilities Act of 1990 is not really a code or standard but can result in the need for upgrade when a building is undergoing addition, alteration or repair. This has become even more applicable since many States have either adopted ADA by reference or some States have written Barrier Elimination Statutes specifically for enforcement in those specific states. Texas for example requires, when the cost of construction exceeds $50,000.00, that a minimum percentage of construction dollars be directed to eliminating barriers to accessibility.

HOW ARE THEY ENFORCED?

With all of these construction requirements, who ensures they are enforced? This enforcement occurs at a variety of levels. While the ICC Codes are developed nationally there is not currently any national structure for enforcement of all these various codes and referenced standards. California, has for years, legislated a Building Code. Hurricane Katrina prompted the State of Louisiana to pass emergency legislation mandating that the IBC be utilized by the coastal Parishes in reconstruction following the storm. The Florida Code utilizes the ICC codes as the basis for the various Florida Codes. There are beginning to be numerous other States that may not establish state level enforcement structure but may still adopt a statewide code to be used to regulate construction throughout the state. The legislative language may assign enforcement to one of the other levels of government in the state or may simply mandate that work designed and constructed in the state must conform to the adopted code. Even in these cases there is usually some reference to a process to secure third party inspection and acceptance of the construction. The codes are regularly adopted by County, Parish, City and Town governmental bodies where departments are established to issue permits and perform inspections to assure compliance with requirements in the codes. While it is not enforcement, many States through rules associated with professional licensing place an ethical and professional responsibility on Design Professionals to design their projects to conform.



NEW, ALTERATION OR REPAIR?

The IBC indicates the scope of the code is to address construction, alteration, movement, enlargement, replacement, repair, location, maintenance, removal and demolition of every building or structure or any appurtenances connected or attached to such buildings or structures. The IRC provides a similar scope for dealing with residential properties. With the appropriate one of these codes the scope would seem to indicate every bit of information needed to identify the damage or deficiencies of a structure following a loss incident is right there in one place. And, if the jurisdiction has only adopted the IBC and the IRC, for residential, that can be a fairly reasonable assumption. Now we just need to see if the jurisdiction has made modifications, to the model code, that alter the intent of the language. While many jurisdictions adopt a Model Code they still feel the need to make modifications to that code. Some amount only to establishing fees for service while others feel there community is so unique that the code needs to be customized for their use. Some of these amendment packages can significantly alter the language and intent of the base document.

It is always advisable to identify if and what type amendments may be in place and if those have any significance relative to your site.

We now also need to see if the jurisdiction may have adopted one of the other, of the family of, codes published by ICC.

Some jurisdictions adopt the International Property Maintenance Code. The code is specifically intended to apply to sub-standard or dilapidated structures but some will still try to use the code to address property repair following and incident. Still others may adopt a Historical Building Preservation Code, developed prior to ICC, for property maintenance and repair.

Neither of these codes is well suited to resolve property damage caused by a fire or wind storm event. ICC does, however, publish a relatively new code developed specifically to address repair, alteration or addition to an existing building.

First available as the 2003 Edition, the International Existing Building Code (IEBC) is intended to reduce the cost of repair and maintenance of buildings by allowing the use of vintage materials and methods.

It is this writer's opinion the code needs to experience a few more code change cycles to fill some gaps to assure that safety is not lost in the interest of cost savings. Many jurisdictions are, however, adopting and using the document.

This means some added investigation; documentation and convincing may be required to assure that repairs are provided in a manner to protect the building and occupants.

WHERE IS THE CONNECTION?

Every time you prepare an adjustment, you or someone is going to be dealing with code requirements and it will be beneficial to communicate with the local code enforcement authority. Having a good understanding of codes or involving a code consultant can have a significant impact on the success of adjusting your claim.

Through the years insurance writers were some of the early developers of codes in an effort to minimize losses. The Insurance Industry continues today to be very active in the code change process by contributing recommended changes and being active participants in the code hearing process. While the industry participates in updating the codes many insurance providers have taken the position that unless the local code authority requires upgrade of building systems, there will be no code upgrade monies released.

As indicated previously, even the Ancients recognized a need to assign responsibility for failures in construction and increase standards following certain significant events.

Even as Rome burned Nero already had a plan to improve the city layout and improve the durability of buildings with improved construction methods. After the London Fire of 1666 the government recognized that even though there had been requirements in place those had not been sufficient to prevent wide spread disease or prevent the disaster that followed the plague, so they set out to evaluate and improve. The huge impact of property loses from the Chicago Fire and San Francisco quake and fire caused the Insurance Companies to press for stronger standards to mitigate future financial losses. The terrible loss of life in the MGM caused many to look for ways to provide a safer environment and improve conditions that might limit future such losses. Hurricane Andrew was a huge financial burden on the insurance industry and provided a clear indication that construction methods must be improved to avoid similar losses in future storms. So, there has always been and continues to be a connection between evaluating damage following a disaster, evaluating the loss, determining how to resolve the loss and how future such losses might be reduced.

WHAT LEVEL OF REPAIR?

Most are likely familiar with the phrases 'Like kind and quality' and 'Code Upgrade'. What are the implications of these? With some buildings it would be impossible to accomplish a repair with the same materials used in the original construction. You can't use asbestos anymore. Likewise there are regions where it is no longer acceptable to use stone or gravel aggregate as ballast on a roof. Does replacing these materials or methods constitute a Code Upgrade? We have found that there may be cases where the answer is no. If an alternate material or method of repair can be accomplished for a cost similar to that of using the prohibited method it is not an upgrade. On the other hand there may be situations when it is determined that making the repair with vintage materials will not meet the current code requirements for wind-load design. It may be that remedial work is required to assure roof drainage to protect the structural

integrity of the roof frame. These type changes in method or material can add significant expense and are generally considered Code Upgrade. We have dealt with some recent sites where the jurisdiction has adopted the IEBC, mentioned earlier, this code is much more willing to allow like materials than even the IBC had been. This code can require more effort and documentation to provide clear convincing argument to convince the local code official that application of the IEBC's relaxed requirements are not appropriate.
Even though the IEBC allows the use of materials similar to original the code stipulates this use is only allowed provided no hazard to life, health or property is created by such use. The cost of repair using more durable materials or to improve a design to be more structurally sound can result in significantly increased repair cost. Implementation of these repairs should be considered 'Code Upgrade'. The code will generally permit the repair or replacement of a roof covering to be made without requiring the code specified slope to drain as required for new construction.

However, if the entire roof cover and substrate is removed it is typically considered that the new cover is required to provide code specified slope. This may require adjusting the deck or providing sloped substrate to accomplish the required minimum slope. This is likely to be considered 'Code Upgrade'.

THE LINK

We've talked about a bunch of old guys and old tragedies. It was almost like being back in History Class. We've talked about adjustments with like kind replacement and adjustments with code upgrade. We talked about how the insurance industry has participated and sometimes led the effort to upgrade and strengthen code requirements in an attempt to reduce future catastrophic loses. The link is that if you are going to produce the best possible estimate and adjustment for your client it is necessary to understand the construction requirements in place when a building was constructed. Then it is necessary to understand the codes currently applied by a jurisdiction, what changes exist and how those may impact the property repair. Even with all of this it is still important to know how to communicate with the local officials. The Case Studies, included below, identify the need to understand the codes and in one instance certainly highlight the need to understand the position of the local enforcement officials.

CASE STUDIES

1. Scenario:

- Multi-story commercial building with curtain wall exterior cladding.
- Numerous, single thickness, glass units were lost or damaged during Hurricane Katrina.
- Significant damage occurred to areas of the curtain wall frame and supports.

Evaluation:

- Based on changes in the IBC design wind speed like kind glazing replacement would not comply.
- Investigation of the curtain wall frame and supports identified the frame was not capable of accepting the thicker glass need to comply with wind load design. Additionally, many of the curtain wall supports were not sufficient to support the frame and heavier glass units.
- The extent of damage required the replacement glazing to comply with Energy Code requirements in addition to wind load design. This added additional weight to the already inadequate support system.

Conclusion:

- The State of Louisiana Legislature through emergency legislation adopted the IBC and mandated that all Parishes, adjacent to the Gulf Coast, enforce the code requirements in authorizing repair and reconstruction of Katrina damage.
- IBC code language specifies when structurally unsound conditions are identified in the process of making repairs the unsound conditions must be corrected. This required that the previously marginal curtain wall supports must be upgraded.
- The newly, State mandated, IBC specified a higher wind load design for New Orleans and the Gulf Parishes than previous codes. This meant that single thickness glass, similar to original construction, could not be used for the repair.
- The requirement to install multilayer, heavier glass to satisfy the higher wind load requirements required replacement of the curtain wall framing with a system capable of accepting the thicker glass units.

2. Scenario:

- One multi-unit building of an apartment complex constructed mid 1970's.

- Fire originated in a ground floor closet containing the gas fired building water heater.
- Adjacent ground and second floor units sustained some damage but the fire quickly traveled to the third, top, floor. The interior walls and roof of the third level were approximately 85% destroyed with significant exterior wall damage.

- Childress was retained by the insurance writer to identify areas where the local jurisdiction would likely require building upgrade.

Evaluation:

- Upon inspection the undamaged wood building frame was found to be in excellent condition. The manner of construction and materials were in some ways more sound than current methods. Many units on levels one and two along with two on level three were essentially untouched and did not even sustain water damage.
- At the time of construction the code allowed the building to be constructed three stories and to the total building area without installation of automatic fire protection.
- While there was minimal fire damage on the first and second levels some units had sustained significant water intrusion into the electrical system and devices. The building electric service and transformer were undamaged. The HVAC units and duct systems in most of the units had also sustained significant water damage.
- The exterior stairs, landings and balconies showed the wear and deterioration of 30 plus years but the only fire related damage was sections of rail that had been removed by fire fighters.
- A thorough review of the city adopted codes as well as amendments and department policies and procedures were performed. The water damaged electrical components as well as the third level structure needed to be replaced. No language was found in adopted codes that indicated the HVAC and electrical could not be replaced with wiring and devices similar to those that had survived the fire. Likewise there was no indication other than the fact that like units were no longer available that the HVAC was required to be made to conform to the current code requirements. Matching the remaining framing was not an issue because, as indicated earlier, the remaining wood framing met or exceeded current code requirements. While the code requirements relative to stair rise and run as well as hand and guardrail requirements were found to be more stringent in the current code, these were undamaged and could remain in place during reconstruction.

Conclusion:

- The local code officials agreed that the locally adopted codes did not contain language that would require more than like kind repair of the electrical wiring and devices. However, they demanded that because the adopting ordinance did not allow the use of #14 wire in new construction that the entire building, including those areas not damaged, would require retrofit with minimum #12 copper wiring. This change would in turn require upgrade of all devices including the in unit panel. With these changes it would then be required that house service wiring and transformer be replaced. With replacement of these it would then be required to upgrade the service all the way to the electric utility provider's connection.
- Like kind replacement of the HVAC systems would have amounted to an upgrade because like kind equipment is no longer available. The code officials wanted more. Again, admitting the adopted codes did not require, they insisted that ducting be provided to introduce fresh air into the system. The units had originally been constructed with charcoal filter, recalculating bath exhausts and kitchen vent hoods. While the code language did not require, the officials insisted that replacements be ducted to the building exterior, not giving consideration to the extent the wood framing might be compromised.
- They agreed it may be possible for the stairs, landings and rail systems to remain in place during reconstruction. They acknowledged there was no specific language in the adopted codes to require replacement. They however insisted it would be necessary to replace all four stair systems, including one serving six units that had received no fire damage. They also indicate that guardrails along all levels of the access balconies along

with guardrails on all stairs and handrails must be replaced with railings conforming in height and picket spacing to requirements in the current code.

- The amending ordinance for the building and fire codes included language that required retrofit of automatic fire protection when repair or alteration to a building exceeded 50% of the County appraised value. The calculated cost to return this building to pre-fire condition was significantly lower than this 50% figure. The Fire Marshal insisted that the re-construction would not be allowed to proceed without plans indicating full building retrofit of an approved fire protection system. This installation would require possible upgrade to the fire hydrant line across the fire-lane from this particular building or extending a dedicated fire line to the City water main, approximately 200 yards from the building.

This study indicates that even with thorough research and evaluation of local codes there is still a need to communicate with the local code officials. This was clearly an unusual, extreme example, but even with a common package of model codes adopted by a large majority of jurisdictions there are still some individuals that enforce their own versions of those codes.

3. <u>Scenario:</u>

- A significant thunderstorm with large hail caused extensive damage to multiple building roofs.
- Many of the roofs were modified bitumen systems so like kind replacement was initially not believed to be a concern.
- Further investigation revealed

that many of the roofs had originally been installed with less than code required slope. Some areas were even found to slope away from drains and evidence of ponding was observed. The jurisdiction did not require issuance of permits for building re-roofing.

<u>Evaluation:</u>

- As indicated, some roofs showed evidence that water had been standing in areas away from roof drains. Some roof drains actually included extensions which placed the drain entry 2" above the roof surface.
- The jurisdiction had adopted the IBC without amendment to the roofing or re-roofing requirements of the code.
- The city had not amended out the permit requirement to obtain a permit and inspection for re-roof but administratively did not require such permits.
- Some of the existing systems were sufficiently damaged to require removal to the metal roof deck.
- The IBC requires re-roofing and certainly roof recover to provide code specified ¼" per foot slope to drain. There is provision for re-roofing to allow reduced slope where positive slope is provided to drain.

<u>Conclusion:</u>

- Childress' opinion was that the code, as adopted by the jurisdiction, required code complying installation whether a permit was required or not.
- In a meeting with the local building official, representatives of the insurance writer, property owner and Childress the building official supported Childress' position on code compliance. The building official indicated he had reviewed the question with the City Attorney. He indicated the Attorney held that once adopted any work in the jurisdiction was required to be performed in compliance with the code. The issuance of a permit or lack of same did not determine the need to comply with the jurisdiction established law for building construction.
- Correcting the slope conditions, in conjunction with the replacements, was considered to be code upgrade.

4. <u>Scenario:</u>

- A Regional hospital complex with full emergency care and surgery facilities received significant damage to multiple roof areas as well as losing numerous lights of glass at various areas throughout the complex.
- Portions of the complex were constructed beginning in the 1950's.
- Some roof areas were coal tar with stone ballast.
- With construction as old as 1950's much of the glass did not comply with newer code specified wind load requirements.

<u>Evaluation:</u>

- The hospital with critical care facilities is considered, by

code, as an essential facility which will likely be called on during a disaster to provide service or shelter. The code includes this facility in Occupancy Category IV, the highest rated importance category.

- The location of this facility is in an area, designated by code, as both a Hurricane Prone Region and a Wind-Borne Debris Region.
- In a wind-borne debris region the roofs could not be replaced with similar coal tar and stone ballast.
- Like kind glass replacement would not meet more stringent wind load requirements of the newer code.
- The jurisdiction had adopted the relatively new International Existing Building Code. This code was developed specifically to provide a means for addition, alteration or repair of existing buildings at a lower cost and without requiring upgrade to newer code requirements.

Conclusion:

- Childress identified a roofing system at a cost comparable to the damaged coal tar and ballast but without the code prohibited ballast. This system provided a means to replace the damaged roof at a cost similar to like kind instead of a higher priced option which would have required arguing for upgrade approval.
- The IEBC provides multiple paths for repair compliance.

All, except one, require replaced glass to comply as new construction. Because the wind load design speed has changed substantially through the multiple code editions since some portions of the complex were constructed "like new" would require Impact Resistant Glazing. Consultants for the Insurance Writer focused on the one option which does not clearly state that replaced glass must be installed as new construction. This Section only addresses glazing which is subject to human impact and does not consider the IBC requirements for glazing subject to wind loads. Childress argued that even though the requirement in this one option is not direct the code still required the glazing upgrade. The IEBC, when addressing Permitted Materials, states: *"Like materials shall be permitted, provided no hazard to life, health or property is created."* The nature of the hospital activities places the building in the highest importance category based on IBC importance classification along with fire, rescue and police stations and buildings having critical national defense functions. This level of importance would clearly be compromised by the installation of glass which had already been shown to be incapable of withstanding the wind loads or wind-borne debris. Written confirmation was sought and secured from ICC supporting the position that clear and significant hazard would be created by not installing impact resistant glazing.

This article has been written by Ray Kirby, Code Consultant for Childress Engineering Services, Inc. Mr. Kirby joined CES in 2008 following retirement from serving as a building code official for Plano, Texas. Ray is a former Code Official with 20+ years of municipal code interpretation and administration. He has extensive background in code education and code development activities and has been involved in code and construction related activities for 35+ years. Mr. Kirby's responsibilities with CES include:

- Providing code requirements for personnel performing site damage assessment based on State, County and City where assessment is being performed.
- Determine if any regional or local modifications have been made to the codes that would affect assessment of damage and recommended repair solutions.
- Support to Field Staff through research and interpretation of Industry Recognized Standards and Product Specifications.
- Communicate with code officials to identify jurisdictional specific code interpretation and requirements for damage repair.
- Perform field inspections and damage assessment.
- Review CES prepared Architectural and Engineering documents to assure code compliance.
- Construction Administration on CES designed projects.

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