

**Stone Harbor Building Height:
An Option for the Future
January, 2007**

Rising Sea Level Requires Extra Protection

Stone Harbor sits on a barrier island with approximate land elevations ranging from 5 feet to 12 feet above sea level. The island slopes from beach to bay with the higher elevations along the beach and dune fronts. Sea level is rising at a rate of 14 inches per century. Evidence of increased water levels is presented at each full and new moon, as well as at each northeaster.

Extra Height Gives Extra Protection

The Base Flood Elevation (BFE) is the calculated height of the still water during the 100-year storm. All of Stone Harbor lies within a Flood Hazard Area (A-7), where BFE is elevation 10'. The (A) zone does not take wave action into account. In the event of a 100-year storm, waves from wind or other causes would exceed the BFE, causing potential damage to rise.

Adding one or more feet to BFE establishes a Flood Protection Elevation (FPE) as opposed to a Base Flood Elevation (BFE). All new and substantially damaged residential buildings should be required to elevate to the FPE rather than to the BFE.

Building Height as Measured from Top Of Curb

The Stone Harbor zoning ordinance measures building height from "top-of-curb". A home built in Stone Harbor in 1982, the year the current zoning ordinance was adopted, would have had a first floor very close to grade. BFE (base flood elevation 10.00 feet) was not a consideration.

Since 1982, changes have been made to both flood prevention (FEMA) and the international building codes (IRC). The newer building codes address crawlspace height, flood and mold prevention. The criterion on which the zoning ordinance was based has changed, but the ordinance has not. It is simply outdated.

Today, in response to newer building codes, the 1st floor elevation of a typical home will be a minimum of 2 feet higher than a just a few years ago. A 2 foot crawlspace is now required and an excavated crawlspace (lower than adjacent exterior grade) is prohibited in flood hazard areas (IRC).

Measurement of Building Height From Bfe

The difference between BFE and grade elevation varies across the island. Grade may be above BFE along the beach front and as much as 5' below BFE in the back-bay areas. Building height should be measured from BFE (rather than top of curb) with an additional crawl space allowance where grade is higher than BFE.

Non-Conforming Structures

The zoning ordinance recognizes the need for additional building height in the lower elevation areas. Additional height is granted where grade (curb elevation) is significantly below BFE. However, where grade is higher or close to BFE, the ordinance makes no such allowance. The result has been a generation of homes built far too close to grade. As noted above, the IRC now requires a 2' crawlspace. The zoning ordinance has, in effect, acted as a disincentive toward sound flood prevention practices. (Photos 1 & 2, below)



Photo 1: Flood vent & crawl space below grade

Many of the worst offending homes are not very old, having been built just prior to the building code changes of 2002. Homes of this era were routinely pushed to the extreme vertical zoning limit, and built as close to grade as possible. Many homes are without crawlspaces, some have excavated crawlspaces, and most have minimal flood and air ventilation. This is concern that should have the Borough's attention.

Additionally, there has been a trend towards building slab-on-grade homes in the higher elevation areas. This may meet the letter of the law, but cannot be considered to meet its spirit. One can question the efficacy of a zoning code that encourages, or at least does not question, slab-on-grade construction in Flood Hazard Areas.



Photo 2: Flood vent & non-conforming crawl space

The number of homes that fail to comply with the minimum crawlspace requirement is overwhelming. Blocks eastward of 3rd Avenue may have a nonconformity rate above 80%. Non-conformity rates of 50% are not uncommon. A small percentage of these homes are “slab-on grade,” requiring no crawlspace. But this is a small percentage. Moreover, most of the homes found to be “crawlspace compliant” were only marginally so.

SAMPLE CRAWL SPACE CONFORMANCE
FIG. 1



33 Nonconforming Crawl Space	■	9 Conforming Crawl Space	■
21% Conformance			

SAMPLE CRAWL SPACE CONFORMANCE

FIG. 2



22 Nonconforming Crawl Space	■	5 Conforming Crawl Space	■
17% Conformance			

SAMPLE CRAWL SPACE CONFORMANCE

FIG. 3



44 Nonconforming Crawl Space	■	19 Conforming Crawl Space	■
30% Conformance			

Effect of Height Change on New Buildings

Measuring the building height from BFE will have minimal impact on building height. (See *Diagrams 1- 4*, attached). When building height is measured from BFE there is no change to current allowable building height where grade is lowest as in the back-bay areas; the 2' crawlspace is already included due to the circumstance of grade to BFE.

Absolute building height would not change until grade is above elevation 8'. Most notably, homes in the beach blocks would be 2' taller than currently allowed. However, this is the area where the greatest offenses occur, where the greatest change is required. A comparison of *Diagram 1* (Beach Front) and *Diagram 4* (Bay Front) shows that even with the additional building height, the bay area home is still 2' taller than the beach front home.

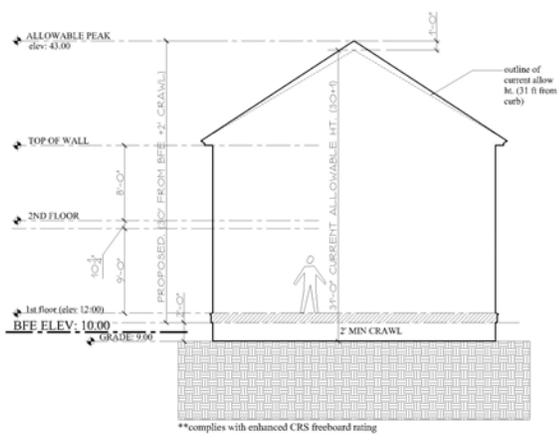
Measuring building height from BFE would:

- Tie the building to its site specific conditions.
- Allow "full" height crawlspaces for access, ventilation, mold protection, flood protection.
- Remove difficulties presented by grade and street elevations in doing calculations of height.
- Make the playing field more even for building interior design.
- Result in steeper roof pitches and more historically sensitive buildings.
- Have minimal impact on building height

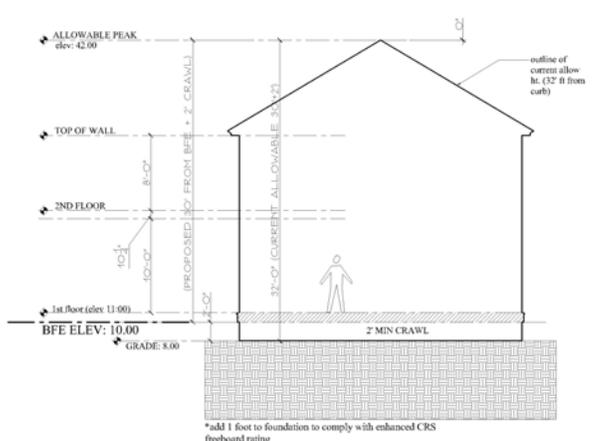
Freeboard Of 2' Recommended For Residential Buildings

In discussions with building officials and state experts, a FREEBOARD of 2 feet is recommended for residential buildings, with the requirement that the height of the first floor be at or above the FPE. That extra height will put the bottom of all structural members and ductwork under the first floor above BFE. This assumes 1' for floor assembly and 1' for ductwork.

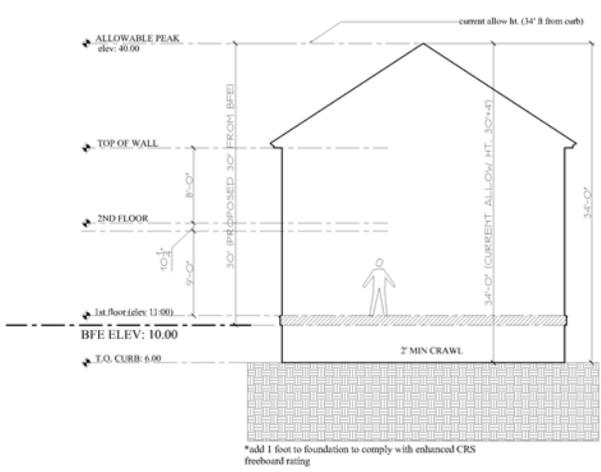
In practice, floor assemblies are typically set with the bottom of structure at BFE. Adding just 1 foot will satisfy the NFIP criteria for 2 feet of freeboard. National Flood Insurance Rates are reduced for each additional foot the structure is above BFE. See attached NFIP schedule.



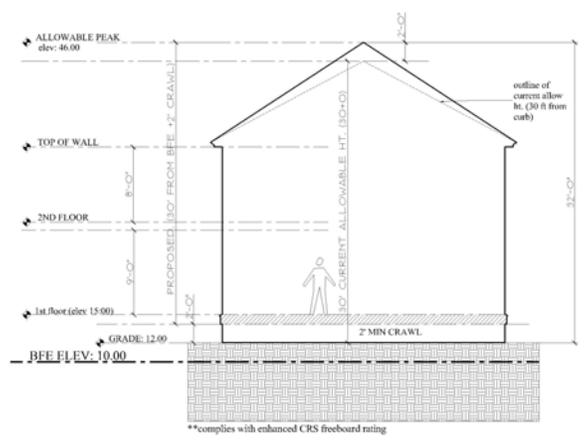
3 ELEVATION DIAGRAM WITH CURB AT ELEV 9.00
 NO SCALE
*BEACH BLOCKS
 GRADE AT ELEV 9,
 1' HT CHANGE*



2 ELEVATION DIAGRAM WITH CURB AT ELEV 8.00
 NO SCALE
*MID-ISLAND
 GRADE AT ELEV 8
 NO HT CHANGE*



1 ELEVATION DIAGRAM WITH CURB AT ELEV 6.00
 NO SCALE
*BAY AREA
 GRADE AT ELEV 6.00
 NO CHANGE TO BUILDING HT.*



4 ELEVATION DIAGRAM WITH CURB ELEV 12.00
 NO SCALE
*BEACH FRONT
 GRADE AT ELEV 12,
 2' HT CHANGE*

CRS Program Gives Points for Freeboard

Each foot of additional elevation over BFE offers 100 points offers for the CRS (Community Rating System) program. A 2' FREEBOARD would offer 200 extra points. If FREEBOARD is added in varying amounts, for instance more near the bay and ocean and less in the interior of the island, and only for residential buildings, then the points are prorated.

Stone Harbor currently has a CRS rating of 8. The borough is encouraged to explore these height issues as a method for reducing insurance rates. The diagrams shown (1 thru 4) would require no additional height in the beach blocks, and only an additional foot in the back-bay areas to comply with this CRS rating.

Federal Emergency Management Agency
Region IV
3003 Chamblee-Tucker Road
Atlanta, GA 30341

NATIONAL FLOOD INSURANCE PROGRAM
SAMPLE FLOOD INSURANCE RATES
Regular Program Post-FIRM Single Family Construction NFIP Rates
Cost and Savings Based on Elevation of the Lowest Floor Above or Below the Base Flood
Elevation in AE or Numbered A-Zones with Elevation Certificates
Coverage = \$100,000 Building, \$25,000 Contents

Elevation of Lowest Floor Above or Below BFE	Coverage Type	Rates Basic/Additional	Value of Coverage	Rate Price	Federal Policy Fee	Annual Policy Cost	Savings from elevation above BFE
+ 3 Feet	Building	B = 0.24	\$50,000.00	\$120.00	\$30.00	\$272.00	\$713.00
		A = 0.08	\$50,000.00	\$40.00			
	Content	B = 0.38	\$20,000.00	\$76.00			
		A = 0.12	\$5,000.00	\$6.00			
+ 2 Feet	Building	B = 0.37	\$50,000.00	\$185.00	\$30.00	\$337.00	\$648.00
		A = 0.08	\$50,000.00	\$40.00			
	Content	B = 0.38	\$20,000.00	\$76.00			
		A = 0.12	\$5,000.00	\$6.00			
+ 1 Foot	Building	B = 0.67	\$50,000.00	\$335.00	\$30.00	\$513.00	\$472.00
		A = 0.08	\$50,000.00	\$40.00			
	Content	B = 0.51	\$20,000.00	\$102.00			
		A = 0.12	\$5,000.00	\$6.00			
+ 0 Feet	Building	B = 1.31	\$50,000.00	\$655.00	\$30.00	\$985.00	
		A = 0.10	\$50,000.00	\$50.00			
	Content	B = 1.22	\$20,000.00	\$244.00			
		A = 0.12	\$5,000.00	\$6.00			
-1 Foot	Building	B = 3.31	\$50,000.00	\$1,655.00	\$30.00	\$3,003.50	
		A = 1.21	\$50,000.00	\$605.00			
	Content	B = 3.38	\$20,000.00	\$676.00			
		A = 0.75	\$5,000.00	\$37.50			
				\$2,973.50			

-2 Ft or more Below BFE = Submit to Rate
Revised 6/30/2007; rates effective 5/1/2007
Examples do not include added ICC premium. Add \$6.00 for ICC coverage.
Susan W. Wilson, DHS/FEMA MV Insurance Liaison

A Building Height Primer

The measurement of residential building height is always a sensitive and evolving zoning issue. Most southern New Jersey coastal towns measure building height from BFE. Cape May and Ocean City do not, however the height measurement allows for an adequate crawlspace. Ocean City's code is currently under review. Longport is increasing their building height to facilitate both a more standard BFE measurement, and a better architecture. Brigantine offers a 5' allowance for attic space, ensuring a steeper roof, solely for aesthetic purposes.

Building codes (BOCA and IRC) have always measured building height to the mid-point of the rake. Many zoning ordinances historically have done the same. This device encourages a steeper roof pitch. The steeper roof (above 6:12) offers better structural design and wind and weather protection. The steeper roof and the taller building are historically correct and aesthetically pleasing. Indeed the taller building mitigates the appearance of bulk; the proportion of the building matters much more than its height

The Lexicon of the New Urbanism, a guide book for zoning codes, states: "under no circumstances should the building height be measured to the absolute peak, as this tends to lower the pitch and flatten the building."

This issue is also addressed in Form-Based Codes: A Guide for Planners, Urban Designers, Municipalities and Developers, which states: "If height limits are regulated to the roof ridge, designers are forced to create buildings with flat roofs or with minimally sloped roofs to keep under the height limit. These roofs are often out of character with others in the area."

This is precisely the issue in Stone Harbor. A flatter roof is permitted if not encouraged. Building height is protected to the exclusion of all other things. Since 1982 the ordinance has raised a generation of buildings that are technically flawed, aesthetically challenged and detached from the historic fabric of the borough.

Conclusion

The power of zoning ordinances to shape our towns is, in the end, fairly limited. The ordinances are born more out of Municipal Land Use Law than planning practice. Commonly, municipal zoning strives to prevent the very worst of building design instead of prescribing how to make the very best.

Nostalgia is a current that runs through the coastal resorts. Families and generations are connected through beach and bay. But the picture post card image of 40s cottages is gone and it is not coming back. We must find another standard. The way forward is to leverage the success and the reputation of Stone Harbor towards the highest quality building. The imprimatur must be quality, not a random collection of numbers.

Works Sited

Duany Plater-Zyberk & Co. "The Lexicon of the New Urbanism" Version 3.2, 2002

D. Parolek, K. Parolek, P. Crawford, "Form-Based Codes" "2008, John Wiley & Sons, Inc.