

Chapter 4. Preventive Measures

The objective of preventive measures is to protect new construction from hazards and see that future development does not increase potential losses. Building, zoning, planning, and/or code enforcement offices usually administer preventive measures. They include the following:

- Building Codes
- Standards for Manufactured Homes
- Planning and Zoning
- Subdivision Regulations
- Open Space Preservation
- Floodplain and Storm water Management

4.1. Building Codes

Hazards Addressed	
✓	Flood
✓	Tornado
✓	Earthquake
✓	Thunderstorm
✓	Winter storm

Building codes provide one of the best methods of addressing all the hazards in this plan. They are the prime measure to protect new property from damage by earthquakes, tornadoes, high winds, and snow storms. When properly designed and constructed according to code, the average building can withstand the impacts of most of these forces.

Hazard protection standards for all new and improved or repaired buildings can be incorporated into the local building code. Provisions that should be included are:

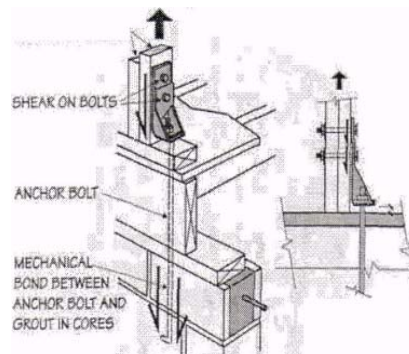
Making sure roofing systems will handle high winds and expected snow loads, Providing special standards for tying the roof, walls and foundation together to resist the effects of wind (see illustration),

Requiring new buildings to have tornado "safe rooms,"

Including insulation standards that ensure protection from extreme heat and cold as well as energy efficiency,

Regulating overhanging masonry elements that can fall during a quake,

Ensuring that foundations are strong enough for earth movement and that all structural elements are properly connected to the foundation, and new basements to prevent sewer backup.



Both builders and inspectors need to know the details of proper anchoring to protect new buildings from high winds

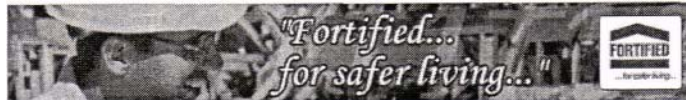
Model Building Codes: Most communities in Illinois are working with various versions of the National Building Code of the Building Officials and Code Administrators (BOCA) and/or the One and Two Family Dwelling Unit Code published by the council of American Building Officials (CABO). These standard building codes

provide the basis for good building safety programs, especially protection from fire and electrical hazards. However, the BOCA and CABO codes are not "state of the art" when it comes to addressing natural hazards. They are being replaced by the new International Code series.

Tornado standards: After a disaster, FEMA often sends a Building Performance Assistance Team to evaluate how well buildings built to code held up. A recent evaluation of wind and tornado damage concluded that the BOCA and CABO codes should be amended to incorporate wind load standards ASCE 7-95 and 7-98. The new I-codes have already incorporated these standards into their codes.

The Institute for Business and Home Safety (IBHS) has also reviewed the I-codes with respect to hazards such as hurricanes, floods, hail, and tornadoes. The IBHS recommends that the International Residential Code should be amended to increase design for wind loads to meet hurricane resistant standards,

Fortified Homes: IBHS has a set of recommendations to strengthen a building to better resist the



impacts of natural hazards. The specific requirements for a "Fortified" home are available through the IBHS website at www.ibhs.com. A Fortified Tornado Windstorm Protection Checklist, provided on the website, defines nearly 20 standards, such as the size and depth of anchor bolts and materials of windows and skylights.

IBHS has researched the cost for implementing the Fortified program. The following table shows the increased cost of constructing a "Fortified" home. For less than 10% above the cost of the average home, a builder can incorporate all of the recommended criteria for a safer building.

Flood standards: The I-Codes have a section on flood protection that communities must adopt separately.

Thunderstorm standards: The IBHS also supports stronger codes for roofing standards so they can better resist damage from hail. It recommends that communities adopt the Underwriters Laboratory Standard 2218, to increase the impact resistance of roofing

Code Administration: Just as important as the code standards is the enforcement of the code. There were many reports of buildings that lost their roofs during Hurricane Andrew because sloppy construction practices did not put enough nails in them. Adequate inspections are needed during the course of construction to ensure that the builder understands the requirements and is following them. Making sure a structure is properly anchored requires site inspections at each step.

There is a national program that measures local building code natural hazard protection standards and

code administration. The Building Code Effectiveness Grading Schedule (BCEGS) is used by the insurance industry to determine how well new construction is protected from wind, earthquake and other non-flood hazards. It is similar to the 10-year old Community Rating System and the century-old fire insurance rating scheme: building permit programs are reviewed and scored, a class 1 community is the best, and a class 10 community has little or no program.

Local implementation: Jersey County is at the present using the ICC codes in the floodplain areas. In the other portions of the unincorporated county the NFPA codes are being used. The county has signed up for the CRS and as soon as this plain is adopted we will be able to join. Grafton and Jerseyville are using I codes for their building requirements. In addition, the City of Jerseyville has a BCEGS class of 5.



CRS credit: The Community Rating System provides flood insurance discounts to those communities that implement various floodplain management activities that meet certain criteria. Comparing local activities to those national criteria helps determine if local activities should be improved.

The Community Rating System encourages strong building codes. It provides credit in two ways: points are awarded based on the community's BCEGS classification and points are awarded for adopting the International Code series. Up to 120 points are possible. Based on the data in the table on the previous page, Sleepy Hollow, for example, would receive 70 points.

The CRS also has a prerequisite for a community to attain a CRS Class 8 or better: the community must have a BCEGS class of 6 or better. To attain a CRS Class 4 or better, the community must have a BCEGS class of 5 or better. In other words, a strong building code program is a must to do well in the Community Rating System.

4.2. Manufactured Homes

Manufactured or "mobile" homes are usually not regulated by local building codes. They are built in a factory in another state and are shipped to a site. They do have to meet construction standards set by the US Department of Housing and Urban Development. All mobile type homes constructed after June 15, 1976 must comply with HUD's National Manufactured Home Construction and Safety

Standards. These standards apply uniformly across the country and it is illegal for a local unit of government to require additional construction requirements. Local jurisdictions may regulate the location to these structures and their on-site installation.

Hazards Addressed	
✓	Flood
✓	Tornado
	Earthquake
✓	Thunderstorm
	Winter storm

As is well known, the greatest mitigation concern with manufactured housing is protection from damage by wind. The key to local mitigation of wind damage to mobile homes is their installation.

Following tornadoes in Oklahoma and Kansas, FEMA's Building Performance Assistance Team found that newer manufactured housing that had been anchored to permanent foundations performed better. They also found that newer homes are designed to better transmit wind up-lift and overturning forces to the foundation. Unfortunately, they also found that building officials were often unaware of

manufacturer's installation guidelines with respect to permanent foundations.



Local implementation: The Illinois Mobile Home installers to be trained and certified. Following the installation of a manufactured home, installers must send the state a certification that they have complied with the State's tie down code. Inspections are only done if complaints are made regarding an installation. In addition to code standards to protect the mobile home from high winds is the need to protect the occupants. There is no state or federal requirements for shelters in mobile home parks. The City of Jerseyville requires mobile homes to be placed on a permanent foundation.



CRS credit: Up to 50 points are provided for enforcing the floodplain management requirements in mobile home parks. Additional points are possible for other special regulations, such as prohibiting manufactured housing in the floodway. There are no CRS credits for manufactured housing standards for hazards other than flooding.

4.3. Planning

Building codes provide guidance on how to build in hazardous areas. Planning activities direct development away from these areas, especially floodplains and wetlands. They do this by designating land uses that are more compatible to the natural conditions of the land, such as open space or recreation. They can also benefit by simply allowing developers more flexibility arranging improvements on a parcel of land through the planned development approach.

Hazards Addressed	
•	Flood
•	Tornado
•	Earthquake
•	Thunderstorm
•	Winter storm

Comprehensive Plans: These plans are the primary tools used by communities to address future development. They can reduce future flood related damages by indicating open space or low density development within floodplains and other hazardous areas. Unfortunately, natural hazards are not always emphasized or considered in the specific land use recommendations.



CRS credit: Up to 100 points are provided for regulations that encourage developers to preserve floodplains or other hazardous areas from development. There is no credit for a plan, only for the enforceable regulations that are adopted pursuant to a plan.

Hazards Addressed	
•	Flood
•	Tornado
•	Earthquake
•	Thunderstorm
•	Winter storm

4.4. Subdivision Regulations

Subdivision regulations govern how land will be subdivided and sets construction standards. These standards generally address roads, sidewalks, utilities, storm sewers and drainage ways. They can include the following hazard protection standards:

- Requiring that the final plat show all hazardous areas.
- Road standards that allow passage of fire fighting equipment and snow plows
- Requiring power or phone lines to be buried
- Minimum water pressures adequate for fire fighting
- Requiring that each lot be provided with a building site above the flood level
- Requiring that all roadways be no more than one foot below the flood elevation.

Local implementation: Jersey County uses its Subdivision Ordinance for any new development outside the mile and one half of each municipality. The City of Jerseyville also uses its Subdivision Ordinance for any new development inside the city and within a mile and one half of the city. Jersey County and the City of Jerseyville also use the Soil and Water Conservation District office to do storm water run-off implementation for each subdivision.



CRS credit: Up to 25 points are provided for requiring that new streets in a floodplain be elevated to no more than one foot below the flood elevation. There are no CRS credits for requirements for hazards other than flooding.

4.5. Open Space Preservation

Keeping the floodplain and other hazardous areas open and free from development is the best approach to preventing damage to new developments. Open space can be maintained in agricultural use or can serve as parks, greenway corridors and golf courses.

Capital improvement plans and comprehensive land use plans can identify areas to be preserved through any or all of the following means:

- Acquisition,
- Dedication by developers,
- Dedicating or purchasing an easement to keep the land open, and
- Specifying setbacks or buffer zones where development is not allowed.

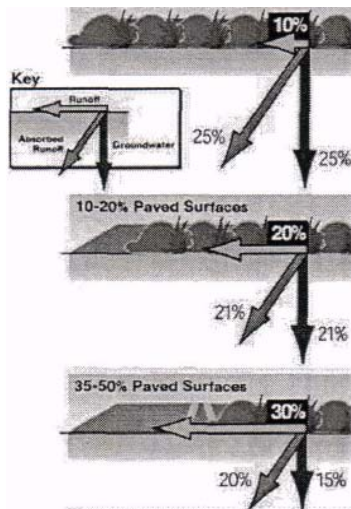
Local implementation: Jersey County has over 234 buy out properties that are open space these properties were purchased after the 1993 flood using state and federal money.

CRS credit: Preserving flood prone areas as open space is one of the highest priorities of the Community are one of the highest priorities of the Community Rating System. Up to 700 points can be given, based on how much of the floodplain is in parks, forest preserves, golf courses, undeveloped floodway or other uses that can be depended on to stay open. Additional credit provided if there are deed restrictions on the parcels

4.6. Floodplain and Storm Water Management

Hazards Addressed	
•	Flood
	Tornado
	Earthquake
	Thunderstorm
	Winter storm

Development in floodplains is development in harm's way. New construction in the floodplain increases the amount of development exposed to damage and can aggravate flooding on neighboring properties.



Development outside a floodplain can also contribute to flooding problems. Stormwater runoff is increased when natural ground cover is replaced by urban development (see graphic). Development in the watershed that drains to a river can aggravate downstream flooding, overload the community's drainage system, cause erosion, and impair water quality.

Stormwater management encompasses two approaches to protecting new construction from damage by surface water:

- Regulating development in the floodplain to ensure that it will be protected from flooding and that it won't divert floodwaters onto other properties, and
- Regulating all development to ensure that the post-development peak runoff will not be greater than under pre-development conditions.

Most communities participate in the National Flood Insurance Program (NFIP). The NFIP and the Illinois Department of Natural Resources set minimum requirements for regulating development in the floodplain. All new buildings must be protected from the base or 100-year flood and no development can cause an increase in flood heights or velocities.

Storm water runoff regulations require developers to build retention or detention basins to minimize the increases in the runoff rate caused by impervious surfaces and new drainage systems. Generally, each development must not let storm water leave at a rate higher than that under pre-development conditions.

CRS credit: CRS credit is provided for both higher regulatory standards in the floodplain and

runoff management standards for new developments. Credit is based on how those standards exceed the minimum NFIP requirements.

4.7. Conclusions:

Building Code Ordinances, mobile or manufactured home ordinances as well as subdivision ordinances provide protection for future buildings and development within the County. Following the State Mobile and Manufactured Homes tie-down and protection from flooding regulations as well as the State's adoption of the International Residential Code makes it easier for County's do adopt their own codes.

Although Jersey County does not have a zoning ordinance, it does have a Land Use and Subdivision Committee that regulates development and growth.

4.8 Recommendations:

1. Jersey County and local municipalities promulgate and enforce a nationally-recognized building code.
2. Jersey County and local municipalities promulgate and enforce appropriate regulation of subdivisions, open spaces, and storm water run-off.
3. Jersey County engages in comprehensive land use planning and appropriate regulations.
4. Jersey County to adopt the Community Rating System and within one year joining the Insurance Services Offices to better their classification, this would take our rating from a class 8 to possibly a class 5.
5. Jersey County and local municipalites should work together on code enforcement, building code language and sharing of GIS information